

Rights, Benefits and Social Justice: Keeping Common Property Freshwater Wetland Ecosystems of Bangladesh Common^{1,2}

Mahfuzuddin Ahmed

*International Center for Living Aquatic Resources Management (ICLARM)
MCPO Box 2631, 0718 Makati, Metro Manila, Philippines*

Abstract

Seasonally flooded wetlands under fallow are one of the very few remaining common property natural resources in Bangladesh. Traditionally, these wetlands have been accessible to surrounding communities especially the poor and landless who derive benefits from their use. In recent years, extension and application of new aquaculture technologies in common property wetlands, formerly considered of little or no value, have increased their productive potential and consequently, have caused their value to rise. As a result of increasing private investment and transformation of wetlands to more economically profitable land uses, the poor and the landless are denied of access to these resources and deprived of their benefits. This is contributing to a widening gap between the better-off and the worse-off in rural communities. Moreover, competition for the resource may spawn violence and abuse of human rights. Therefore, some drastic measures on the use of wetlands should be undertaken by the government to protect the rights of the poor and disadvantaged members of the community. It will also need newer institutional arrangements and management mechanism that could increase wetland productivity and yet allow communities to retain access and management responsibility.

Introduction

Bangladesh is a low-lying riverine country. Its topography, ecology and human habitat are greatly influenced by the Ganges and Brahmaputra river systems originating from the Himalayas. Changing courses of the river systems and frequent floodings during the monsoon have created a large amount (4 million ha) of diverse wetlands, such as rivers, *baors* (resulting from loss of river flows), *beels* and *haors* (natural depressions) and floodlands. These water resources contribute a substantial proportion of the country's yearly supply of fish (72%). Historically, most of these waterbodies were non-private or state property and use rights for fishing, animal grazing, and fodder and plant harvesting were open to all. In course of time the government took away free fishing rights from the relatively large waterbodies (e.g., rivers, beels and haors) through establishment of periodic leasing system, in order to generate revenues. However, the system created a group of middle agents, usually from rich and elite class, who by dint of their economic and social powers, established perpetual authority over these resources and continued to benefit at the expense of the professional and hereditary fishers (Aguero et al. 1989). On the other hand, small indigenous including seasonally flooded wetlands

¹Paper presented at the Fourth Common Property Conference, 16-19 June 1993, Manila, Philippines.

²ICLARM Contribution No. 947.

that comprised nearly 65% of the total inland water area were still a common property resource as far as fishing was concerned. Again, in the course of time through different land settlement measures, titles of land in many such waterbodies got transferred to the local landed families for crop cultivation for at least part of the year by taking advantage of new agricultural technologies. As a result, fishing and many other community uses became limited, though not entirely closed. It is estimated that about 10 million households take part in fishing in the floodlands and catch nearly 190,000 t of fish every year.

Over the years introduction of new agricultural technologies and increased competitive pressures for more intensive use of the wetlands resulted in the deterioration of fishery resources as well as reduced the size of common property wetlands. Nevertheless, traditional rules of fishing rights by the community was maintained, at least in the water areas with marginal or no use value for agricultural purposes. Very recently, extension and application of new aquaculture technologies in floodlands and beels within the floodlands, formerly considered of little or no value, have increased their productive potential and consequently, have caused their value to rise. As a result of increasing private investment and transformation of wetlands to more economically profitable land uses, the poor and the landless are being denied access to these resources and deprived of their benefits. This will contribute to a widening gap between the better-off and the worse-off in rural communities and, in some cases, competition for the resource may spawn violence and abuse of human rights. Until recently these consequences of development process were not addressed. Development policies with respect to these water resources seldom considered the interests of the poor communities who used to derive benefits for their livelihood. The broad objective of this paper is to review the historical evaluations of disintegrating common property system and resulting breakdown of community rules in traditional floodland and beels. Moreover, the paper explores possible institutional arrangements and management mechanisms that could increase wetland fishery productivity and yet allow communities to retain access and management responsibility over them.

Data on the ownership and uses of and benefits from beels within the floodlands were collected from Kapasia thana under the district of Gazipur, where new technologies for culture-based fisheries are becoming popular as a result availability of extension services and inputs. Direct observation of the beels and group discussion with the neighboring community was followed to obtain the information. There are 125 such beels occupying an area of 1,092 ha within the thana (Table 1). As many as 15 such beels were reported to be privately operated for culture-based fisheries. Six selected beels were directly visited and discussion in groups with the owners and operators of these beels were organized (Table 2). The average water area of the sample beels is about 1,500 m² ranging from 500-30,000 m². On average each beel is owned by 16 farm households living in the nearby villages. Among the sample beels, two were singly owned and over times distributed equally among four brothers in one case and seven brothers in another case.

Historical Perspectives of the Beels

There are differences of opinion with regard to how the people got entitlement of the beels within the floodlands. Some viewed that the owners of these beels were the

zamindars and they became owner with the tenancy rights under land settlement. Some other viewed that the beels were *khas* and over the times they got ownership right from the government. Before the technological innovations centering the green revolution the beel ecosystem and use pattern was completely different from the post-green revolution era. All the beels at that time were derelict, full of aquatic vegetations and weeds. Heaps of decomposed aquatic vegetations over the years made floating layers on the water surface of the beels which were locally called *dums*. The layer was so thick that man and animal could easily move on it. Most of the water area were covered by this layer. A small part of the beels were kept clean by the community so that the households residing nearby the beels could use the water for bathing, washing and drinking water. In the dry season these were the only source of drinking water. The beels in most cases were also the grazing fields for the animals, especially for the buffalos. The water in the beels thus remained fallow.

Fish resources were abundant in these beels. The deeper and fallow portion of the beel served as shelter for fish. Angling and trapping were the popular methods of catching fish. There were no restrictions on catching fish. Usually households within the periphery of the beels were the ones to catch fish. Fishes were found in abundance relative to population and market value of fish was very low. Fishing was thus limited to mainly subsistence and sports. Crop cultivation and other agricultural uses were yet to become important within the beels and its peripheries.

Impact of Green Revolution

As time elapsed, increased demand for food due to rapid increase in population compelled the community to change their traditional behavior in the production process. Emphasis to grow more cereals increased and consequently lands that remained fallow and/or considered less suitable also came under crop cultivation. This process was accelerated during the 1960s, at the advent of green revolution. Major elements of the green revolution were the development of irrigation, drainage and flood control schemes and introduction of new seed-fertilizer-pesticides technology. Packaged dissemination of this new technology altered the beel environment and use pattern.

The *dums* of the beel were cleaned by suspending in the bottom muds, although it took several years to entirely eliminate them from the beels. This process of cleaning the *dums* had one additional advantage that it raised the deep lower bed of the beels and facilitated crop cultivation in the dry months of the year. Thus the beels gradually became seasonal waterbodies which were used both for fishing and crop cultivation. In some cases lands in the peripheries became available for double cropping as a result of irrigation, flood control and drainage facilities. During monsoon the beels and adjoining lands turned into a single waterbody where community at large had access to catch fish as well as to make other uses like bathing, washing, and animal grazing.

Major harvesting and participation by the community in fishing took place after the flood water had receded, just before winter (November-December). Thousands of people from the surrounding villages and even from distant areas gathered during this time. Usually, fishing was organized on a fixed date determined mostly by the land owners within the beel and it was publicly announced in the local markets through beating the drums. The owners allowed community harvest on two considerations: firstly, it facilitated intensive trapping to harvest maximum fish; and secondly, It helped crop

production in the coming season as the weeds and aquatic vegetations got suspended in the muds at no cost to the land owners. In the early days of the green revolution fishes were still abundant, and poor and landless households continued to get benefits from the beels.

As winter approached and flood waters receded, some parts of the underlying land were cultivated with rice crops while the deeper parts served as source of irrigation water. In the dry months when water level reached its lowest level, owners of the lands harvested fish by dewatering where access of others were restricted.

Enhancement of land-based farm activities, construction of flood control and irrigation regulators, indiscriminate use of pesticides and excess fishing pressure contributed to increase rice cultivation at the cost of sharp decline in fish productivity in the beels.

Impact of New Aquaculture Technologies

In recent times development in fish culture technology (hatcheries, nurseries and artificial breeding) and increased market value of fish have been inducing the farmers to invest in culture-based fisheries. Fish culture has been seen as a more profitable enterprise than crops and many other agricultural enterprises. As a result, along with pond fish culture, floodlands, beels and other indigenous small waterbodies are gradually coming under culture-based fisheries. This has led to the breakdown of common property system, and community fishing has been closed in many beels where culture-based fishery was introduced by private owners.

The six beels that were studied came under culture-based fishery a year ago as a result of the introduction of pilot fish culture extension program in the area. Few enterprising farmers have taken over the operation of these beels as joint ventures. On average, each beel has 20 share holders ranging from 4 to 30 sharers. Owners of floodlands are generally the members of the group with equal cost and profit sharing arrangements. Members who have maximum land in the beel, were allowed to purchase more than one share (a maximum of five shares were found in one family) depending on the amount of land. In one exceptional case, unequal sharing was also observed. Among the 8 shareholders, one shareholder alone owned 70% share. In other three beels a few non-owners who reside near the beels were included as member in the groups. A short profile of the operating members/households are provided in Table 3. The table shows that only 10% of the operating households are landless (including functionally landless). Maximum (more than 70%) households lie between 0.2 to 1.02 ha land bracket. Only 6.5% of the operating members are illiterate. Almost 29% of the members have education up to secondary level or more. Majority of the members (66.4%) have agriculture as principal occupation. Members having service and petty trading as principal occupation are 15.6% and 8.2%, respectively. Only 9.8% of the members are day labor. Young (age below 40) and educated members of the households were seen taking more interest in fish culture.

As part of pre-stocking preparation all the beels were reportedly cleaned from several indigenous submerged and emergent forms of aquatic vegetation which normally grow well in stagnant aquatic environment. No attempt was made to remove predatory and weed fish, as it was considered very costly to dewater such a large waterbody or to poison to kill the predatory fish. Indian major carps, chinese carps, common carp were

among the species stocked. Species-mix and density of fingerlings were found to vary from beel to beel depending on the environment and maximum retainable water area in the beels. Both rice and fish were found to grow simultaneously in 5 out of 6 beels. Fish culture did not affect productivity of boro cultivation, rather rice farming may have impeded high growth of fish. Operators of one beel stopped rice cultivation in the beel after they started fish culture. Farmers who did not take part in the fish culture activity were compensated for their crop loss.

It took enough labor to clean aquatic weeds from the beels. Liming was found common mainly to protect fish from infectious diseases like *Epizootic Ulcerative Syndrome* (EUS). Feeding and fertilization were almost absent. Operators of one beel were found to apply rice bran and fertilizers which were much below the requirement. Production performance of the beels under observation was not clear as many of them did not harvest yet. Some of the beels harvested partially. All the beel operators harvested weed fish ranging from 300 kg to 400 kg. It is estimated from the partially harvested beels that the farmers were able to produce more than 2.5 t per ha during 9-10 months rearing. It was further reported that the beels were able to realize 3 to 5 times its costs with only 40 to 60% harvest of estimated biomass.

Farmers were facing some immediate problems which in the long run, they hope will come, under control. Presence of aquatic weeds and high cost of harvesting are the immediate problems of fish culture in the beels. Aquatic weeds - submerged and emergent - were found visible during field observation although all these were cleaned more than twice during the culture period. It affects normal growth of fish and harvesting of fish becomes difficult through netting. In actual practice it will take several years to completely eradicate these aquatic weeds. Harvesting cost also poses a serious problem in fish culture. Small scale harvesting is usually done by using caste net and other indigenous methods which do not involve any cost. Large-scale harvest needs netting which is done by hiring professional fishers. Farmers are compelled to pay 20 to 25% of total produces either in kind or in cash.

Most suspected common problems are the management and distribution of benefits accruing from the beels. When it was uncovered that fish culture in these waterbodies is highly profitable, powerful section of the community and of the existing groups have been taking full control over these resources. There may be conflict among the sharers with regard to distribution of benefits. When fish culture was first initiated there was consensus among the sharers and no conflict of interest was reported. Conflicts and misunderstanding reported to have started after one year when harvesting of fish had begun. It was observed in a beel that one share holder was claiming all the small indigenous fish harvested during the culture period on the ground that he was the owner of maximum lands in the beel. In another case fingerling stocking was discontinued due to dispute among the shareholders. One owner who did not want to be a member at the time of group formation became interested to get in when he saw the better prospects in fish culture. He even threatened to kill all the fish by poisoning if he was not allowed to be a member. Misunderstanding among the sharers arose with respect to disposal of the harvested fish. Some of them wanted to sell fish in the market and others wanted to consume. Some of the members who used to catch natural fish did not agree to continue fish culture.

Discussion

Historically, beels within the floodlands and other indigenous waterbodies were mainly *khas* (government) lands. Farm households became owners of these beels through different land settlement process. All these waterbodies were derelict in the early 1950s. At that time these were used for fishing by the community at large, and in some instances, during dry season, these were used for bathing and drinking water. Fish was abundant, market value of fish was almost zero and everybody of the community were entitled to catch fish. Neighboring families enjoyed the benefits irrespective of ownership. Excess pressure of population and increased food demand led the farmers to bring relatively high lands in the periphery under rice cultivation. Introduction of seed, fertilizer, and irrigation technology during the 1960s provided opportunities to increase rice production but it had adversely affected the capture fishery production. Decline in fish production attributed mainly to indiscriminate use of pesticides, excess fishing pressure and most recently to the outbreak of ulcerative disease. As a result, competition for fishing increased, common property rules began to break down and private enterprises have begun to develop who are undertaking culture-based fishing.

Professional fishers who were dependent to earn their livelihood by harvesting fish from these common property wetlands and millions of poor and landless households will be denied their access to these resources if new developments in culture-base fisheries continues. Poor people of the community who cannot afford to buy fish from the market sources will be deprived of necessary fish proteins. Although for some strategic reasons and social considerations some non-owners and poor neighbors are currently provided with the opportunity to take part in culture process, in course of time they may be dropped, especially when the owners will experience high returns from the investment in aquaculture. This is evident from disagreement among shareholder to continue fish culture on a cooperative basis and an emerging tendency to buy each other out. It is feared the elites and vested interest groups may take full control of these waterbodies.

Before this new aquaculture technology become widely popular, a viable institutional arrangement and management mechanism is needed, which will increase wetland productivity and at the same time allow communities to retain access and management responsibility over them. The main focus of the new institutional arrangement should be the poorer section of the rural community who are being threatened with their livelihood from wetlands. In this direction a possible institutional arrangement may be formation of groups/cooperatives taking landless men and women and the professional fishers from around the beels/wetlands. These groups will lease in the wetlands from the owners with specific terms and conditions for at least 5 years or more. Government may lease out *khash* beels/wetlands for a specific period to these groups/cooperatives for fish culture purposes.

Conclusion and Suggestions

Floodlands are the last remaining Common Property. They occupy 65% of the country's inland water area (4.3 million ha) and supplies 30% of total annual inland fishery production (600,000 t). They provide employment and livelihood to as many as 10 million households (World Bank, 1992). The impact of new aquaculture and culture-based fisheries should be viewed in terms of how it affects these million of households.

Taking examples from what has been happening in recent times in an area where new aquaculture technologies got transferred it can be concluded that: 1. less and less number of households will eventually have access to these benefits; 2. spawning of violence and competition to establish exclusive rights will increase; 3. the poorer community will have less animal protein due to reduction of subsistence fishing; and 4. fishing as an alternative and supplementary source of livelihood will become limited.

Measures should be undertaken to protect the community interest from private and individual interests. Mechanisms should be found to involve poorer households as partners in the management of these resources for fishery and related uses. There is a strong need for advocacy for retention of common fishing rights in the floodlands and similar wetlands. Such a policy will, however, require institutional support. The government extension department and NGOs should work together to form functional groups among poor and landless households and mobilize them to undertake efficiently fish culture or culture-based fisheries in those waters. Finally, waterbodies that are owned by the government should be given to such groups and the process of land settlement to private individuals should not be encouraged in this kind of resources.

References

- Aguero, M., S. Huq, A.K.A. Rahman; and M. Ahme. Editors. 1989. Inland Fisheries management in Bangladesh, Department of Fisheries, Dhaka Bangladesh; Bangladesh Center for Advanced Studies, Dhaka Bangladesh; and International Center for Living Aquatic Resources Management. 149 p.

Table 1. Summary information of beels within the floodlands in Kapasia thana, Gazipur district, Bangladesh.

Union	Number of beels	Total number of shareholders	Total number of dominating shareholders	Area in ha		Average water retention period (mo.)
				Wet season	Dry season	
Durgapur	19	788	19	244.8	105.4	8
Singhsree	22	445	44	180.2	5.7	8
Torgaon	32	587	31	100.2	51.3	10
Sanmania	12	240	13	40.5	11.6	8
Kapasia	11	302	18	72.5	27.3	8
Chandpur	04	349	18	49.8	42.5	6
Rayed	01	14	04	1.6	1.0	10
Toke	06	240	15	89.1	5.7	6
Barishaba	18	1,448	61	313.4	65.6	8
Total	125	4,453	223	1,092.0	316.1	

Table 2. Area and number of owners of sample beels in Kapasia thana, Gazipur district, Bangladesh.

Name of the beels	Area in (m ²)	Number of owners
Kumari beel (1)	12,000	17
Sinduria beel	20,000	30
Kumari beel (2)	5,000	25
Baluzora beel	30,000	15
Falguni beel	7,000	4
Nurar beel	15,400	7
Mean	15,000	16

Table 3. Profile of the operating members/households of the beels under study in Kapasia.

Items	Number of operators/ households (%)
Land ownership of the operating households (n=106):	
Landless	4.7
Below 0.2 ha	5.7
0.20-0.40 ha	37.7
0.40-1.01 ha	33.0
1.01-2.02 ha	10.4
Above 2.02 ha	8.5
Education of the members (n=122):	
SSC and above	28.7
Class viii to x	19.7
Class v to vii	45.1
Illiterate	6.5
Occupation of the members (n=122):	
Agriculture	66.4
Service	15.6
Petty trading	8.2
Daily labor	9.8

Table 4. Changing use pattern, rights and benefits in common property wetland in Bangladesh.

	Historical/pre-green revolution period	Post-green revolution period	Recent trends
Uses	<ul style="list-style-type: none"> • Derelict and fallow • Natural fishing • Bathing and drinking water • Animal grazing 	<ul style="list-style-type: none"> • Crop cultivation • Natural fishing • Bathing • Animal grazing 	<ul style="list-style-type: none"> • Crop cultivation • Fish culture
Rights	<ul style="list-style-type: none"> • Equal rights of fishing by community • No restriction on other uses 	<ul style="list-style-type: none"> • Fishing right was open in the monsoon and late monsoon. • Owners had absolute right of fishing in the dry months. • Other uses restricted. 	<ul style="list-style-type: none"> • Prohibitive access to community
Benefits and beneficiaries	<ul style="list-style-type: none"> • Unlimited supply of fish • All households drawing benefits 	<ul style="list-style-type: none"> • Supply of animal protein declined. • On average 150-200 neighboring households were getting benefits during moonsoon from one beel • More than 1000 people from the neighboring villages had access once or twice in a year. 	<ul style="list-style-type: none"> • Supply of animal protein and cash flow increased only for the owners. • Only the owner-cum-sharers and a few neighboring families are the beneficiaries