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## Co-management approach on fisher group: A case study on Ramsar site, *Tanguar haor* in Bangladesh

Pulakesh Mondal\*, Marion Glaser<sup>1</sup>, Ainun Nishat<sup>2</sup> and Annette Breckwoldt

University of Bremen, Bremen, Germany. <sup>1</sup>ZMT, Bremen, Germany

<sup>2</sup>IUCN Bangladesh Office, Dhaka, Bangladesh

\*Corresponding author & present address: Assistant Chief, Ministry of Fisheries and Livestock, Bangladesh Secretariat, Dhaka 1000, Bangladesh. E-mail: pulak76@gmail.com

### Abstract

In Bangladesh, wetlands are managed through leasing system traditionally from time immemorial. Recently the Government accepted co-management approach for wetland fisheries management and this approach is being practiced in few wetlands for maximize revenue income. A study was carried out to evaluate trend and impact of co-management in *Tanguar haor* (a Ramsar site wetland) on fisheries resources and livelihood of resident people in the immediate vicinity of the wetland. In *Tanguar haor*, conflict between leaseholders and the local community was a common phenomenon in the past. Since 2003 the district administration of Sunamganj has been managing the vast wetland resources, however, local people participation was ignored in *haor* management system. Average monthly fish catch of fishermen increased by 17% after introduction of co-management system and 7 fish species reappeared after introduction of co-management. Average monthly volume of fish catch has increased from 70 kg to 87 kg. A well-defined management structure has been developed for integration of all people of *Tanguar haor* which would enable them to raise voice jointly and influence policy in their favour.

Key words: Co-management, Wetland, Fishers

### Introduction

Wetlands of Bangladesh are rich in biodiversity and have great ecological, economic and social values in ensuring livelihood security of millions of poor people particularly fisher community in Bangladesh (Nishat 1993). Administrative arrangements for public inland fisheries in Bangladesh comprised only leasing of fishing rights from 1930 to 1986 (Ullah 1985, Naqi 1989). Since Bangladesh's independence in 1971, a range of initiatives have been taken attempting to find out an appropriate wetland fisheries management strategy to halt the further decline of fisheries resources (Craig *et al.* 2004). Recently, it has been argued that a community-based cooperative fisheries management, which is one of the property rights approaches in fisheries management, seems to be a viable option in many of the artisanal fisheries in developing countries (Wilson 2001).

Efforts are being exerted to introduce co-management system in Bangladesh and notable efforts have been made from Management of Aquatic Ecosystem through Community Husbandry (MACH) and Community Based Fisheries Management (CBFM) and Community Based resource Management (CBRM) projects.

*Tanguar haor* is the most important ‘mother fishery’ of Bangladesh. It provides subsistence and livelihoods to more than 40,000 people living in 88 villages situated in its periphery. The Government has declared *Tanguar haor* as an Ecologically Critical Area (ECA) in 1999 considering its critical condition due to overexploitation of natural resource. In 2000, the *Hoar* basin was also declared as the country's second *Ramsar* site-wetland of international importance (SDC). *Tanguar haor* is considered as a refuge for threatened fish and is also home to some of a bigger species (IUCN 2008). The management history of *Tanguar haor* has always been subject to “elite capture” and politically connected local elites. In leasing time, local people were almost ignored during resource extraction. The leasing system has been abolished from 2001 after the *haor* was designated as *Ramsar* site (Kabir and Amin 2007). In 2001, ownership of *Tanguar haor* was transferred to Ministry of Environment & Forest and subsequently the leasing system was banned effectively and its management was regulated under the direction of the district administration of Sunamganj District. Up to 2006, the *haor* was managed by the local administration. Though no leasing system was existed from 2002 to 2006 and local people deprived of resources extraction from the *haor*.

In 2002, IUCN Bangladesh on behalf of MoEF introduced a co-management approach in *Tanguar haor* as pilot basis. The Preparatory Stage (18 months) was started in December 2006 and ended in April 2009. The present study was carried out to evaluate the performance of the co-management system, especially co-management on fisheries resource in a *Ramsar* site where the government is committed to implement the *Ramsar* guidelines. However, this practice was recent in nature, by this time some indications have been obtained.

## Materials and methods

This study was carried out during August 2009 to January 2010. For this study data collection methods was performed using of personal questionnaire surveys and Participatory Rural Appraisals (PRA) including direct field observations. Selection of study sites was done considering cluster of fisherman in and around the wetland areas within a convenient distance. The study was conducted in eight villages (*Indrapur, Mandiata, Lamagao, Jayantri, Rupnagar, Majharchara, Ranchi* and *Cowhani*) of the Dharmapasa and Tahirpur Upazilas (sub-districts) of the Sunamganj district (Fig.1). The villages were chosen on the basis of close proximity to *Tanguar haor* and were selected purposively assuming that the people of these villages are more dependent on the wetland resources in comparison to the villages that are further away from *Tanguar haor*. The semi-structured interviews and in-depth interviews were undertaken in all eight villages.

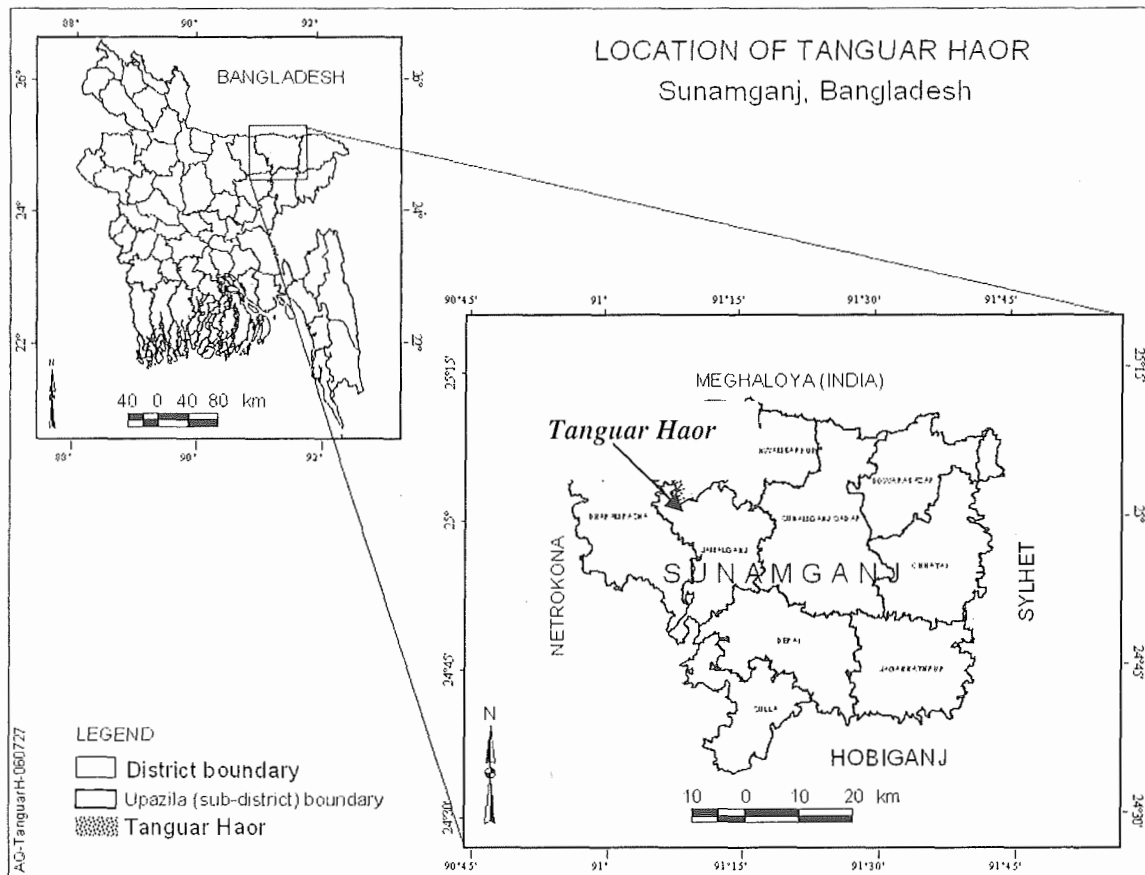


Fig 1. Location of Tanguar haor

**Sampling:** The sample design was prepared on the basis of base line census survey by IUCN. Based on the census information, a total of 80 fishermen and 40 fishmongers were initially selected for the survey. A total of 128 households were considered for the survey (Table I).

**Field data collection:** Primary data was collected by field surveys using semi-structured questionnaire with the households and the key informants. Informal group discussions with people from different walks of life and direct field observations through field visits have been conducted also. PRA, such as Time Line and Trend Analysis, Seasonal Calendar and field observation were used to gather primary information from the local community. In this study, 4 FGDs were conducted at 4 different *Unions*. Member of the *Union Adhoc* committee, fisherman, fish monger and local people of other occupations were the participants of the FGD. The participants were invited in advance to a specific place on a specific date and time. Discussions were conducted in the *Union* council

office. Two officials from partner NGOs (CNRS and ERA) helped in organizing the groups.

Table 1. Distribution of samples according to union, village and occupation

Upazila and Police Stations	Union	Village	No. of interviews				Total
			Fish Monger	Fisherman	Focus Group Discussion	Security people (Police)	
Tahirpur	North Sreepur	i) <i>Indrapur</i>	5	10	1	2	33
		ii) <i>Mondiata</i>	5	10			
	South Sreepur	i) <i>Lamagaon</i>	5	10	1	2	33
		ii) <i>Joyatri</i>	5	10			
Dharampasha	North Bangshikanda	i) <i>Rupnagar</i>	5	0	1	2	33
		ii) <i>Majherchara</i>	5	10			
	South Bangshikanda	i) <i>Rangchi</i>	5	10	1	2	33
		ii) <i>Cowhani</i>	5	10			
Total sample	4 Unions	8 villages	40	80	4	8	132

## Result and discussion

Fishery dependency of *Tanguar haor* people: People in the vicinity of *Tanguar haor* are dependent on fisheries resources to a great extent. Fishing is the most important economic activity of the *Tanguar haor* dependent people. More than 70% of households involved in fisheries activities in the floodplains either for income or food (Minkin *et al.* 1997). Table 2 illustrates the involvement of local people in fishing and related activities before and after co-management practices. The present study revealed that most of the local people around *Tanguar haor* are still engaged in fisheries related activities. Among the occupations of the respondents, more than half (67%) are full time involved in fish catching which was 48% before co-management practice. It is also evident that changes in the management practice (from leasing to government managed resources) resulted favorable environment for fish catching and aqua business. Before co-management, the local people were deprived fishing directly from *haor*. Interestingly observed that a number of seasonal fisher groups switched themselves in to fishing, fish business, and fish drying activities. Before co-management practice, these people were involved in

net/trap making/selling, boatman, fishing labour, ice selling and other indirect fisheries activities.

**Table 2.** Involvement of the local people in fishing and related activities

Types of involvement	Before co-management system		Present time	
	No. of respondent	%	No. of respondent	%
Fish catch	48	40.00	80	66.67
Wholesale fish business	13	10.83	15	12.50
Retail fish business	15	12.50	20	16.67
Fish drying activities	6	5.00	5	4.17
Trap making activities	13	10.83	0	0.00
Net/trap selling	4	3.33	0	0.00
Boatman	3	2.50	0	0.00
Fishing labor	12	10.00	0	0.00
Ice selling	4	3.33	0	0.00
Others	2	1.67	0	0.00
Total	120	100%	120	100%

The IUCN survey in 2008 found that 95 percent of the people reported some kind of dependency (through their occupation) with the *Tanguar haor*, and nearly 65 percent of the people were involved in fishing or related activities. The *Ramsar* Convention allows local inhabitants to use these resources to enhance their income. However, the new management is yet to develop a comprehensive management system.

**Local people's participation in co-management practices:** In the present study, an attempt was made to assess local people's willingness to participate in the management system. During FGD and personal interviews, a question was asked to the participants about the importance of the management and reasons for that. It is shown that that 75 percent of the interviewees expressed their opinion that present management system is "very important" to manage the resources properly and 20 percent of respondents shared that the present management system is "important" for managing the resources (Fig. 2). So all together 95 percent respondent had willingness to participate in the management activities and only 5 percent considered their participation as either 'not important' or 'less important'. However, all the respondents shared that their participation to the conservation practices is essential for both the betterment of the *haor* ecosystem as well as the local economy.

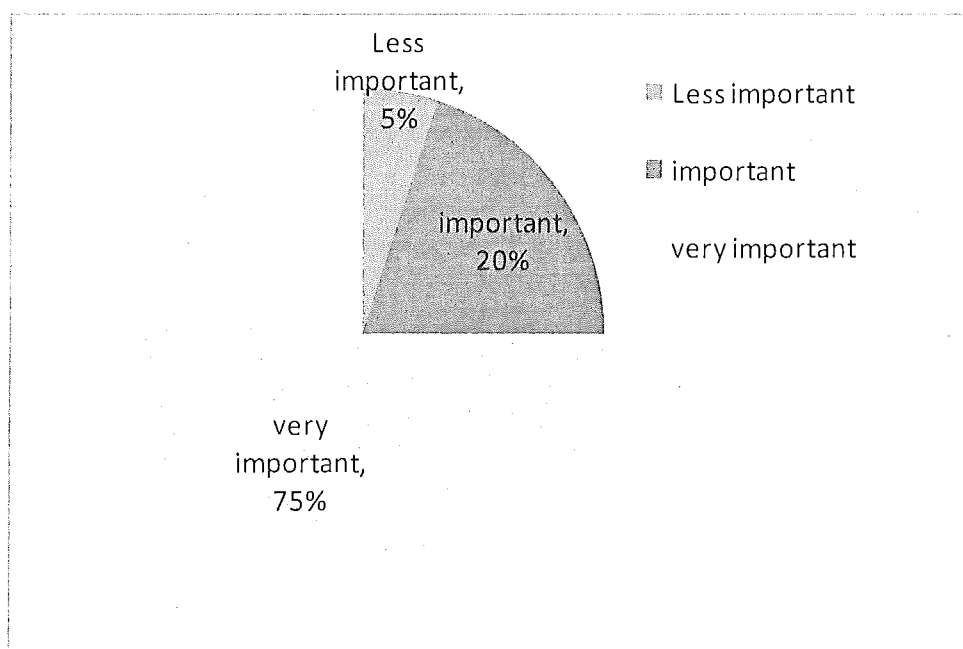


Fig. 2. Local people's opinion about co-management practices.

*Tanguar haor* management system has been running for nearly a decade. In the beginning, people of the *Tanguar haor* were against leasing of the fishing resources to individuals in the name of the fishing societies. Since local people living in the same fishing resources, they came in to conflicts with the leaseholders very quickly. The study revealed that over a long time the local people have realized that their participation in the co-management of *Tanguar haor* would be capable of changing their fate, and this is the only way they could establish their rights of access to and withdrawal of resources. As a result, the local community at *Tanguar haor* is very eager to be integrated into the management system, although they understand that they have to wait longer to have monetary benefits from the *haor*.

**Causes of participation in the management practices:** The question was asked about the reasons for participation in the current management system. Most respondents were aware that their access and ownership would be established if they are integrated into the current management system. Fig. 3 shows that nearly 43 percent of respondents were involved in the process in order to get benefit for the long run. Only 31 percent of the respondents wanted to participate in the management practices only to get benefit from the resources.

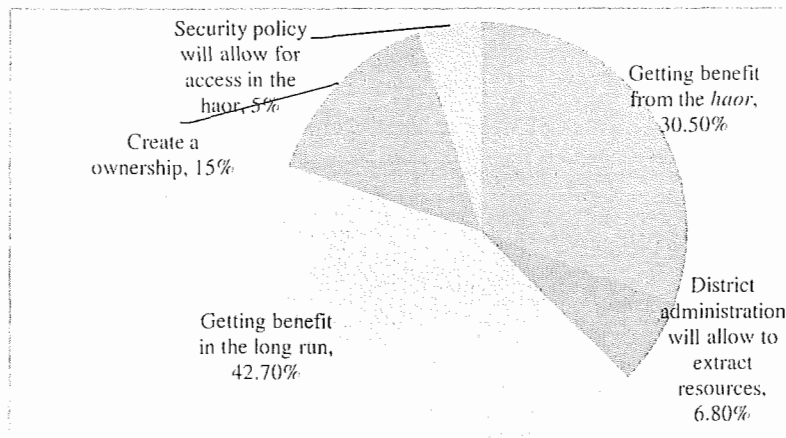


Fig. 3. Reasons of participation of local people in the management practices

About 15 percent of people were in favour of creating ownership in the wetland. The rest of the respondents opined that they want to participate in the management practices due to get permissions from district administration and security police. It is evident that there is close interrelationship and interdependency between *haor* and the local community. The major importance of the resources to the local community is to establish the rights of utilization that have been developed for a long period. Although the local people are willing to participate in the management system, however there are some constraints. Primarily, most of them have a low level of education. Secondly, they are not economically well off, and in most cases support their family by working as day-labourers. Therefore, it would be very difficult for the poor to find extra time to participate in these voluntary activities, unless the new management system has provision of providing substantial income (remuneration) in return for their services. However, the socio-economic status of the people will play an important role in integrating them into the management practices.

**Benefits of co-management:** Local people are willing to participate in the management system of *Tanguar haor* by their own accord, because they expect to receive some benefits. Fig. 4 shows that 46 percent respondents shared that their income will substantially increase by participating in the management practices. Thirty five percent respondents mentioned that the introduction of management system reduces illegal extraction of resources, 11 percent respondents think that the overall biodiversity status already increased. The rest of the respondents (28%) shared that the entire *haor* area would be a healthy ecosystem if the *Ramsar* guidelines were implemented with the active participation of the local community.



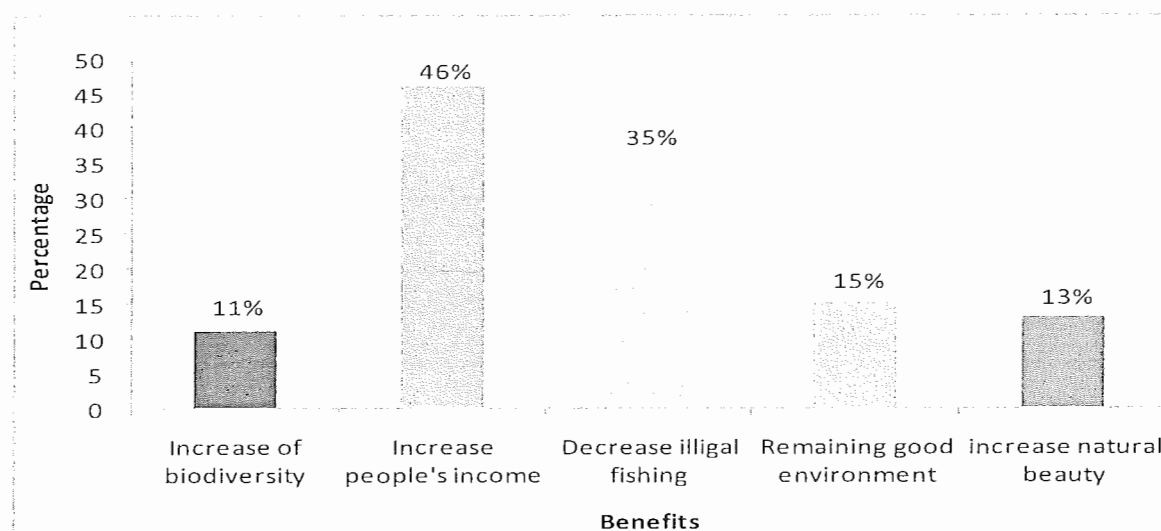


Fig. 4. Benefits of co-management in *Tanguar haor*

In the second half of the last century, especially during the past 50 years, the local community was systematically excluded from the use of the natural resources of the ecosystem. It is well known to the people at *Tanguar haor* that this wetland has recently been designated as a *Ramsar* site. In general, the local people perceive the gradual degradation of the resources, especially over-harvesting of fishery resources by the hired fisher folks. Most of the respondents believe that the leasing system is responsible for massive degradation and decline of fisheries, forest and water birds. At the same time, they also feel that the *haor* ecosystem has started getting return to its original state after the leasing system was abolished and the control of *Tanguar haor* was taken under co-management practices. Over a long period of time, the local people have realized that their participation in the management of *Tanguar haor* can enhance changing their rights of access to the *haor* and withdrawal of resources as well. The local community is eager to be integrated into the management system, although they understand that they have to wait for a longer period to have monetary benefits from the *haor* resources.

**Institutionalization process of co-management:** The concept of co-management has, however, been used to cover a large range of institutional arrangements, which have very little in common, and has been adapted very differently in various situations. From FGD it is found that a single organization has been formed integrating all people of *Tanguar haor* which enable them to raise voice jointly and influence on policy in their favour. A steering Committee is operating at the national level and regional platform is functional at district level, known as management committee. A well-defined organizational structure for co-management has been established (Fig. 5).

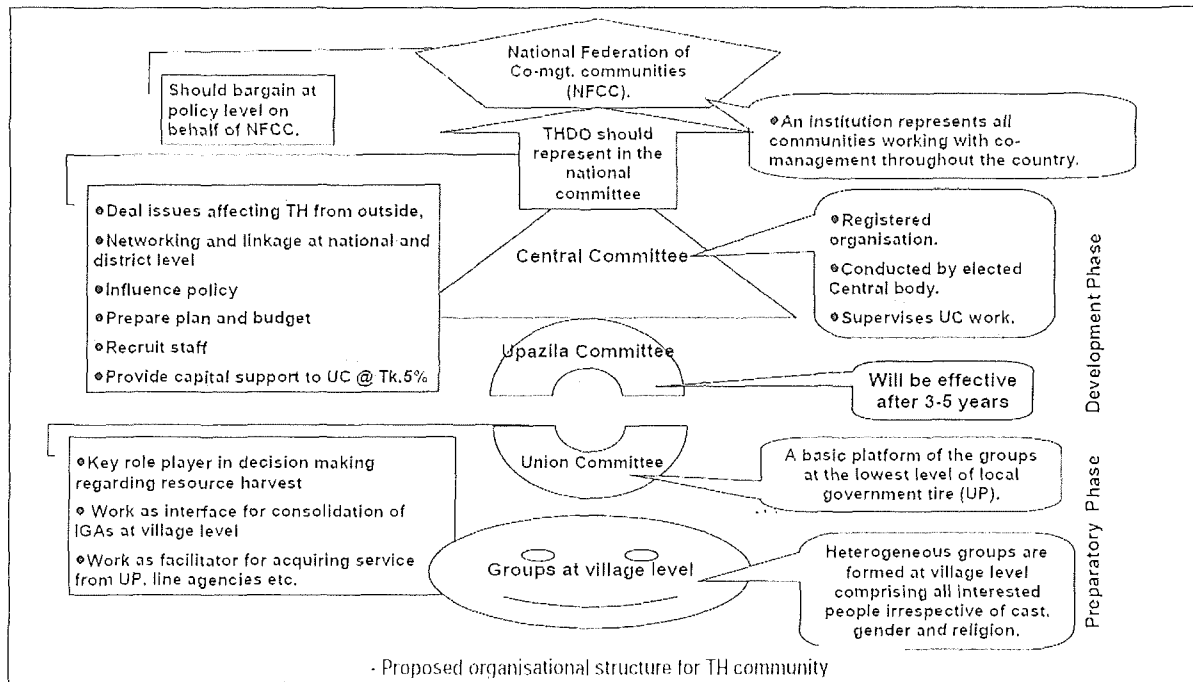


Fig. 5. Organizational structure for *Tanguar Haor* (IUCN 2009)

Four *Union Adhoc Committees* (UAC) are functional and it can be considered as the stepping stone for evolving resource governance structure. One of the milestones achieved, the benefit-sharing ratio from fish harvest. According to benefit-sharing ratio, the fish harvesters will get 40% (as traditional wage in *haor* area), 36% for the *Tanguar haor* community (4 *Union Adhoc Committee* as elected representatives of *Tanguar haor* community), and the rest 24% as government revenue which has to be invested in the *Tanguar haor* development through the concerned *Union Parisad*. This is a groundbreaking achievement and will usher future wetland management in Bangladesh.

This endorsement has given the legal basis to provide community people's access to the *Tanguar haor* resources. Establishment of terms and conditions for single and commercial fishing in the *haor* by the *Tanguar haor* management committee will stop indiscriminate fishing.

**States of fish diversity due to co-management:** The *Tanguar haor* is very rich in fish diversity along with other flora and fauna. Abundance of many nationally declared threatened species is interestingly abundant here. To assess the degree of increase or decrease in fish diversity, fishermen were asked about the total number of species they caught before and after co-management. Similarly, fishmongers were also asked to know the total number of fish species they buy or sell. The survey found that both fishermen and fishmongers given nearly the same information about the number of fish species exist. Form Fig. 6 it is clearly found that, during leasing time (before co-management)

fishermen and fishmonger found an average total of 23 and 22 fish species respectively. On the other hand, after introduction of co-management the number of fish species increased up to 30. It is very clear from this study 7 fish species re-appeared in the catch after the introduction of co-management (Fig. 6). According to fishermen and fishmonger opinion the threatened species of fish in *Tanguar haor* are (mentioned in local name and scientific name): Nandina (*Labeo nandina*), Shorputi (*Puntius sarana*), Pangsh (*Pangasius pangasius*), Gozar (*Channa marulius*), Aor (*Mystus aor*), Gulsha (*Mystus cavasius*), Bacha (*Ailia coila*), Chitol (*Notopterus chitala*), Foli (*Notopterus notpterus*), Kali Baush (*Mylpharyngodon piceus*), Gonia (*Labeo goniis*), Caski (*Corica soborna*), Pabda (*Ompok pabda*), Chela (*Salmostoma bacaila*), Kuccha (*Monopterus cuchia*), Tara Baim (*Mastacembelus armatus*), Chanda (*Chanda ranga*), Meni (*Nandus nandus*). Among the threatened species the following 7 species re-appeared: Nandina (*Labeo nandina*), Shorputi (*Puntius sarana*), Bacha (*Ailia coila*), Foli (*Notopterus notpterus*), Kali Baush (*Mylpharyngodon piceus*), Meni (*Nandus nandus*), Gonia (*Labeo goniis*).

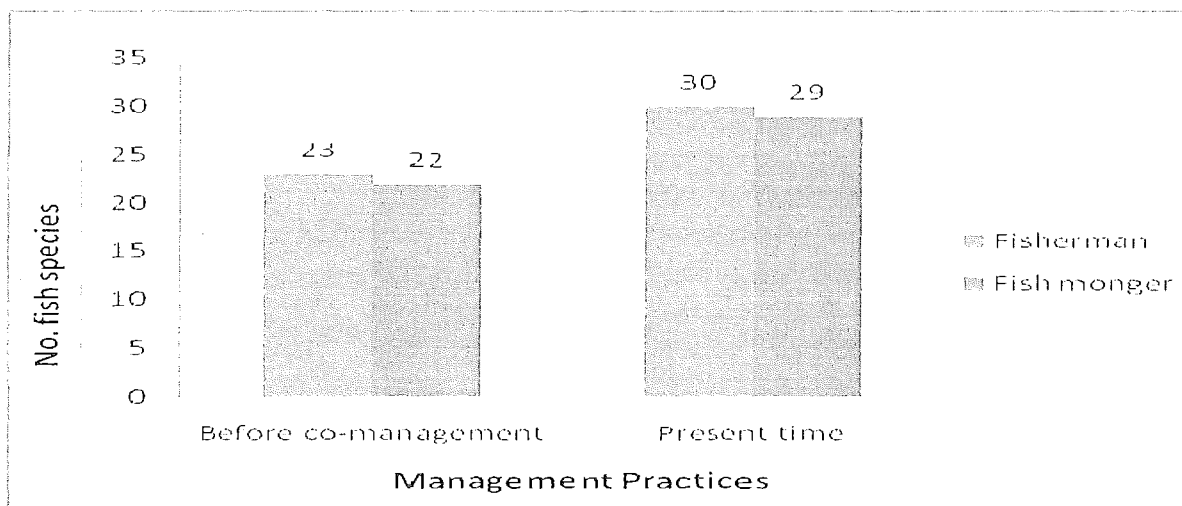


Fig. 6. Number of fish species observed before and after co-management

*Tanguar haor* has 52 *beels* which treated as single wetland. If it would divide as per number of groups/villages, the management of local community become destroy the natural system. Five *beels* viz. Rowa *beel*, Rupa boi *beel*, Alamer *duar*, Kavar *Khal* and Tegunne *beel* were established as sanctuaries to save the endangered fish species in *Tanguar haor*. During the dry season, dewatering of breeding places in the *haor* basin is an important reason for extinguishing fish species. After introduction of co-management system, the dewatering activity is nearly stopped.

*Tanguar Haor* is home to 141 varieties of fish (more than half of Bangladesh's 260 freshwater fish species). This includes 55 fish species that are threatened in Bangladesh, of which 28 are endangered. Of these 28 endangered fish species, 17 are found only in *Tanguar haor* (NCS 2007).

**Status of a total fish catch after introduction of co-management:** The issue of average fish caught before and after co-management was raised during FGD. Fig. 7 shows that year round fish catch in *Tanguar haor* varied seasonally before and after co-management. April to October is the off-season to catch fish from *Tanguar haor*. Survey acknowledged the maximum catch for the months of December, January and February. On the other hand, the lowest fish catch is acknowledged for the months of June, July and August. It is found that the average monthly fish catch before co-management was 72 kg, which increased a bit 83 kg after co-management. It is clearly observed that average fish catch of *Tanguar haor* increased about 11% after introduction of co-management. The reasons behind the average fish catch increase was introduction of fishing licence among fishermen that stopped indiscriminate fishing. Not only that, creation of new sanctuaries and selective the fishing period other than whole year fishing.

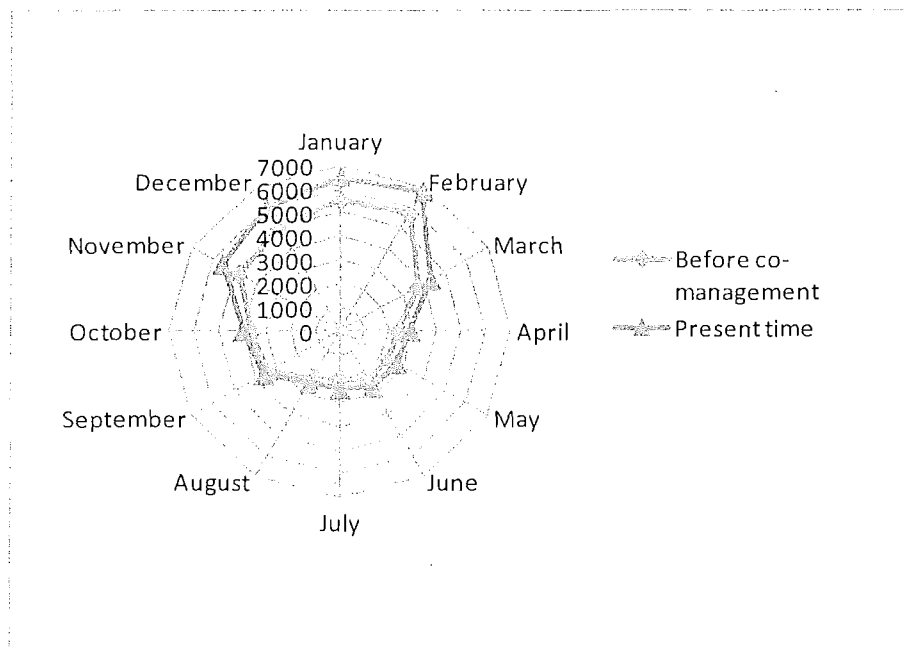


Fig 7. Average monthly fish catch (kg.) before and after co-management

Apart from that it is found from the personal fisher group interview that average monthly fish catch of fisher group before and after co-management was 70 kg and 87 kg respectively. However it is indicated that average monthly fish catch is increased 17% after introduction of co-management. Catch in *Tanguar haor* increased after the introduction of the co-management system due to the introduction of licensing system for commercial fishing among local fishermen. One of the important conditions of the licensing system is not to catch endangered and small species mentioned by the IUCN (IUCN 2008). Another reason is the close monitoring by the fish harvest committee formed under co-management approach.

## Conclusions

To prevent further degradation and overexploitation of fisheries resources, better management is imperative. The present study finds that the *haor* resources are improving chronologically after the present management authority took over the management of the *haor*. Local people are satisfied with the existing management system because local community has been included in resources utilization. Majority of the respondents in the co-management practices considered their participation as “very important”. The pilot scale efforts implemented in the *Tanguar haor* in regard to co-management and benefit sharing are landmark achievements. A close interrelationship and interdependence between the *haor* and the local community has been identified in this study. The local people intend to establish their rights of resource utilization, from which they have been deprived for a long period of time. Some of them have allegations against the existing management authority because the poor locals are often harassed and oppressed by the law enforcing forces.

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