

# Progressive women carp farmers of Haldia, Purba Medinipur, West Bengal, India

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The internationally recognised chemist from West Bengal, the late Professor Asima Chatterjee (1917-2006), once said, "I wish to work as long as I live." On 17th June 2024, Mrs Arati Barman, a 68-year-old fish farmer, echoed these words. She is from Dwariberia Village in Deulpota Gram Panchayat, under Satahata Police Station and Haldia Development Block, in the Purba Medinipur District of West Bengal. The author spoke with Mrs Barman at her farm. Recently, P.K. Mukhopadhyay and U. Banerjee highlighted the significant and noticeable roles of women in diverse domains of aquaculture<sup>1</sup>. They described women-led Self Help Group (SHG) members involved in aquarium fish farming in the Nandakumar Block. They also mentioned two women collecting fertilised carp eggs from a circular hatchery chamber. These eggs are then further nursed. In India, West Bengal ranks second in annual table fish production through aquaculture. Purba Medinipur leads among the 23 districts in the state, especially in the production of major carps.

## Instances of women in aquaculture and the need

In India, women from Manipur, Assam, and West Bengal participate in sustainable aquaculture. They are involved in pond fertilisation, nursery fish seed rearing, fish feeding, and harvesting. In the north-eastern states and West Bengal, women's participation in aquaculture is around 55%. Experts from ICAR-Central Institute for Women in Agriculture, Odisha, believe that improving rural women's access to credit and developing women-friendly aquaculture technologies can help. Involving women trainers and extension workers, and organising women aquaculture clubs, can also enhance technology transfer<sup>2</sup>. The late Dr Radheyshyam, an eminent fishery scientist, saw the need for expanding women-friendly freshwater aquaculture technologies. He noted the benefits of these technologies in terms of economic profit, labour efficiency, and self-employment for rural women in India<sup>3</sup>. The late eminent fishery scientist Dr M.C. Nandeeshya studied women's participation in carp culture activities across different states. He made viable recommendations to address related issues.

In western districts of Odisha, many women find aquaculture suitable for group enterprises. Women Self Help Groups (SHGs) have successfully bid for pond leases and achieved high fish yields. Women have reported that fish care fits well into their daily schedules. They are gaining increased agency through group formation, leasing water bodies, and starting aquaculture. This process helps them gain technical skills and expertise<sup>4,5</sup>. Mission Shakti, the flagship SHG movement of the Government of Odisha, has brought significant changes.



Mrs. Arati Barman holding a large catla.

It has improved the knowledge, attitudes, and practices of women SHGs towards fish farming in derelict or under-utilised Gram Panchayat tanks and ponds.

Experiences with leasing ponds to women groups show positive results. After training, these groups have excelled in fish culture<sup>6</sup>. In rural Bangladesh, a 'special' empowered group of women under the Community-Based Fisheries Management project manages inland fisheries and fish farming ponds. They also care for poultry and livestock, earning a sustainable livelihood and have taken control of same<sup>7</sup>. Increased economic activities from small-scale aquaculture have created income opportunities for rural women in Bangladesh<sup>8</sup>. To empower women, the Department of Fisheries, Government of West Bengal, has encouraged forming women cooperatives in the ornamental fishery sector. This includes both indigenous and exotic freshwater ornamental fishes. Dr M. Mukherjee, former Director of Fisheries, West Bengal, stressed the need for development schemes related to women as the fishery sector has significant potential for women's employment<sup>9</sup>. Jaljeevika, a fishery-based non-profit in Jharkhand, has trained many women SHG members in fish farming in cages in large inland water bodies. About 1,200 women have been trained and guided in major carp seed rearing, from spawn to fingerling, under the West Bengal ADMI Project of the Department of Water Resources Development.



## Women carp farmers of Haldia, Purba Medinipur, West Bengal

Women involved in aquaculture are critical to achieving Sustainable Development Goals. They contribute to food security and nutrition in rural areas. In Purba Medinipur, women practice family-based freshwater aquaculture in backyard ponds. This helps improve the health of rural households and supports their lives and livelihoods. In 2019, in a 1,320 m<sup>2</sup> pond owned by national-award-winning fish farmer Sarat Chandra Bhowmick in Basanchak Village, Haldia Block, natural breeding of pengba (*Osteobrama belangiri*) brooders occurred. These brooders had been raised from previously stocked fry stages. In the next three months, 7.5-10 cm fry were produced in nylon net hapa enclosures. His wife, Mrs Bandita Bhowmick, took proper care of rearing pengba larvae and oxygenating the pond water. She also supplied Pengba fry to local women interested in fish farming for their homestead ponds. This encouraged them to use their ponds for pengba farming instead of leaving the ponds unused<sup>10</sup>. The fry were sold at a nominal rate of INR 2-5 per piece.

The author met S.C. Bhowmick at his home on 17th June 2024. Mrs Bhowmick often gets up early in the morning. She harvests paddy from the field using a sickle, cooks food at

*Author with Mrs. Barman at her fish farm.*



*Fish culture in large freshwater bodies has taken up in Purba Medinipur.*

home, and feeds the fish. She practices mixed farming of *O. belangiri*, *Labeo rohita*, and *Catla catla* in their homestead pond. Harvested large fish are sold in the local auction market. She has taken training in fish farming organised by the West Bengal Fisheries Department at Haldia Block. She also received input support for fish farming as a beneficiary of a departmental scheme.







*The largest aquaculture water body of Mrs. A. Barman.*

Much of the daily life of women in Purba Medinipur revolves around small ponds found in almost every rural household's backyard. These ponds support multi-species fish culture, including Indian major carps and indigenous nutritious fishes that enhance rural diets. This practice, documented in the film 'Unseen Faces Unheard Voices - Women and Aquaculture in Purba Medinipur, West Bengal' by the International Collective in Support of Fishworkers, contributes to family nutrition and local food security. It also provides some income for women through fish rearing and marketing. Mrs Nanda Rani Sahoo is one of the women fish farmers in Haldia Block. Mrs Arati Khatua from Contai Block noted that initially, she did not provide supplementary feed to growing fish in her homestead pond, resulting in unsatisfactory growth. However, after proper pond preparation and management practices, she stocked major carp fingerlings, which showed significant growth. She nets the fish herself, consuming most at home and selling a small amount.

Mrs Shefali Manna from Haldia Block is a member of the women-led Fish Production Group in Chaulkhola Village, Debhog Gram Panchayat. She received block-level training on fish farming organised by the West Bengal Fisheries Department. Supported by the ATMA Project under the Department of Agriculture, West Bengal, she has educated herself on maintaining clean homestead ponds, adopting improved technologies for better pond management, and stocking appropriate numbers of fish fingerlings according to

pond size and carrying capacity. These FPG members are collectively engaged in fish farming to supplement their family income. In Chaulkhola Village, they also organise the four-day Durga Puja festival annually. In October 2021, they used this platform to educate about the importance of scientific fish culture in small- to medium-scale village freshwater resources. They highlighted its impact on rural socio-economic development, including women's self-employment, empowerment, income generation, and the nutritional benefits of fish. This initiative is uncommon and commendable.

In an on-site conversation with the author on 7th July 2024, Mrs Jharna Manna, a Governing Body member of Chaulkhola Fish Production Group (FPG), mentioned their focus on



*Author speaking at a Fish Farmers Day programme 2024.*





*Homestead pond of Mrs. Bandita Bhowmick*

larger fingerling production (100-300 g size) of *Labeo rohita*, *Cirrhinus mrigala*, and *Labeo bata* in two rainfed freshwater bodies spanning 800 m<sup>2</sup> and 3,400 m<sup>2</sup> leased by the group. Thirty women members from Chaulkhola and adjacent Shibramnagar villages are involved in carp culture. Initially registered as a Self-Help Group in 2010-2011, engaging in activities such as poultry and goat farming, it became an FPG in 2017-2018. Advanced fry stages (7.5-12 cm) are sourced from Narghat near the Haldi River, about 25 km away, costing INR 275-300/kg (for *L. rohita* and *C. mrigala*) and INR 400-500/kg (for *L. bata*). Mrs Manna received fish culture training in 2022 organised by the Government of West Bengal. FPG members visited a freshwater fish farm in Digha, Purba Medinipur, and Mrs. Arati Barman's fish farm nearby for practical knowledge on aquaculture management practices. They routinely feed good quality mustard oil cake and other ingredients. Fish weighing 100-300 g at harvest are sold at INR 160-180/kg to grow-out carp farmers. Chaulkhola FPG has benefitted from fish seed and lime provided by the Government of West Bengal. Most members own backyard ponds ranging from 400-800 m<sup>2</sup> where they practice small-scale carp culture. Mrs Manna expressed gratitude for the guidance received from Sri S.K. Sahu, former Fishery Extension Officer, Haldia Block.

Even in Dadanpatrabar Village, Ramnagar-II Block of Purba Medinipur District, fisherwomen interviewed in a study reported that besides fish harvesting and marketing, they

handle all aspects of fish farming within their households. This includes growing vegetables, raising poultry, and managing ponds for commercial fish farming<sup>11</sup>. Mrs Sumitra Mantri from Haldia Block actively assists her husband in managing their ponds dedicated to commercial fish farming. Their farming area has expanded from 364 decimal (1.456 ha) in 2018 to 10.4 ha in 2021. They follow proper fish feeding schedules and water quality management practices. The efforts and



*Mrs. Jharna Manna and her homestead pond.*



success stories of Sumitra and other women in freshwater fish farming were highlighted in the documentary produced by ICSF.

## Distinguished woman fish farmer of Purba Medinipur

Mrs. Arati Barman, a distinguished woman fish farmer from Purba Medinipur, shared her achievements and perspectives with the author. Born and raised in Rajnagar Village, Tamluk Block, she learned the fundamentals of fish farming from her father, who commercially produced major carp fingerlings. The fish seed market in Rajnagar is renowned throughout Purba Medinipur. Despite her age, Mrs. Barman actively participates in drag netting during early dawn fish harvests in waist-high water, weighs the fish, and cleans large nets diligently. She sometimes stays overnight at shelters near water bodies to prevent poaching. Since starting with a modest operation in 1985, she has expanded her freshwater carp farming to cover many acres of water bodies. After marrying into a family involved in Hilsa ilisha fishing in motorised boats near Haldia, she began commercial carp seed rearing and fingerling production in two small ponds near her father-in-law's house in Dwariberia Village during the late 1980s. Since 2003-2004, she has been engaged in major carp farming, producing two crops annually in three water bodies: 1.664 ha (her own), 8.32 ha (of which she owns three-fourths), and 3.744 ha (leased), all with water depths of 1.2-2.4 m. Additionally, she manages two large fish farming water bodies in Garughata Village, Mahishadal Block, measuring 83.2 ha, located 18-20 km from Dwariberia.

In her water bodies, Mrs. Barman stocks *Labeo rohita* weighing 400-500g, which grow to 1400-1,500g within six months. *Catla catla*, stocked at 750-1,000g, reaches 3,000-3,500g at harvest. *Cirrhinus mrigala*, stocked at 300g, grows to 1,200g over the same period. Sub-adults are purchased at INR 40-150/kg and sold after six months at INR 180/kg. Some adult *Lates calcarifer* are also introduced to control *Tilapia* sp and weed fish populations. Pelleted feed (INR 35-50/kg) and a mix of broken rice and rice bran (INR 22/kg locally) serve as supplementary feeds. Previously, Mrs. Barman stocked Indian major carps (25-40 g fingerlings) at 3,000/2,080 m<sup>2</sup>. Currently, she stocks 900-1,000 in the same area, achieving larger sizes.

## Experience on decrease in profit margin

Since 2015, the price of high-quality supplementary fish feed for major carp in Purba Medinipur has steadily risen, making it increasingly unaffordable. Similarly, the annual lease payments for large water bodies have also escalated. Recently, Mrs. Barman has noticed a decrease in profit margins compared to previous years in her grow-out carp farming operations. Each of her fish farm water bodies employs two permanent workers, paid INR 10,000-12,000 per person per month. The lease for her 83.2 ha water bodies costs INR 6,000,000 per year. In the mid-1980s, mustard oil cake was priced at just INR 3/kg; now, it ranges between INR 28-30/kg. Diesel fuel is essential for operating machinery used in dewatering and refilling water in large fish



*C. catla* 750 g at stocking in Mrs. Barman's water body.



*C. mrigala* 300 g at stocking.



*L. rohita* 500 g at stocking.

farming areas, as well as for oxygenation using paddle-wheel aerators. The price of diesel has increased from INR 30-35/litre to INR 100/litre. Daily wages for farm labourers engaged in netting have risen from INR 40-50/person/day to INR 500-550/person/day. However, the market price of large major carps, when sold at auction markets after harvesting, has not seen a comparable increase.



## Success of Mrs. Barman - a lesson for beginner carp farmers

Mrs. Barman's husband was a farmer with 1.664 ha of land, but their agricultural production and income were unsatisfactory. They decided to construct a fish farming water body on this large tract by manually digging out the earth. Workers filled earth-moving containers at the digging site, lifted them onto their heads, and carried them to the dumping site. Today, this process is carried out using tractors and JCB excavators.

Before starting fish farming after her marriage, Mrs. Barman earned a meager income by selling a popular dish called 'oil cakes' at temporary stalls set up during village fairs throughout the year. These snacks were made from brinjal slices, boiled potato mixed with spices, or thinly sliced onions coated in a batter of concentrated gram flour paste and fried in mustard oil. With an initial capital of INR 30,000 saved from this venture, she ventured into fish farming by leasing small freshwater ponds in Dwariberia. There, she began producing and selling live carp fingerlings. Later, she expanded into grow-out carp farming in a 1.664 ha freshwater body, realising that both investment and profit were significantly higher in this practice compared to fingerling production.



Device to keep adult carp alive in wholesale fish market.

Over the years, Arati Barman has overcome numerous challenges to earn respect in Haldia and nearby blocks. Her fish farming water bodies provide sustainable livelihoods to many rural youths of Purba Medinipur who work there, generating employment opportunities. Until 2004-2005, there were only 4-5 professional fish farmers in Haldia and nearby blocks engaged in commercial-scale carp farming. Mrs. Barman was among them, initiating large-scale carp farming in Haldia Block with high embankments constructed on all

Mrs. Arati Barman receiving Award from Fisheries Minister, West Bengal.



পশ্চিম বঙ্গের মৎস্য মন্ত্রী চন্দ্রনাথ সিনহা  
রাজ্যের মীনমিত্র প্রথম পুরস্কার প্রাপ্তী আরতি বর্মন

sides. Since then, the number of fish farmers has significantly increased. During harvest seasons, fish traders from Singur in Hooghly District, Kharibari in South 24 Parganas, Contai, Mecheda, and Haldia towns in Purba Medinipur, along with other nearby places and wholesale markets near Purba Medinipur, including Balasore in Odisha and Bihar, gather on the embankments to purchase large quantities of fish. These fish are loaded into mini-trucks and transported live from Dwariberia and Garughata over long distances to their respective destinations.

On June 16, 2016, Mrs. Barman received the State-level 'Meen Mitra Award' from the Minister of Fisheries, Government of West Bengal. The ICAR-Central Inland Fisheries Research Institute, Barrackpore, honored her with the Platinum Jubilee Award on March 17, 2018. Her achievements were recognised by Haldia Energy Limited Power Station on World Women's Day in 2015. On January 22, 2015, she was awarded a 'Certificate of Appreciation' by the Block Development Officer, Haldia Block, for her outstanding contribution to fishery and aquaculture development in the area. Mrs. Barman has mentored local youths interested in fish farming and encouraged homemakers in nearby villages to engage in fish farming. Several college students who trained at her farm now work in reputable companies producing fish feed and other aquaculture products. During the COVID-19 lockdown starting from March 16, 2020, she faced significant financial setbacks as fish markets, hotels, and restaurants closed, and the lock gate of Hooghly River prevented freshwater from entering her ponds. Mrs. Barman lives with her three sons, daughters-in-law, two granddaughters, and four grandsons.

## End note

The role of women in small-scale family fish farming has long been significant (BOBP, 1980). According to Sri S. Maity, owner of a small-scale fish hatchery in Shibramnagar Village, Haldia, many women are now trained in hatchery seed production of medium carps and other high-value freshwater fishes. New eco-hatchery structures, smaller than conventional Chinese systems, enable women to rear and sell fish spawn and fingerlings profitably from small ponds while managing household duties. In a recent issue of a respected magazine, an elderly Scheduled Caste woman was pictured releasing carp fingerlings in Kheyadaha-I Gram Panchayat, Sonarpur Block, South 24 Parganas (April-June 2024, Page 6). In another instance, 11 members of Elajaner Kuthi Disha SHG near Coochbehar town were seen harvesting *Anabas testudineus*, *L. bata*, and *C. mrigala* from a leased pond (English daily, 25/09/2015).

On July 10, 2024, the author highlighted notable examples of women freshwater fish farmers and their dedication in an audio-visual presentation at the Training Hall of Bishnupur-II Development Block, South 24 Parganas, West Bengal, during the 'Observation of Fish Farmers Day' 2024 program. The aim was to inspire 70 male and female fish farmers, both young and old. Among the 342 blocks in West Bengal, Haldia and Moyna stand out as leaders in successful commercial freshwater aquaculture and fish production, showcasing both innovative and traditional aquaculture practices—an ideal environment for learning.

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