Journal of Entomology and Zoology Studies

Available online at www.entomoljournal.com

E-ISSN: 2320-7078
P-ISSN: 2349-6800
JEZS 2017; 5(4): 46-52

Received: 09-05-2017
Accepted: 10-06-2017

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An overview of impact of small scale fish farming on socio-economic growth in Birbhum district, West Bengal, India

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Abstract
A survey was conducted in 10 significant villages of Birbhum, an economically backward district of West Bengal to analyse the impact of small scale fish farming in the rural socio-economic aspect. 5 respondants from each village were interviewed providing a set of questionaries to obtain a clear view about demography, social and financial status, the nature of fishery and the economy that directly related with fishery. It reveals that majority of fish farmers are males and most are not educated beyond class 10 level. The respondants have an average household size ranges between 3-6 persons. Result of descriptive analysis and test of significance shows that there is a significant impact of small scale fishery enterprise on rural economy.

Keywords: Birbhum, backward district, small scale fish farming, impact, socio-economy

1. Introduction
Fishery is an important aspect in India providing financial support to a large number of households and hence this reflects on economic growth of the country. As per the Handbook of Fishery statistics, Government of India, this country is the second largest producer of fish contributing 5.68% of global total during 2013-14 earning 30,213 Crore foreign currencies [1, 2]. West Bengal is second in production (1.632 Million metric tons) relating to other states [1, 2]. Birbhum is a semi potential district from the fisheries point of view though it is having vast water resources like tanks, beels, reservoirs, rivers etc. [11] Hence impact of fishery is not so as national or state standard. But a large number of households depend upon fishery direct or indirectly to earn their living [3]. From a study it has been found that most fishermen in India are poor, low-educated and have credit based livelihood. Besides they have less participation in social and cultural activities [8]. They enjoy themselves the poor earning from fishing in a kind of sacrificed profession. The young members feel the charm of adventure of fishing. This is also studied that mostly male members of the households take part in direct fishing practice [5].Their average age is 44 years. [9]

Fish production from natural water bodies in the country including Birbhum district like rivers, lakes, canals, beels etc followed a declining trend primarily due to proliferation of water control structures, indiscriminate fishing and habitat degradation [4]. Therefore rural fishery is now mainly depends upon pond or tank based that requires some financial and technical benefits from Credit society and government agencies. If the fishing practice is managed properly by formation of co-operative society and financial investment and implementation of advanced techniques this would impose a notable impact on socio-economic upliftment of this district. It is found that socio-economic and cultural profile of the fisherman community is not so hopeful throughout the countries as the impact of small scale fishery is very less [2]. This survey is a picture of present status of impact and influencing others to focus on this field so that a large number of inhabitants can enjoy the benefits of small scale fishery enterprises and the financial backward Birbhum district [6] will be progressed.

2. Materials and Methods
2.1 Study area and Study period
The present study was conducted in 10 villages of Birbhum District of West Bengal, situated in between 23°23'30" and 24°35'00"N latitudes and 87°5'25" and 88°1'40"E longitudes. Relevant information's for the present study were collected from April 2017 to May 2017.

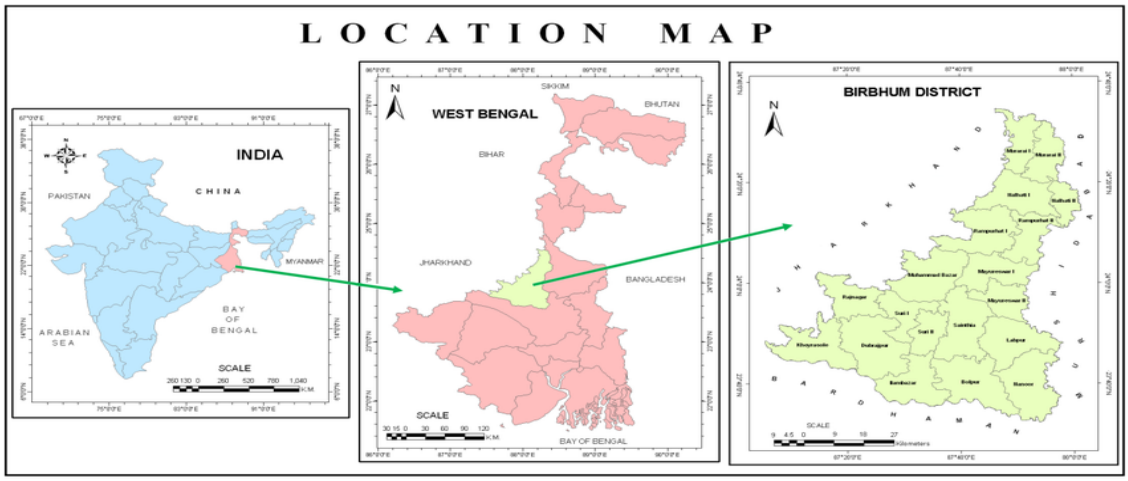

Fig 1: Location of Birbhum District (Curtsey: Google Map)

2.2 Data collection

Primary data were collected from the respondents of the villages surveyed. Purposive and simple random sampling techniques were used to collect necessary data. Structured interview schedules were used to collect information from the respondents. A question paper was prepared to know Name, gender, educational status, number of family member, annual family income, participation in social activities, interest in co-operative formation, credits taken for fishing practice, addiction to alcohol, any complain or dissatisfaction to Government aid. Secondary data were collected from Census report of 2011 [12] about demographic information of the district and the villages, State Fishery Department Corporation Ltd (SFDCL), Birbhum district Fishery Department to collect information about present fishery status of the district[11], Fishery statistics of Ministry of Agriculture, Fisheries Division, Government Of India to obtain information about picture of fishery in India and West Bengal and several related websites and journals to obtain respective data [1].

2.3 Data presentation and analysis

The data were represented in textual, tabular and graphical form for easy understanding of present findings.

3. Result and Discussion

3.1 Information of the district and status of fishery

Table1 shows that Birbhum district (Fig.1) is populous and village based. Table2 shows the status of fishery in this district. There is a potentiality in fishery and the Fishery department is in effort to do better.

Table 1: Birbhum district at a glance

Area	4545 sq km
Community Development Block	19
Number of Villages	2455
Number of Gram Panchayat	169
Number of Municipalities	6
Total population	3502387
Density	771/sq km
Male/Female ratio	955.52

Source: Census Report,NPR. Govt. of India, 2011

Table 2: Fishery status in Birbhum district at present

Total ponds/tanks	21376.87 ha
Private ownership	20134.51 ha
Culturable	14833.80 ha
Beel and baor	632.16 ha
Reservoir	9416.53 ha
River	795.63 ha
Canal	5896.85 ha
Total annual production	65092.8 metric tons
Total annual demand	67699 MT
Total fisherman families	51350
Functioning co-operative societies	15
Total hatcheries	13
Total seed production	600 million spawn

Source: Assistant Director of Fisheries, Birbhum

3.2 Analysis of survey data

The primary data collected from 50 respondent after interview it is found that most of the fisherman families are under educated. Education status of non-fisherman families is also not satisfactory (Fig.2). Most of the fisherman are male (Fig.3). Mode of age group is 30-45 years (Fig.4) Most fisherman do not follow the advanced methods of Pisciculture though many of them are trained. They sell the fishes in village market (haat) and also supply in towns. They mostly do not preserve by ice as production is low and not sufficient to meet the demand. Hence there is little chance of damage. Table-3 shows information about the villages surveyed.

Table 3: Villages selected for survey

Sl. No	Name of Village	Block	Population	Area in Hactre	Number of households	Number of Fisherman Families
1.	Nahina	Bolpur	3332	217.76	737	12
2.	Pachhiara	Dubrajpur	3627	276.85	795	26
3.	Narayanpur	Rampurhat-I	4449	506.27	954	28
4.	Chhota Alunda	Suri-I	2511	331.44	606	13
5.	Madhaipur	Rajnagar	1531	409.23	351	19
6.	Narsonda	Ilambazar	1292	266.49	274	10
7.	Hatikra	Suri-II	1555	330.41	383	21
8.	Selarpur	Dubrajpur	1914	162.6	406	19
9.	Neturi	Sainthia	1092	249.33	226	08
10.	Bhurkuna	Suri-I	1674	299.34	389	17

Source: https//villageinfo.in/westbengal/birbhum and Survey data

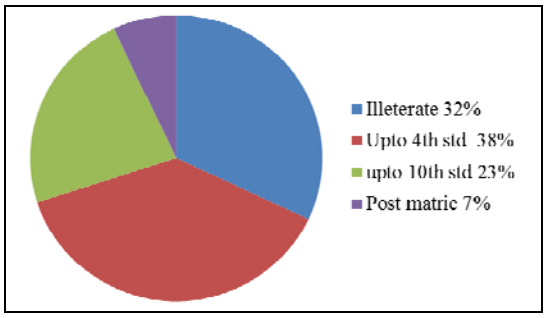

Fig 2: Educational status in the ten villages found in survey including fishermen

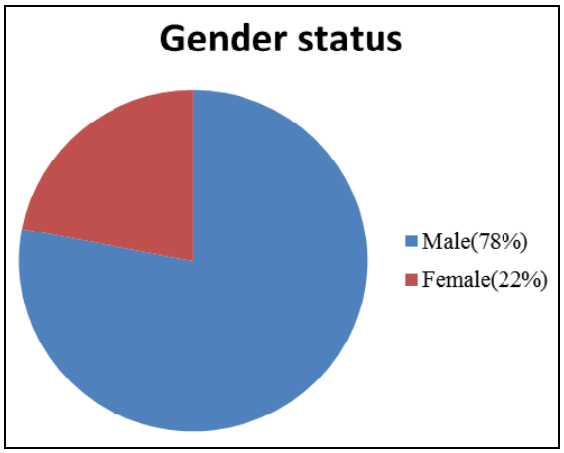

Fig 3: Gender status of the fishermen

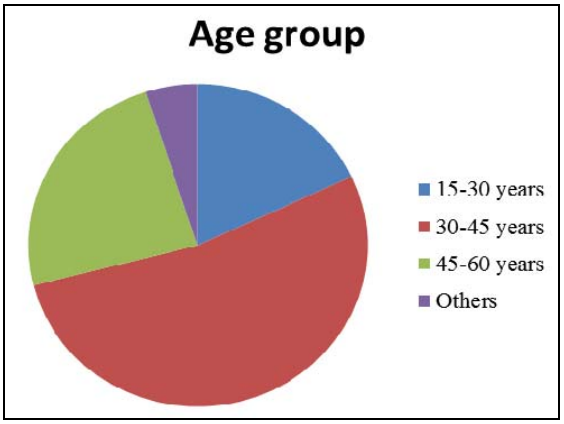

Fig 4: Age groups of fisherman (in%)

3.3: Discussion

It is clear from the findings that a few number of households are fishermen. Then one may think that the impact of fishery in village economy is negligible. But it has been found that some fish vendors are not directly included in counting of fisherman but can earn their livelihood from fishery. Similarly the shopkeeper selling fishing nets and other equipments, lime used for water purification and restore alkalinity, fish feed seller etc enjoy the financial benefit through business. One of the major problem found in these fishermen households is addiction to liquor. But this is not the problem of this district only. It is found that about 62% of fishermen are addicted to liquor expending more than 30% of their total income in Poducherry region, India [3]. It is also found that most of them have an average monthly income is 5000 to 20000 Indian rupees which is higher than Birbhum district fisherman. Education status is poor in this District. More than 72% of fisherman are illiterate in during a study in Barpeta, Assam, India [10] and this is only 10% in Valsad Gujarat, India [9]. So it is clear that educational status is highly variable throughout India and therefore the fisherman of Birbhum district can involve in better production and earn more though they are undereducated. It means education is not directly related to improve small scale fishery but related to more advanced fishing practice like hatchery maintenance, implementation of scientific methodologies offered by government officials and workers. However the department arrange training programme to make them educated in fishing time to time.

There is possibility of joint venture of fish economy to other commercial fields like ice factory, transportation industry, fish byproducts industry, pickling and packaging industry etc [13]. It will provide chance of creation of huge employment. Both social and economic upliftment can be expected in near future. The District fishery department is trying to its best for growth of rural fishery providing methodological training, loan and financial support, supplying seeds to the needy farmers, marketing etc. Exotic carps have been cultured along with Indian major carps. There is no traditional culture practice but large number of catfishes, koi (Anabas sp) Tilapia, hybrid fishes (Bighead, Nilotrigon etc) etc are captured which also have good market demand. There is an ever demand of fish as delicious protein food item to all non-vegeterians and hence the impact will increase day by day. However investment can not be expected high but we may be optimistic to see more number of households are involving in this sector. Women should be involved more in number who can enrich the sector by their labor and innovations. Future researchers might find whether the impact has been increased or not.

There are some difficulties or constraints in rural inland fish culture that lowers the impact below as expected. The major constraints observed during survey are a) drying of most ponds and beels during dry seasons except the deep perennial ponds so that fishing is restricted for 9 months b) village politics and jealousy c) lack of sufficient knowledge of advanced methodologies d) financial insufficiency etc.

4. Conclusion

From this survey it is obvious that the economically backward areas of Birbhum district have chances to be developed if small scale fishery enterprises are expanded. During study most of the fishermen complained about the poor marketing and tricky exploitation of the middleman and the creditors. These problems must be solved on urgent basis by respective government authorities. Number of Co-operative Credit Societies should be increased and the fishermen will be encouraged to take the benefit from this.

5. Acknowledgment

The author put his thanks to the persons of the villagers and others those helped me during the study. I also express my thanks to the Fishery extension officer of Meen Bhaban, Suri, Birbhum and several other kind personnel.

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