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## Socio-economic status of fishermen and different fishing gear used in Beki River, Barpeta, Assam

**Gaurab Jyoti Kalita, Pradip Kumar Sarma, Priyanuz Goswami, Srustidhar Rout**

### Abstract

This study was carried out in Beki river, for the period of seven months in 2014. Through profilistic study, we were evaluate the socio-economic condition of fishermen and their different kinds of fishing gears. A total sample of respondents was 276 fishermen. The result of the study revealed that most of the responded belonged to the Muslim community (68.48%). Illiteracy was found one of the major problem of the studied area as about 72.10% respondents were found to be illiterate. Here, fishing business was totally male dominated (97.10%) and maximum (90.22%) fishermen had married. About 49.28% of total respondents were found to belong under the age group between 31-40 years. About 52.17% respondents working as farmer for other earning apart from fishing.

Various kinds of fishing gear were used in Beki River for fishing, viz., Cast nets, Scoop nets, Gill nets, Fishing lines and Traditional Bamboo Trap.

**Keywords:** Beki riverine, Fishermen, Socio-economic, Fishing gear.

### 1. Introduction

Fish and fishing business is an important sector of many nations of the world from the standpoint of income and employment generation. Fishing plays an important role in supporting livelihood worldwide and also forms an important source of diet for over one billion people. It is estimated that 12 million people are directly engaged in fishing and about 60 million are exclusively depending on it for livelihood in India [6]. Fisheries sector plays an important role in the Indian economy by contributing to the national income, employment and foreign exchange. It has a vast potential for fish resources, both from inland and marine environment. India has about 1.6 million hectares of freshwater lakes, ponds, and swamps; and nearly 64,000 kilometers of rivers and streams [6]. Fisheries-related activities provide important sources of livelihoods for nearly 7 million people in India [7]. A number of studies related to economics of fish farming have been conducted by eminent social scientists and economists at national level, state level and district level in India.

Assam is one of the richest fresh water resources states in the country along with 3.91 lakh hectares of surface water (Brahmaputra and Barak river system) [8]. Those (Brahmaputra and Barak river system) plays a pivotal role in the socio- economic development and employment generation in Assam. Barpeta district is the second largest flood prone district in Assam, the river mighty Brahmaputra flows from east to west across the southern part of district, the tributaries of these river that flow through the district are Beki, Manah, Pohumara, Kaldia, Palla, Nakhanda, Marachaulkhowa and Bhelengi flowing from North to South. Beki river is one of the most important and largest rivers in Barpeta district. So far, there are many published reports on socio-economic condition of fishermen and different types of fishing gears, with special reference of wetland, Assam. But meager information is available about socio-economic condition of fishermen near riverine areas of Assam. Socio-economic status of river dependent people was studied by few workers in Assam [1, 2, 3, 4, 5]. A detailed study on socio- economic condition of the fishermen and the fishing gears of the Beki river system together has not been documented earlier in Barpeta district. The present study has been pledged to evaluate the socio-economic conditions of the fishermen as well as fishing gear used in Beki River.

### 2. Materials and Methods

The present study was carried out from December 2013 to June 2014.

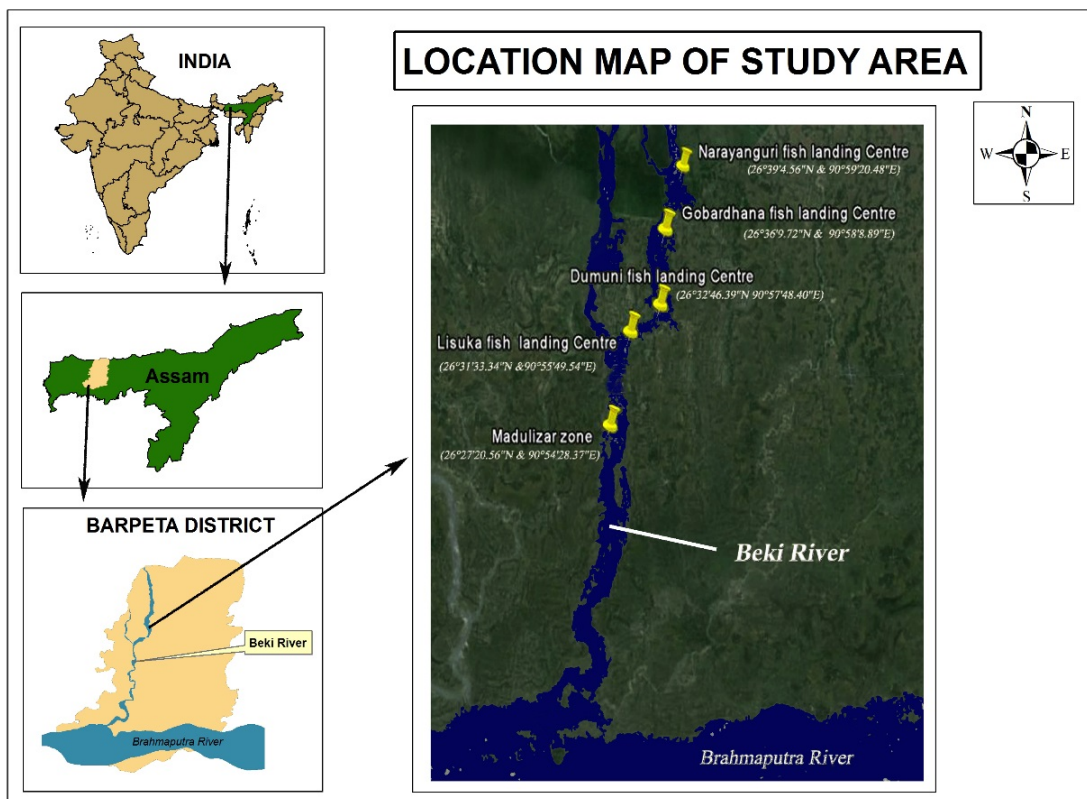
**2.1 Study Area:** Beki river, also known as the Kurissu river in Bhutan, lies between  $26^{\circ} 20' 00''$  N;  $90^{\circ} 56' 00''$  E and located in Barpeta district and flows from North to South through Barpeta district. The survey was conducted in five different landing zone of Beki river.

### 2.1.1 Places (Survey Landing Zone) Description:

- (i) **Madulizar (L<sup>1</sup>):** ( $26^{\circ}27'.56''$  N and  $90^{\circ}54'37''$  E): It is about 16 km from Barpeta road. This landing zone is very near to riverbank.
- (ii) **Lisuka (L<sup>2</sup>):** ( $26^{\circ}31'.34''$  N and  $90^{\circ}55'54''$  E): It is about 3 km from Barpeta road. Upstream part of river.
- (iii) **Dumuni (L<sup>3</sup>):** ( $26^{\circ}32'.39''$  N and  $90^{\circ}57'40''$  E): It is about 6 km from Barpeta road. Upstream part of river.
- (iv) **Gobardhana (L<sup>4</sup>):** ( $26^{\circ}36'.72''$  N and  $90^{\circ}58'89''$  E): It is about 16 km from Barpeta road. Upstream part of river.
- (v) **Narayunguri (L<sup>5</sup>):** ( $26^{\circ}39'.56''$  N and  $90^{\circ}59'48''$  E): It is about 22 km from Barpeta road. Upstream part of river.

### 2.1.2 Data Collection Method

The methodology used in this study was combination of descriptive and analytical. The different data was used for the study with a combination of interviews and observations on the fishermen villages along the riverine area and with the help of a schedule containing both structured and unstructured questions, the head of the family was interviewed. Planning was made for field visits combined with resource persons and elderly persons and the purpose and objectives of the study were made clear to them. Further enquiries and observations were made during subsequent visits to several riverine villages. Various field exercises were conducted to gather information like population, dependency on river, uses of the net and uses of boats, types fishing gears etc. The secondary data was also including; those were available from different newspapers, fisheries bulletins of Assam, journals and published books. Moreover, personal knowledge was used to make meaningful interpretation of the data.



**Fig 1:** Study area Location Map

## 3. Results and Discussion

To study socio-economic condition of fishermen and different types of fishing gears of Beki riverine areas we interviewed 276 fishermen from five different fish landing zone. And study of the socio-economic condition of fishermen of Beki riverine areas has been made to investigate the following objectives: (1) examine the educational qualification of fishermen in study area (2) types of fishermen in study area (3) examine the religion, age and sex of fishermen in study area (4) investigate the different kinds of common and traditional fishing gears (5) investigate the housing condition of

fishermen of study area (6) investigate the average fishes catch per day from river and also investigate other earning sources of fishermen.

### 3.1 Educational qualification of fishermen

**Table 1** Reveals percentage of educational qualification of fishermen from Beki River. Out of 276 respondents, 25.73% belonged to the education group upto Lower primary school. 2.17% belonged to pass Matriculation level and rest of 72.10% respondents belonged to the uneducated category.

**Table 1:** Percentage of Educational Qualification of Fishermen from Beki River

Educational qualification of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Landing zone</b>							
<b>Uneducated</b>	21	45	35	40	58	199	72.10%
<b>Lower primary</b>	34	0	16	21	0	71	25.73%
<b>Pass Matriculation</b>	0	0	6	0	0	6	2.17%

**3.2 Marital Status, Religion and Sex of fishermen**

**Table 2** Reveals percentage of marital status of fishermen from Beki River. Through profilistic study, it was estimated

that 90.22% respondents belonged to married and rests of 9.78% respondents belonged to the unmarried category.

**Table 2:** Percentage of Marital Status of Fishermen from Beki River

Marital status of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Landing zone</b>							
<b>Married</b>	55	33	49	57	55	249	90.22%
<b>Unmarried</b>	0	12	8	4	3	27	9.78%

**Table 3** Reveals percentage of religion status of fishermen from Beki River. Through profilistic study, it was estimated that 31.52% respondents belonged to Hindu community fishermen and rests of 68.48% respondents belonged to the

Muslim community fishermen. It was found that, the Muslim community was dominated the fishing business in Beki riverine area.

**Table 3:** Percentage of Religion of Fishermen from Beki River

Religion of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Landing zone</b>							
<b>Hindu</b>	42	0	0	39	6	87	31.52%
<b>Muslim</b>	13	45	57	22	52	189	68.48%

**Table 4.** Reveals percentage of sex ratio of fishermen from Beki River. Through profilistic study, it was found that

97.10% respondents belonged to Male category and rest of 2.90% respondent's belonged to female category.

**Table 4:** Percentage Sex ratio of Fishermen from Beki River

Sex of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Landing zone</b>							
<b>Male</b>	55	45	53	60	55	268	97.10%
<b>Female</b>	0	0	4	1	3	8	2.90%

**3.3 Types and Age of fishermen**

**Table 5** Shows that percentage of types of fishermen from Beki River. Types of fisherman details were as follows **Type a**- those who catch fishes for their own daily consumption. **Type b**- those who belonging to the Non-fishermen

community, but depend in fishing for their livelihood. During profilistic survey it was estimate that 11.23% respondents belonged to **type a** fisherman and rest of 88.73% of the respondents belonged to **type b** fishermen category.

**Table 5:** Percentage of different Types of Fishermen from Beki River

Types of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Landing zone</b>							
<b>Type a</b>	27	0	2	2	0	31	11.23%
<b>Type b</b>	28	45	55	59	58	245	88.73%

**Table 6** Shows that percentages of age distribution of fishermen from Beki River. Through profilistic survey, it was found that 26.81% respondents belonged to age group between

20-30 years, 49.28% respondents belonged to the age group between 31-40 years and rest of 23.91% of the respondents belonged to age group between 41-50 years.

**Table 6:** Percentage of age of Fishermen from Beki River

Age of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>20-30 years</b>	27	15	8	13	11	74	26.81%
<b>31-40 years</b>	28	17	23	29	39	136	49.28%
<b>41-50 years</b>	0	13	26	19	8	66	23.91%

**3.4 Other income sources and Housing condition of fishermen**

**Table 7** Reveals percentages of other income sources of fishermen from Beki River. During a survey, it was found that 52.17% respondents working as farmer for other earning apart

from fishing and the rest of 47.83% respondents working as labour in sand and stone mining business from Beki river. Farmer and working as a labour (sand and stone mining business) were found to be the most common alternative option for fishermen of Beki riverine area.

**Table 7:** Percentage of other income source of fishermen from Beki River

Other income source of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Farmer</b>	47	0	22	38	37	144	52.17%
<b>Labour</b>	8	45	35	23	21	132	47.83%

**Table 8** Shows that percentages of housing condition of fishermen near Beki riverine areas. Through survey it was found that 96.74% respondents had kaccha ghar and only 3.26% respondents had pakka ghar. Above statistics reflecting

that fishermen; who belongs to Beki riverine areas were too poor and unable to fulfill their minimum living requirements such as a good house, pure drinking water etc.

**Table 8:** Percentage of housing condition of fishermen from Beki River

Housing condition of fishermen	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Kaccha Ghar</b>	49	45	54	61	58	267	96.74%
<b>Pakka Ghar</b>	6	0	3	0	0	9	3.26%

### 3.5 Daily average catches of fishes from Beki River through individual fishermen

**Table 9** Reveals percentage of daily average catches of fishes by individual fishermen from Beki River. During a survey, it

was found that 44.57% respondents caught upto 3-5 Kg of fishes individually daily. 47.83% respondents caught upto 6-8 Kg individually daily and rest of 7.60% respondents caught upto 9-10 Kg of fishes individually daily.

**Table 9:** Percentage of daily average catches of fishes by individual fishermen from Beki River

Amount of average catches fishes	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>3-5 Kg</b>	31	16	23	21	32	123	44.57%
<b>6-8 Kg</b>	24	29	30	23	26	132	47.83%
<b>9-10 Kg</b>	0	0	4	17	0	21	7.60%

### 3.6 Different kinds of fishing gears used by fishermen in Beki River

**Table 10** Shows that percentage of different kinds of fishing gears used in Beki River. Through survey it was found that 26.81% respondents used cast nets, 24.28% respondents used

scoop nets, 32.61% respondents used gill nets, 6.15% respondents used different kinds of traditional bamboo traps and 10.14% respondents used different kinds of fishing lines for fishing.

**Table 10:** Percentage of different kinds of fishing gears used by fishermen

Name of fishing gears	No. of fishermen					Total No.	Percentage
	L <sup>1</sup>	L <sup>2</sup>	L <sup>3</sup>	L <sup>4</sup>	L <sup>5</sup>		
<b>Cast net</b>	14	8	17	22	13	74	26.81%
<b>Scoop net</b>	19	9	6	11	22	67	24.28%
<b>Gill net</b>	17	21	19	19	14	90	32.61%
<b>Different bamboo traps</b>	1	0	6	9	1	17	6.15%
<b>Different fishing lines</b>	4	7	9	0	8	28	10.14%

### 3.7 An elucidative data about different fishing gears used in Beki River

All the relevant data about fishing gears were collected through the profilistic field survey with the help of local fishermen. All description of the gears provided by the local fishermen were recorded in the relevant section of the questionnaire. In Beki river different kinds of fishing gears were used. The fish capturing methods (different fishing gears) in the Beki River are described below.

#### 3.7.1 Nets (Jal)

Different kinds of nets are used in Beki River for fishing, viz., Cast net, Scoop net, Gill nets, different fishing lines and different traditional bamboo traps.

##### 3.7.1.1 Cast net

It is a large circular type of net which is used to catch large and medium sized fishes. It is made up of cotton or indigenous fiber. It's look like an umbrella type. A strong cord is attached

to the apex of the bell shaped net and a number of iron balls are fixed all along the margin. The mesh size of the net ranges from 1 cm- 2.5 cm. It is mostly used throughout the year in the Bekis River.

##### 3.7.1.2 Scoop nets

It made up a rectangular bamboo-frame which is supported by a short handle of bamboo. It is very simple and common and also known as lift nets. The rectangular bamboo frame carries an oval shaped net which is made of mosquito net. Most of fishermen use this type of net in the Beki River. Scoop nets are found in different types. Those are as follows.....

- Tongi jal:** One type of scoop net. The structure of this fishing gear is same as scoop net. But mesh size about 1-5 cm.
- Dheki jal:** It is a large triangular net. It is consist of a triangular bamboo- frame which is supported by a simple and short bamboo handle. Mesh size about 1-1.5 cm.



### 3.7.1.3 Gill nets

Gill net is rectangular nylon nets which are provided with head and foot ropes. The foot ropes are provided light weight stone balls and head ropes are provided light weight floating balls. Gill nets are found in different types. Those are as follows....

- a. **Kawoi langi jal:** The design and details are same as gill net. But mesh size 1.5-3.5 cm. The major catch composition is *Anabas sp.*, *Nandus sp.*, *Heteropneustes sp.* and *Clarias sp.*
- b. **Puthi langi jal:** The design and details are same as gill net. Mesh size is 1.0-1.5 cm. The major catch composition is *Puntius sp.* & other small fish sp.
- c. **Rou langi jal:** The design and details are same as gill net. Mesh size is 5.5-9.0 cm. The major catch composition is *Labeo sp.*

### 3.7.2 Fishing lines

Fishing lines are widely used in traditional fisheries. Main principle of capture fishes is based on the feeding behavior of the target species. Fishing rods are locally known as “Boroshi” which consist of a lone and slender bamboo rod slightly curved at the tip. Fine cotton or nylon thread with a hook is tied at the curved tip of the bamboo rod. Also floats are tied in nylon thread and bait generally consists of earthworms, small fishes, insects etc.

- a. **Nal boroshi:** This type of “Boroshi” bears a floating bamboo, which is about 1.5 meter long and is tied centrally with a nylon rope with a hook. And generally earth worm is used as bait.
- b. **Sip boroshi:** it is made up of an elastic small size bamboo, which measure about 2-2.5 meter in length. At the top of bamboo a nylon rope with a hook is tied.

### 3.7.3 Traditional bamboo trap

Bamboo traps are Assamese traditional fishing gear. Different kinds of traditional bamboo trap use in Beki River for fishing. Those are described below....

- a. **Chepa:** It is most commonly used in during monsoon period. It is cylindrical shaped sieved bamboo trap, tapering at both ends. It is 0.6 to 1 meter length. It is placed in fast moving down small canal.
- b. **Dingora:** It is only used in monsoon period. It is rectangular shaped sieved bamboo trap. It is 0.5 to 1 meter length.
- c. **Polo:** It is bell shaped narrow cut bamboo trap. It is usually 0.5 to 1 meter in height. It is used in shallow water for catching all kinds of fishes. It is used in winter period near river bank when water level is really low.
- d. **Kuk or Khaloi:** It is bamboo made collecting plot. This is used for keeping the fishes after caught them.



Fig 2: Dingora



Fig 3: Chepa



Fig 4: Khaloi



Fig 4: Cast net

### 4. Conclusion

The economic condition of the fishermen were too poor, even they were not fully engaged in a fishing business. Maximum numbers of fishermen were unable to fulfill their minimum requirements. Most of fishermen were less perceptive about modern capture fisheries techniques. Here capture fishery business was totally male dominant; it's also an important finding. During a survey, it was found that a total 12 types of fishing gears used in Beki river. As obtained from the study, it was noticeable that cast net, tongi jal, dheki jal, kawoi langi, puthi langi and rou langi were most extensively used in Beki river for fishing by local fishermen. According to the seasonal variation different kinds of traditional fishing equipment's were also used in Beki River.

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