

Farmer to Farmer Program and Aquaculture without Frontiers

Trip Report: Bangladesh, September 2010

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A trip was scheduled by Farmer to Farmer for September 16 - 25, 2010 to conduct field visits and hold trainings for the "Empowerment of Women through Family-Based Integrated Aquaculture Project" run by Caritas Bangladesh, a national non-profit development organization. A visit to Bangladesh Agricultural University and meetings with aquaculture researchers and commercial fish farmers were also scheduled. Dr. Anwara Begum Shelly, Director of Caritas Fisheries Program (CFP), Mr. Marcel D'Costa (CFP Coordinator), and Mr. Abu Hena Mostofa Kamal (CFP Program Officer) were the primary hosts for my stay in Dhaka. Dr. Md. Abdul Wahab, Professor of Limnology and Aquaculture and Dean of the Faculty of Fisheries at Bangladesh Agricultural University hosted my stay in Mymensingh.

Caritas Head Office

A visit was made to Dhaka where Caritas Bangladesh is headquartered. I met with Dr. Anwara Begum Shelly, director of Caritas Fisheries Program, which is in the process of being transformed into the broader Natural Resources Management Project (NRMP). CFP began in 1981 with the objective of promoting household pond fish culture. Since then, the program has hugely expanded its pond aquaculture program and also grown to include large-scale open water fisheries management projects. Recently, Caritas has decided to remodel CFP into the broader NRMP. The new program focuses on integrated farming and conservation/protection-based management for livelihood improvement, with aquaculture as one component instead of the sole component.

Caritas is committed to organic farming, sustainable practices, social empowerment, and community participation. They have a strong system in place which ensures that households and communities have a say in all of the organization's projects. Their practice methods focus on building their beneficiaries' capacity to help themselves. They also focus on empowering the powerless, which includes the landless, those without access to government facilities, and women.

Dhaka served as a base from which we made trips to the rural areas nearby where Caritas is running some of their family-based, women's empowerment projects.

Natural Resources Management Project Field Visits

In order to gain an understanding of the broad scope of the Natural Resources Management Project, visits were made to some of the projects Caritas is running in the Serajdikhan upazila, just south of Dhaka. I was accompanied on these visits by Marcel D'Costa (CFP Coordinator) and Mr. Md. Syeduzzaman (Assistant CFP Coordinator).

Jahanara Begum's Farm

A visit was made to Mrs. Jahanara Begum's poultry farm, which she has been running for five years. For the first three years she struggled with the farm; however, after



Jahanara Begum in front of her chicken coop

receiving training from Caritas in the third year, she has had consistent success with her chickens which has, in turn, allowed her to buy two cows, a goat, five ducks, and start a kitchen garden. She has not been able to farm fish because it is too expensive to build the embankments needed to make a pond. As women in rural Bangladesh generally do not go to the market, Jahanara's husband, Md. Amir Hossain, purchases the chicks. Jahanara does everything else necessary for raising her poultry. Although the religious leaders in the village originally disapproved of women working, Jahanara and her neighbours have now gained their approval because they consistently earn good income. Jahanara has two sons. She and her husband were not able to send the eldest one to school, but she hopes that with the income from the NRMP activities she will be able to give her second son a good education.

While at Jahanara's house I held a discussion workshop with seven village women, all beneficiaries of Caritas projects. We discussed the challenges they have in running their agricultural projects, how the projects have benefited their families, and the issue of marketing their products. As there was an outbreak of anthrax in Bangladesh at this time, the women were aware that poultry prices were rising and were hoping to take advantage of that. They commented that they were savvier than men when it comes to marketing. For instance, they often wait for holidays to sell their chickens at a good price, whereas the men will sell them any time, at lower prices. Marcel D'Costa commented that he found the women more responsible with the money they earned, spending the majority of it on their children, while men tended to spend it on themselves.



Village workshop with seven women

Kohinoor's Model Farm



A visit was made to Miss Kohinoor's family home, where Caritas has helped establish a model farm. The farm functions as a model for the community of how a virtually landless family can survive on the limited resources available. Kohinoor is the official beneficiary; however, she, one sister, her mother, and father all run the farm together. I met and conducted an informal training with the four of them. Her father, Mr. Md. Karim Shekh, was previously the only earner in the family and it was very difficult to pay for their five children's schooling. Mr. Shekh now cares for his own resources instead of doing physical labour for others. The family makes a profit of 8000 tk. per month, which is a reasonable income for the rural region. The farm includes: a vegetable garden, fruit trees, chickens, ducks, pigeons, six cows, and a pond stocked with tilapia and Indian carps. With the help of Caritas they had also recently built a more environmentally-friendly stove that uses less wood, and they plan to teach other families nearby to how do the same.

Mr. Shekh with molds for making new stoves



Kohinoor (left), her sister, and their cows

is prohibitive. They do not fertilize the ponds during the wet season, as habitual flooding makes it ineffective. However, during the dry season they fertilize the ponds and also plant vegetables on the banks or on lattices over part of the pond. The acquisition of high quality fry or fingerlings at the right times for stocking is a constant challenge. Thievery is also a problem, particularly with cattle. The cows are kept in a stable built into the family's house in order to keep them safe. Selling milk, however, is not a problem and the high demand for milk makes the cows an excellent investment.

AWF Project Field Visits

Visits were made to the AWF projects in the Rupganj upazila, just east of Dhaka. I was again accompanied by Marcel D'Costa and Md. Syeduzzaman. The "Empowerment of Women through Family-Based Integrated Aquaculture" project objectives are:

- To utilize unused and underused water and land resources
- To initiate and develop aquaculture technology to increase consumption of fish
- To improve the economic condition of poor people through fish farming
- To build women's capacity for aquaculture techniques and best practices

Caritas began working in Rupganj seven years ago and has progressed a long way since then. Rupganj is a conservative Muslim area and when Caritas staff (all male at that time) first sought to start projects in the area, they were not allowed to speak with the village women. Over time, Caritas members were allowed to speak to women through screens, which progressed to wearing burkas, and now they no longer wear burkas when Caritas staff visit, but have friendly relationships with the men, who describe the women as being like sisters. The community was familiar with the idea of fish culture before Caritas started working in the area; however, they said they had never thought of it as something they

Kohinoor's family has only a quarter of an acre for their home and all their agricultural activities, including their pond. Thus, their limited land is a large problem. They cannot grow any feed for their animals, so they have to purchase it, which is expensive, or gather it from the surrounding area, which is time and labour-intensive. In the floodplain area where they live, the fish pond's embankments are hard to maintain and flooding is a common occurrence. Ideally, they should have nets around the pond during the wet season, however they need to be replaced each year and the cost



Kohinoor's father crossing the floodplain back to their homestead



Seine netting

themselves could do, as they did not consider it appropriate or possible for people of their class.

The households in this area raise mainly Indian major carps in small ponds. By keeping three ducks per decimeter, plus fertilizing with poultry drops in the dry season, they do not have to feed the fish and so the cost of running the pond is minimal. Where possible, Caritas also helps communities lease large unused ponds on government land. We visited two such ponds in Rupganj, where men from the community demonstrated netting. It was suggested that Caritas could provide some trainings on using a seine net, as the men in one location struggled with the task. I visited the farms and homes of Mrs. Mukta Begum, Mrs. Qumrunnahar, Mrs. Gulrahen, and Mrs. Jabeda Begum. At each home we engaged in discussion workshops with the family, and their friends and neighbours. Jabeda's family, in particular, has seen a major improvement in their quality of life since they began this project.



Marcel D'Costa discussing water quality at Qumrunnahar's (right) house with 14 villagers. Ponds are unfertilized in the flood season.

Jabeda Begum's Farm



Drying chilies in Jabeda's yard

In the early 2000s the majority of Jabeda's family's cultivatable land was taken over illegally by their neighbour. As a result, Jabeda's husband, Jahangir Hosain, had to become a day-labourer, and three of their seven children had to quit school to work. A few years ago, the family won the land back after a court case. In the past, their pond was left unused. However, in 2007 Jabeda became interested in fish culture and got involved with Caritas. She received aquaculture training and two loans, totaling 9000 tk. from AWF through

Caritas. In the first year of the project, her expenses totaled 6,491 tk., her net profit: 15,875 tk., and her fish production per dec.: 12.13 (total fish production: 194 kg.). In the second year her net profit rose to 18,410 tk. and her production/dec. rose to 16.19 kg. The family also grows bananas, chilies, and other vegetables. At the time of my visit it had been a year since Jabeda has been in contact with Caritas, however she and her family have maintained their projects well and are now able to meet all of their expenses and educate their children.



Jabeda's son, Ajit

Training Workshop at Gulrahen's House

In Rupganj a training workshop on using a dissolved oxygen meter was held for village women. A D.O. meter was donated to the community through the Farmer to Farmer project and the workshop covered the importance of D.O. in fish culture, the factors which affect it, and how to use and care for the meter. The women commented that they sometimes notice (particularly from October to January) that their fish come to the surface to breathe. However, they had not previously realized that this signified low oxygen. They were pleased to learn what this behaviour meant and that they would be able to better deal with the problem in future with the D.O. meter. The challenges the women



D.O. meter training

face in their aquaculture projects include the lack of high quality fingerlings at the right times; the inability to raise their own fingerlings because they have no space for nursery ponds; climate change, which has altered the flood cycle of the floodplain area in which they live; and government acquisition of their land in recent years. Though the goal of empowering women has been hugely advanced and the project has been accepted socially as a way for women to help support their families, there are still things which the women cannot do, namely purchasing/carrying fingerlings from the hatchery, and harvesting fish.

The training was attended by ten women and four men. The women were: Shahnaj Begum, Nurunnahar, Rousonara, Gulrahen, Jobeda Begum, Mukta, Qumrunnahar, Nasima Hossain, Mansura Begum, and Hamida Begum. The men in attendance were: Mohammed Alam, Md. Karim Rashid, Md. Mahabubul Ali, and Jahangir Hosain.

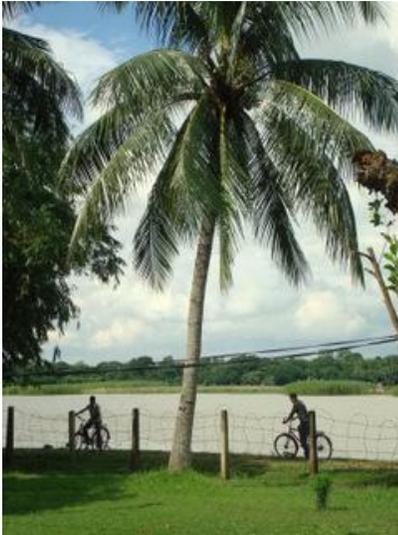
Bangladesh Agricultural University

A visit was also made to Bangladesh Agricultural University in Mymensingh, northern Bangladesh. Dr. Md. Abdul Wahab, Professor of Limnology and Aquaculture and Dean of the Faculty of Fisheries, hosted my stay in Mymensingh. Under the guidance of Dr. Wahab and some of his students, I visited the Faculty of Fisheries facilities, the university's hatchery, numerous ponds of different sizes, and toured the campus. Dr. Wahab provided an overview of Bangladesh's fisheries, aquaculture, and associated research. He also detailed some of the university's main fisheries initiatives, which include integrated farming, improving aquaculture management as opposed to focusing solely on increasing the intensity of farming, and increasing the culture of Small Indigenous Species.



BAU classroom

Small Indigenous Species (SIS) present an interesting example of the complex impacts of aquaculture in Bangladesh. SIS refer to wild small fish which are less than 25 cm in length. A common example is mola (*Amblypharyngodon mola*). These fish are the main and often only animal food source in poor rural households. Fish and rice are the core of the Bangladeshi diet, a point which was



BAU, on the Brahmaputra River

reiterated by almost everyone I spoke to. The traditional proverb "machee bhatee bangali," meaning "fish and rice make a Bangladeshi", drives home this point. Since the green revolution, Bangladesh has greatly increased its production of rice. However, as a result, habitat for freshwater fish has decreased. Recently, changing weather patterns have also affected the flood cycles of the floodplains where many SIS live. As a result, SIS catches have declined and culture fish such as carp and tilapia have become a larger part of the Bangladeshi diet. Bangladeshis are vocal about preferring the taste of SIS to cultured freshwater species; however, more importantly, this change in diet has had a negative impact on nutrition.

While fish are commonly valued as a source of protein, their importance in providing essential vitamins and minerals is often overlooked. SIS provide an important source of vitamins and minerals such as vitamin A, iron, and calcium. For example, vitamin A in fish is concentrated in the eyes and viscera. As SIS are eaten whole, they provide significantly more vitamin A than larger fish which are cleaned before eating. Research has shown that SIS can be integrated in existing carp culture without negative effects. However, as Dr. Wahab explained, new technologies and ideas disseminate slowly in a country with high illiteracy. More information on SIS can be found in the *Workshop Report for the Small Indigenous Freshwater Fish Species: Their Role in Poverty Alleviation, Food Security and Conservation of Biodiversity Workshop*, which took place in February, 2010. The Report can be viewed online here: http://icsf.net/icsf2006/uploads/publications/proceeding/pdf/english/issue_106/ALL.pdf

Q & A with Upoma, MS student, BAU Faculty of Fisheries

AWF Volunteer:	Upoma:
Why did you decide to go into fisheries?	Before we can start an Honors course in a public university, we need to take a competitive exam. I passed the exam, was admitted to Bangladesh Agricultural University, and chose fisheries because it is a subject in high demand in my country.
Fisheries is a field that has traditionally been dominated by men in Bangladesh. What is it like to be a woman working in fisheries in your country?	Women are advanced day by day in many sectors. In my cohort at BAU, we have 50% male, 50% female. But a few years ago, there was a much higher percentage of men. However, more and more women are becoming interested in fisheries and want to show their ability to perform well in this field. I think a day will come when women have a strong influence in this sector.
Professors at BAU said that most female students are not interested in and sometimes not encouraged to do field research. Why did you decided to do field research?	I think it is an essential part of the degree. Book-learning by itself is not sufficient for an in-depth knowledge of the subject.
Can you give a short description of your research?	I am investigating the role of density-dependent growth and survival data of zebra fish kept under semi-natural conditions. My objectives are to study the ecological conditions of zebra fish ponds, to assess the density-dependent effects on growth and survival of zebra fish in natural conditions, and to develop population models for investigating the effects of toxics/chemicals on zebra fish populations.
Do you have any other comments about fisheries in Bangladesh?	We face economic problems when it comes to furthering our research. If we can overcome these problems, we will do better in the future.

BAU's Fish Museum and Biodiversity Center

While at BAU, Dr. Mostafa A. R. Hossain of the Faculty of Fisheries, gave me a tour of the Fish Museum and Biodiversity Center (FMBC), which he established in 2009. Bangladesh has over 750 fish species and 270 freshwater species. However, freshwater species, in particular, are declining at an alarming rate. According to Dr. Hossain, many Bangladeshis are oblivious to the country's rich biodiversity of fish, as well as to the threats to this biodiversity. The objective of the FMBC is to create pride among Bengalis for their country's natural wealth, and to create awareness of conservation and the need to change fishing practices. The museum's interactive exhibits focus on the diversity of fish in Bangladesh and the country's rich cultural history of fishing. The FMBC has received press attention from around the country and Dr. Hossain plans to continue expanding the museum, in particular by adding aquariums.



Models of traditional fishing traps

Bangladesh Fisheries Research Institute Visit



Tilapia at BFRI

The research arm of the government's fisheries programs, Bangladesh Fisheries Research Institute (BFRI) is headquartered near BAU. I visited BFRI and spoke with numerous researchers there. The issue at the forefront of their research is climate change, a threat to which Bangladesh is extremely vulnerable because it is low-lying, densely populated, and largely dependent on agriculture and natural resources that are already being affected by climate change and sea-level rise. As a small, developing country, Bangladesh cannot afford mitigation of the negative effects of climate change; however, they are working hard to find ways to adapt. For instance, salinification is a major problem in its coastal areas as sea levels rise and freshwater

is over-exploited upstream, preventing it from reaching the coast. BFRI is focusing heavily on diversifying coastal aquaculture and developing alternate livelihoods for those affected by rising salinity levels. Their goals include expanding the production of salinity tolerant species such as Genetically Improved Farmed Tilapia (GIFT) and mud crabs, as well as salinity tolerant crops.

Agro 3 Commercial Hatchery Visit

While in Mymensingh, I also visited Agro 3, a medium-sized hatchery and farm, run by Mr. Alam Shamsul. Agro 3 mainly produces GIFT, although they also stock some endangered indigenous species. They produce about 10 million juvenile tilapia and about 50 metric tonnes of food fish per year. Mr. Shamsul is an entrepreneur with a background in social sciences. However, due to his commitment to scientific best practices, his passion for aquaculture, and his honest and transparent business approach, his company has grown extensively since it was established in 2002. He prides himself on producing high-quality seed, which is somewhat of a rarity in Bangladesh, where inbreeding is a major problem. However, increasing temperatures in the last few years have been causing Mr. Shamsul's brood stock to produce



Bagging fry for transport

fewer eggs. We discussed deeper ponds and aeration as methods for keeping temperatures down.

In addition to touring the hatchery and farm, I accompanied Mr. Shamsul as he made a large sale. After bargaining with a local farmer and settling on a price, Mr. Shamsul and his staff carefully counted and weighed out the fry, then placed them in bags for transportation. Mr. Shamsul noted that he was one of the first people in the area to use compressed oxygen to aerate the water in which fish are transported. Mr. Shamsul also invited us to visit a commercial farm nearby which produces GIFT and *Pangasius*.



Commercial farm at sunset; worker feeding fish

Conclusion

In conclusion, the trip was successful. A large number of rural women, as well as a significant number of men, benefited from trainings and workshops that allowed them to exchange knowledge with each other, Caritas staff, and an AWF volunteer. They received information on aquaculture techniques and integrated farming and responded with interest and enthusiasm. The Rupganj community received a dissolved oxygen meter and training on how to use it. The visits to Bangladesh Agricultural University, BFRI, and commercial aquaculture facilities and the excellent researching going on there contrasted sharply with Caritas' household-level aquaculture projects. This contrast provided an invaluable window into the state of aquaculture in Bangladesh and the issues that affect the country, for instance, the challenge of disseminating innovations when there is high illiteracy throughout the country. The effects of climate change are already being felt in Bangladesh and as those effects become more drastic, the development of diverse alternative livelihoods for those affected becomes ever more important. The continued implementation of integrated farming as opposed to aquaculture-only projects is essential to maintaining food security among vulnerable rural households. Dr. Kevin Fitzsimmons will conduct a follow up visit in January, 2011.

Location / Organization	Female	Male
Jahanara's farm	7	0
Kohinoor's farm	3	1
Rupganj netting 1	0	5
Mukta's farm and Rupganj netting 2	7	4
Qumrunnahar's farm	7	7
Jabeda's farm	1	1
Training at Gulrahen's	10	4
BAU students	3	2
BAU faculty	1	2
Agro 3 Farm	0	1
BFRI	0	3
Caritas	1	3
Total (adjusted for those present at multiple locations)	37	30

