

A Note on Some Fishing Activities in Rural Bengal — A Case Study in Two Villages of West Bengal —

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ベンガル農村における漁撈活動覚え書き

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I. Introduction

For Bengalese, fish is one of the most palatable items of food and is also one of the main protein diets. Blessed with good environment for fishing, from time immemorial, the people of Bengal have caught and consumed various kinds of fish ranging from sea fish to fresh water fish. In the rural areas, one can see not only fishermen but also other people catching fish either for sale or for domestic consumption, and more interestingly, it is not only from the sea and rivers but also from canals, way-side ditches, tanks, and paddy fields that fish is caught. In short, fish is caught everywhere in rural Bengal, although Bengal is thought to be a predominantly agricultural country.

Amongst the various types, the fish caught from rivers and tanks are most common in Bengal. And most of the rural people possess their own tanks in which fish is usually cultured.

This paper attempts to illustrate how fishing activities play a significant role in the village life of Bengal. For an analytical study, tank pisciculture at Radhaballavpur

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village and fishing in the Hooghly River at Tentleberia village have been investigated. Both villages are situated in Midnapur District of West Bengal. Field study was carried out from September to November in 1992.

II. Tank pisciculture at Radhaballavpur

1. Ownership and uses of tanks

There are nearly 150 tanks or *pukurs* in Radhaballavpur. Although most of the households in the village have their own tanks, the ways of possession of the tanks are various. We can recognize four types of the ownership as follows:

- (1) One household exclusively owns one tank.
- (2) One household exclusively owns two or more tanks.
- (3) Two or more households jointly own one tank.
- (4) Two or more households jointly own two or more tanks.

These types come from the difference of the structure of household. In case of a large household or a joint family in which two or three generations live together without separating their property, one household tends to possess one or more tank(s). On the contrary, after separating their property, two or more households whose householders are related to each other as brothers, uncle-nephew or cousins tends to own one or more tank(s) jointly.

These tanks are mainly used for i) bathing and washing, and ii) also for pisciculture.

At Radhaballavpur, with the exception of a few tanks which are used neither for bathing and washing nor for pisciculture, most of the tanks are used for both purposes and some tanks are only for pisciculture. In fact, almost all households which own or share tanks carry on fish culture in their own tanks, although the number and the size of the tanks under their possession are varied.

2. Types of tank pisciculture

There are two types of tank pisciculture practised at Radhaballavpur. The one is conducted by tank owners themselves for their domestic consumption, the other is by another person who lease tanks from the owner for commercial purpose. The former largely prevails while the latter can be recognized in the cases of only six tanks at Radhaballavpur. The types of fish cultured in such tanks are mainly carps, i.e. *ru*

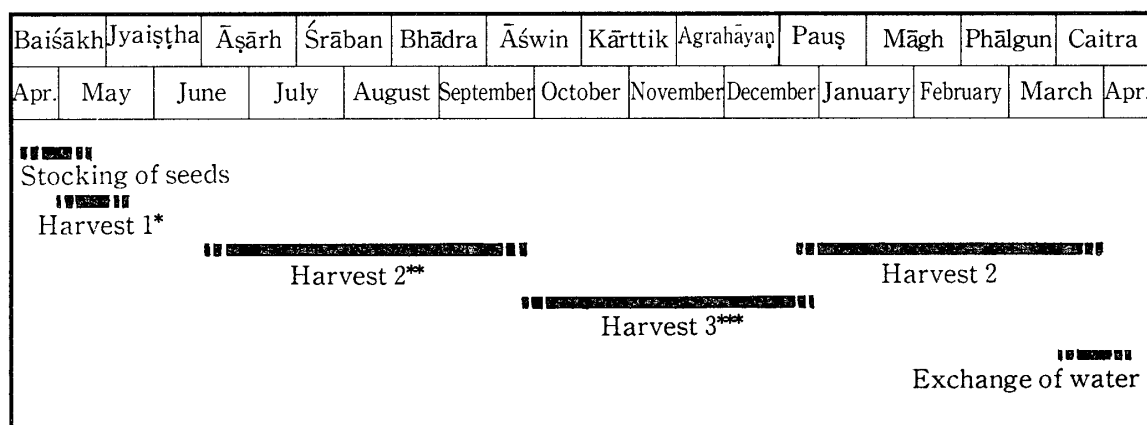
lime (*cun*) and potash are applied in the tanks twice a year with 15kg and 0.05kg at a time respectively. The former is for purification of water and the latter for prevention of infection. Cow dung (*garur gobar*) is also thrown in as feed several times a year with about 30kg at each time.

The water in K's tanks is changed once in two or three years. In late *Caitra* (the middle of April), the water is drawn up with the help of a diesel pump taken on lease from its owner. The tanks are subsequently filled with rainwater. Within 10 to 15 days, water of the tanks is accumulated enough to be stocked with fry of fish. In the meantime, 40kg of lime and 60kg of mahua oil-cake (*mahuyā khail*) are thrown into the tanks.

As mentioned above, the fish are usually consumed by the members of K's family.

Secondly, we take the case of G who leases out his tank to J. J, an inhabitant of neighbouring village of Radhaballavpur, takes 8 tanks on lease from different persons and conducts pisciculture on a commercial scale.

Figure 2 shows the annual cycle of fish culture conducted by J by the use of G's tank of 15 *kāthā* in size. At first, 0.42kg of seeds are stocked in *Baiśākh* (from the middle of April to the middle of May). The seeds become fry within a month, and then the fry are harvested and sold. Grown fish are harvested once a month from the beginning of *Āṣārh* to the middle of *Caitra* (from the middle of June to the end of March). The



* Harvest 1 is the harvest of fry.

** Harvest represents 30~40kg. per month in the period of Harvest 2.

*** Harvest represents about 20kg. per month in the period of Harvest 3.

Fig. 2 Annual cycle of J's fish culture

harvesting is done on a large scale with a *ṭānā jal* or a large dragnet which is used by four combined. The harvest per month is around 30 to 40kg from the beginning of *Āṣāṛh* to the middle of *Āświn* (from the middle of June to the end of September) and also from the beginning of *Pauṣ* to the middle of *Caitra* (from the beginning of January to the end of March), while it falls down to about 20kg in the period between the middle of *Āświn* and the middle of *Pauṣ* (between the beginning of October and the end of December).

All the fish are harvested by the middle of *Caitra* (the end of March), and after that, water of the tank is changed every year. The annual harvest is 400 to 500kg. ²⁾ Half of the harvest is given as rent to the owner of the tank, namely, to G, and the other half, being J's portion, is sold.

For increasing the productivity, lime, potash and mustard oil-cake (*sariṣā khail*) are used six times (25kg at a time), three times (0.1kg at a time) and three times (200kg at a time) respectively. Besides these, mahua oil-cake is also applied in the tank during *Caitra* (in March or April).

3. Comparative analysis of the two types of pisciculture

The two types of pisciculture shown above are different from each other in many way. Compared the two, we can easily see that fish culture of J is more intensive and productive than that of K. In case of K's pisciculture, the duration of fry stocking covers nearly two months and there is the period over two months in which neither stocking nor harvesting can be done (Fig. 1). In contrast, J stocks the tank with seeds within a month and then starts harvesting fish (including fry) after a short interval (Fig. 2). Consequently there is a great difference between the two types of pisciculture in productivity. Calculating the productivity of the two varieties, it has been assessed that, while K gets an annual harvest of 7.3-9.1kg/*kāṭhā*, the corresponding figure in J's tank is 26.7-33.3kg/*kāṭhā*. Productivity of J's tank is three or four times as much as that of K's.

The difference of productivity, as a matter of course, comes from a difference of the expenses incurred in the two types of pisciculture. J changes the water of his tank every year and throws more feed and medicine into the tank than K. As a result, J's pisciculture requires greater expense than K's. Table 1 and 2 give an approximate idea of expenses of the two types of pisciculture. Dividing each expenditure by the

sizes of the tanks, it may be observed that it costs approximately Rs. 37 to 63 per *kāṭhā* (or Rs. 72 to 99 per *kāṭhā* if the water is changed) for K's fish culture, and approximately Rs. 277 per *kāṭhā* for J's one. Given that the annual harvests of K and J amount to 90kg and 450kg respectively, each cost of producing 1kg of fish is approximately Rs. 4.5 to 7.7 (or Rs. 8.8 to 12.1 if the water is changed) and Rs. 9.2 respectively. But, in the case of J, it really costs about Rs. 18.4 to produce 1kg of fish which can be his portion, because he has to give half of the harvest to G, the owner of the tank.

Table 1 Expenditure of K's fish culture

Items	Quantity or hours	Rs/kg or Rs/h	Expenditure (Rs)
Fry (<i>ṣonā</i>)	7–8kg	50–80	350–640
Lime (<i>cun</i>)	30kg	1.5	45
Potash	0.1kg	100	10
Cow dung (<i>garur gobar</i>)	300kg	0	0
Total 1			405–695
Diesel pump	14h	15	210
Lime (<i>cun</i>)	40kg	1.5	60
Mahua oil–cake (<i>mahuyā khail</i>)	60kg	2	120
Total 2			390
Total 1+2*			795–1085

*Total 1+2 shows the amount expended in the year when the water in the tanks is to be exchanged.

Table 2 Expenditure of J's fish culture

Items	Quantity, hours or days	Rs/kg, Rs/h or Rs/day	Expenditure (Rs)
Seeds	0.42kg	185/105g	740
Lime (<i>cun</i>)	200kg	1.5	300
Mustard oil–cake (<i>sariṣā khail</i>)	600kg	3	1800
Potash	0.3kg	100	30
Mahua oil–cake (<i>mahuyā khail</i>)	200kg	2	400
Diesel pump	19h	15	285
3 laborers	10days	60	600
Total			4155

Now G, who leases his tank to J, can get half of the harvest from his own tank without any expenditure. It is approximately 13.3 to 16.7kg per *kāṭhā* in a year, which is nearly twice the amount of K's production. So far as these two cases of pisciculture are concerned, it seems to be better for a tank owner to lease his tank to such a professional fish cultivator as J. In Radhaballavpur, however, we can find only six tanks which are leased out. There are not so many persons in and around Radhaballavpur who lease tanks from/to others for commercial fish culture. There is a reason for this. For lessees, the commercial fish culture requires great expense and also involves some risk if it could not be done successfully. In fact, J could hardly harvest from G's tank in 1992 because of his financial difficulty. So far as the case of Radhaballavpur is concerned, we can safely state that such a commercial fish culture does not appeal so much to both lessors and lessees. And, under the present conditions in Radhaballavpur, it seems that one leases his tank to someone only when he is faced with some managerial difficulties. Out of six tanks which are leased out, four are of the owners who have more than two tanks and feel some difficulties to culture fish very well in their respective tanks. The other two are owned by six or seven households and eight households respectively, and the owners feel it difficult to do fish culture jointly.

4. Difficulty in producing more fish from the tanks

The commercial tank pisciculture does not prevail so much for the reason above, and most of the villagers practise tank pisciculture by themselves for their domestic consumption at Radhaballavpur. But the amount of production from the pisciculture for domestic consumption is, as we have seen, not so much in comparison with that from commercial one, and cannot meet sufficiently the demand for the fish consumed in each family. In the case of K's family, a family of nine, the annual amount of consumption of the fish cultured by himself is only around 10kg per person. To do such a pisciculture, K's family, earning some 1,000 rupees per month, invest about half of their monthly income or the whole of it in his tanks. The more one wants to raise the productivity or to do fish culture commercially, as shown in the case of J's pisciculture, the more he has to invest in his tank. Although there is a potentiality for producing more fish, it is difficult for the villagers who cannot have cash income so much to do

fish culture at a great cost.³⁾

III. Hilsa fishing at Tentleberia

1. Hilsa as the king of Bengal fish

In addition to tank pisciculture, river and coastal fishing is also extensively carried on in Bengal. In 1990-91, marine and inland fish production of West Bengal amounted to 680,000 tonnes accounting for about 18 percent of all fish production in India (3,835,880 tonnes). Amongst the states of India, West Bengal stands first in fish production. The most popular as well as expensive fish caught in Bengal is hilsa (*hilsa ilisha*) or *ilis* in Bengali. Although hilsa is sea fish, it goes up a river in shoals for spawning in the rainy season. The size of hilsa coming into rivers is big, and the taste of it is said to be good. Rainy season is really the season of hilsa fishing, and hilsa fishing on rivers plays a significant role in the economic life of poor fishermen.

The inland hilsa production in West Bengal amounted to 17,700 tonnes in 1990, which represented nearly 50 percent of all inland hilsa production of India (36,196 tonnes).

The marine hilsa production of West Bengal (17,500 tonnes) accounted for nearly 60 percent of all marine hilsa production of India (29,856 tonnes). West Bengal holds the first place in the hilsa production of India.

Tentleberia village, adjoining the Hooghly River, is one of the villages in which hilsa fishing is carried on. In this village, there is no fishing caste who depends mainly on fishing. But some farmers do fishing. Fish caught by the villagers is exclusively hilsa. The fishing season is during a few months in the rainy season.

2. Mode of hilsa fishing

Hilsa fishing is conducted by the use of fishing boat (*jāli naukā*) and hilsa net (*ilis jāl*).

The boat is small and has no outboard motor. The net is a gill net made of nylon.

10 persons, called *mālik* or owner, have fishing boats and nets in Tentleberia. Table 3 shows some characteristics of hilsa fishing of each *mālik*. All *māliks* belong to the Scheduled Castes, i.e. *Namaśūdra* or *Bāgdi*. And 8 *māliks* reside in the same neighbourhood or *para*, i.e. North *para*. This *para* is adjoining the river.

While all the *māliks* have their own nets, only four out of ten have their own boats. The others take boats from other villagers on lease (Table 3).

Table 3 Characteristics of each unit of hilsa fishing in Tentulberya (1992)

Mālik	Jāti ¹⁾	Pārā ²⁾	Boat ³⁾	Net ⁴⁾	Year of beginning	Period of operation	Relation of <i>mājhi</i> and <i>dari</i> to <i>mālik</i> ⁵⁾				
							<i>Mājhi</i>	<i>Dari 1</i>	<i>Dari 2</i>	<i>Dari 3</i>	<i>Dari 4</i>
A	N	N	P1	P1	1962	Jul. 4~Oct. 6	H	S	N	N	N
B	N	N	R1	P1	1984	Jul. 9~Oct. 9	N	B	B	B	B
C	N	N	R1	P1	1977	Jul. 9~Oct.24	S	S	N	N	N
D	N	N	R1	P1	1991	Jul.12~Oct. 4	N	N	N	N	N
E	N	N	P1	P1	1982	Jul.17~Oct.14	C	N	C	C	N
F	N	S	P1	P1	1987	Jul. 1~Sep.28	H	B	AP	AP	AP
G	N	N	R1	P1	1977	Jul. 9~Oct.13	S	S	S	N	?
H	N	N	R1	P1	1987	Jul. 9~Oct.13	H	C	N	AV	N
I	B	S	P1	P1	1987	Aug.29~Nov. 1	B	B	BS	BS	BS
J	N	N	R1	P1	1992	Jul.17~Oct.10	S	S	N	N	N

1) N = *Namasudra*, B = *Bāgdī*

2) N = North *pārā*, S = South *pārā*

3) P1 = one private boat, R1 = one rental boat

4) P1 = one private net

5) H = himself, S = son, B = brother, BS = brother's son, C = cousin, N = neighbour in the same *pārā*, AP = person in another *pārā*, AV = another villager

Hilsa fishing needs five persons. One is helmsman called *mājhi*, and the other four are oarsmen called *dārī*. As shown in Table 3, *mājhis* and *dārīs* are mostly sons, brothers, nephews or neighbours of *māliks*.

The fishing season is between July and October. During this period, the fishing is normally carried on four times a day. Each duration of the fishing is about two hours from the beginning of rising and ebbing tide. According to the villagers, they are not concerned about the phase of the moon, although they avoid fishing at the nights of new and full moon.

Fishing right is not well defined. So the villagers may catch fish anywhere they like. But They usually do not go far from their villages.

3. Economic impact of hilsa fishing on the village

Hilsa caught by the villagers is mostly sold at Geonkhali, a small town near Tentleberia. The price of hilsa at Geonkhali market is around Rs. 80 per kg in the period from *Āṣāṛh* to *Śrābaṇ* (from the middle of June to the middle of August), Rs. 60-75 per kg in *Bhādra* (from the middle of August to the middle of September) and Rs. 30-50 per kg in *Āświn* (from the middle of September to the middle of October). The

price, thus, goes down with the months because hilsa in the latter half of the fishing season is relatively small and does not have its special taste. The catch also reduces with the months.

Income from hilsa is distributed among the persons concerned at the rate of 4/12 for a net owner, 1.5/12 for a boat owner, 1.5/12 for a *mājhi*, 1/12 for a *dārī* (4/12 for four *dārīs*), and 1/12 for a net repairman.

It is difficult to ascertain the quantity of hilsa caught by each *mālik*. But some *māliks* record daily takings from their hilsa sold at the market. Table 4 shows the daily takings of *mālik* D. The haul of hilsa amounts to Rs. 15,315 during two and a half months. The *mālik*, having both net and boat, can get 5.5/12 portion of the total, i.e. around Rs. 7,019. Given that he hires a boat for three months (the rental value is Rs. 300 per month), his net income is about Rs. 6,119.

On the other hand, as the portion for a *dārī* is 1/12, he gets around Rs. 1,276 which means about Rs. 16 per day. Although this average daily income falls behind the daily wages of agricultural labour and the real daily income from fishing, as shown in Table 4, is not stable, it can be said that it is a substantial cash income for *dārīs* in the farmers' slack season.

Along with betel cultivation, hilsa fishing, thus, offers the villagers an opportunity of earning a cash income within the village.

It may be worth pointing out, in passing, that the relations between *māliks* and *mājhis* or *dārīs* are not strained because, as mentioned above, the members of each unit of hilsa fishing are closely related to each other in respect of kinship and place of their residence.

4. History and future prospects of hilsa fishing in Tentleberia

It was some sixty years ago that hilsa fishing by boat was started by the grandfather of *mālik* C at Tentleberia. It is said that more than 200kg of hilsa was caught at a time in those days. Then, in the days of *mālik* C's father, the number of fishing boats was on increase, while the catch of hilsa was found to be decreasing. About fifteen years ago when *mālik* C started hilsa fishing, there were 10 fishing boats in Tentleberia, and the catch of hilsa was 20-40kg at a time. Since that time, although the members have frequently changed, the number of fishing boats has not changed. In the meantime, the

Table 4 Daily takings from hilsa – in the case of *mālik* D in 1992

(Amount; Rs)									
	Date	Amount	Reference		Date	Amount	Reference		
Śrāban	3 (Jul.19)	259		Bhādra	11 (Aug.27)		Net repair		
	4 (20)	298			12 (28)		Net repair		
	5 (21)	618			13 (29)		Net repair		
	6 (22)	804			14 (30)		Net repair		
	7 (23)	568			15 (31)		Net repair		
	8 (24)	243			16 (Sep. 1)		Net repair		
	9 (25)	552			17 (2)	180			
	10 (26)		No fishing		18 (3)	286			
	11 (27)	136			19 (4)	84			
	12 (28)	547			20 (5)	559			
	13 (29)		Net repair		21 (6)	353			
	14 (30)		Net repair		22 (7)	318			
	15 (31)		Net repair		23 (8)	222			
	16 (Aug. 1)		Net repair		24 (9)	272			
	17 (2)	56			25 (10)	333			
	18 (3)		No catch		26 (11)	296			
	19 (4)	186			27 (12)	538			
	20 (5)	299			28 (13)	1045			
	21 (6)	301			29 (14)		No catch		
	22 (7)	428			30 (15)	143			
	23 (8)	695			31 (16)		No catch		
	24 (9)	468			Āświn	1 (17)	425		
	25 (10)	230				2 (18)	238		
	26 (11)	282				3 (19)	622		
	27 (12)	321				4 (20)	260		
	28 (13)		No catch			5 (21)	100		
	29 (14)		No catch			6 (22)		No catch	
	30 (15)		No catch			7 (23)		No catch	
	31 (16)		No catch			8 (24)		No catch	
	Bhādra	1 (17)				No catch	9 (25)	72	
		2 (18)				No catch	10 (26)		No catch
3 (19)		287		11 (27)		No catch			
4 (20)		327		12 (28)		No catch			
5 (21)		345		13 (29)		No catch			
6 (22)			No fishing	14 (30)		No catch			
7 (23)		229		15 (Oct. 1)	40				
8 (24)			No catch	16 (2)	172				
9 (25)		144		17 (3)	44				
10 (26)			Net repair	18 (4)	90				
			Total		15,315				

catch of hilsa has been decreasing still more. And it is difficult to catch hilsa more than 5kg per day in these days.

Such a decrease has been ascribed to three factors, viz, i) damming of the rivers which has seriously affected hilsa migration, ii) pollution of the rivers caused by the release of untreated industrial effluents from the factories along the riverside and iii) increase in the number of fishing boat. Fishing boats have substantially increased in the neighbouring villages of Tentleberia while no protective measure for hilsa has been effectively adopted.

Under these circumstances, *māliks* in Tentleberia have been confronted with difficulties in continuing hilsa fishing, while some people have newly started hilsa fishing, some others have given it up because of their inability to invest money to repair their boats and nets or to replace them by new ones. Subsidized loan for hilsa fishing is not available under IRDP (Integrated Rural Development Programme) scheme in Midnapur District. And the prices of boat and net have become higher year by year.

It is, therefore, impossible for poor *māliks* to start or continue hilsa fishing by their own boats (Table 3).

Seeking financial help under IRDP scheme, they can try to start another small – scale business in place of hilsa fishing. But, according to the inhabitants of North *pārā*, it has been difficult for them to get the subsidized loan under IRDP scheme because they have been separated from the presidents (*pradhān*) of the village council (*grām pañcāyat*) by their political affiliation.⁴⁾ Meanwhile, the price of inland hilsa has become higher and higher. Consequently, they have been more and more interested in hilsa fishing despite their economic hardship.

Inland hilsa has become so expensive and commercially valuable that the village people can hardly afford to eat it. A fish dealer in Geonkhali, who deals with 200kg of hilsa a day during the season of hilsa, sells it at the market of Diamond Harbour, a big fishing harbour in West Bengal. Here hilsa fetches higher price for the consumers in urban areas. In return, he purchases other varieties of fish and cheap hilsa caught from the sea at Diamond Harbour, and sells them at Geonkhali.

In spite of decrease in the catch of hilsa and economic hardship, the villagers are still attracted by hilsa fishing because of its capacity to fetch cash income. It is an irony that while the price of hilsa has become higher due to its short supply, hilsa fishing has

become more attractive. Then, how can hilsa be protected against exhaustion without taking away an opportunity of earning cash income from those who carry on hilsa fishing? A big problem to be solved for the future lies in hilsa fishing.

IV. Conclusion

We have seen two cases of fishing activities in Bengal villages. These suggest that fishing activities occupy a significant place in the rural life of Bengal, and also that, as there are different types of fishing in Bengal, the various fishing activities have their respective problems. On the one hand, as the case of tank pisciculture in Radhaballavpur shows, there is a potentiality to be developed. On the other hand, as the case of hilsa fishing in Tentleberia shows, there is a problem of exhaustion.

We need to pay more attention to the role of fishing activities and to examine their respective problems in detail if we are to consider Bengal rural life and its development.

Acknowledgements

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Notes

- 1) 1 *kāṭhā* = 1/20 *bighā* = 66.89 m²
- 2) This amount, strictly speaking, can be achieved only when the fish culture is done well.
- 3) Fish Farmers' Development Agencies (FFDA) were set up in all the districts of West Bengal, and have trained fish farmers and assisted them in obtaining financial help. But it cannot be said that the project have sufficiently met the demands of villagers in every area. In fact, no one get any financial help for fish culture in Radhaballavpur at present (in 1992).
- 4) The case of North *pāṛā* in Tentulberya interestingly shows a unity of *pāṛā* in political stands as well as in subsistence (i.e. fishing). For the view that *pāṛā* should be considered as a significant unit of Bengali villages, see Kawai and Ando 1990.

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