

Fishing culture in Assam: an overview of trend and scope

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Journal of Livestock Science (ISSN online 2277-6214) 14: 182-189

Received on 3/4/23; Accepted on 5/5/23; Published on 4/6/23

doi. 10.33259/JLivestSci.2023.182-189

Abstract

The topography and high rainfall has given rise to different fisheries resources in Assam in the form of rivers, floodplain wetlands/beels, swamp/low-lying areas, forest fisheries, reservoirs, individual ponds and community ponds. India currently stands at second position in the world in case of fisheries production with 13.7 million metric tons in the year 2018-19, 65% of which was from inland sector. A rapid and faster growth can be seen in this sector during the recent years. Assam, a northeastern state of India is with dense geographical pattern, having about 10.5% of its area with surface water bodies. Along with agriculture and animal husbandry, fish farming is also an important source of occupation in the state. There is a high demand for fish and fish products in Assam (near about 3.36 lakh tons a year), but the current supply of the same (2.94 lakh tons) is not sufficient to cover the huge demand for fisheries products in the state. However, Assam has a large number of water bodies in its surface which can be utilized for fishing activities. The proposed study aims to bring light to the growing trend of fishing culture in Assam and a comparison with the national level averages. It also attempts to focus the growing scope and opportunities of fishing industry in Assam.

Key words: fishery; scope for livelihood; fish seed production.

Introduction

Since the days of hunting, catching fish for food has been an important source of life. Further, with growing population and growing demand for nutrition, it has become a significant part of food behavior of human being. Fish touches the livelihood of people in countless ways in terms of providing food security, nutrition, employment generation, empowerment of women, livelihood, recreation, socio – economic development of the fishing community of the country and many more (NFDB, 2015, 2018). Fish comes from two main modes of production systems: Capture Fishery (capturing of wild fish from marine and freshwater) and Culture Fishery (also known as Aquaculture) (NFDB, 2018). According to NFDB (2017), “fish contributes to about 17% of global population’s animal protein consumption. The global fish production during the year 2016 peaked at 171 million tons with aquaculture representing 47% of the total. The per capita fish consumption reached 20.3 kg and aquaculture has been responsible for the continuing impressive growth in the supply of fish for human consumption.” There is a huge scope for fishing and aquaculture industry in the world.

In the year 2017-18, the fishery sector contributes 5.23% to the Gross Domestic Product (GDP) of the agriculture sector and 0.91% to the total GDP of the country (NFDB, 2018). In the year 2019-20, India contributes 7.7% of global fish production, being the third largest fish producing and second largest aquaculture fish producing country of the world (NABARD, 2020). Fisheries and aquaculture has witnessed a tremendous rise in production providing a source of occupation to about 16 million fishers and fish farmers at the primary level and along the value chain the number is almost twice; indicating ample potential for generating income, employment, growth in subsidiary industries and for earning foreign exchange through foreign trade (NABARD, 2020).

Assam, the north-eastern state of India, located between 24°08'N and 27°59'N latitudes and 89°42'E and 96°01'E longitudes (ASTEC, 2007; Das et al, 2023). The state receives an average annual rainfall of 1780 to 3050 mm. The total surface water resource of the state is estimated to be 600 billion cubic meter. Out of the total geographical area in the state, 10.5% area is occupied by surface water bodies (ASTEC, 2007; Chutia et al, 2018). Table 1 depicts the availability of water resources in Assam.

Assam is considered to have predominantly fish eating population, where about 90% of its population consumes fish (Bhuyan et al., 2017). Rice and fish are often considered as the most common staple food of Assam (Borthakur, 2022). Along with the household level catching for self consumption and production and catch of fish for commercial purpose, community fishing are also much popular in many of the non-protected flood plain wetlands of Assam; having cultural and traditional significance in the livelihood of people practicing the such activities (Dubey and Gogoi, 2023). During the 11th plan, the fisheries sector in the state has registered an annual average growth of 6.4% (Chutia et al, 2018). Assam has a significant potential of being a huge producer of fish as well as fish seed. According to Das et al, (2018), “With a nutritional demand of 11 kg per capita consumption (present per capita consumption is 9 kg), the state needs approximately 3.36 lakh tons of fish. The gap between fish production and demand was 0.29 lakh tons during 2016-17.” In Assam, there is a huge untapped potential for development of open water fisheries, which will not only enhance the production but also help in preserving the fisheries resources along with contributing the sustainable utilization of the indigenous fish species available in Assam (Das et al, 2018). Although the State has abundance of water resources and high potential for fish production, it has yet to tap the potential area for inland fish production, scientific fish farming and management is being practiced considerably in a small portion (GOA, 2018).

Table 1: Fisheries Resources in Assam

Resources	Number	Length/Water spread area
River fisheries	Main rivers: 2; Tributaries: 53	4820 km
Floodplain wetlands (beel/ ox-box lakes)	Registered: 430	60215 (ha)
	Unregistered: 767	40602 (ha)
Derelict water bodies/ swamp/ low-lying areas	3887	116444 (ha)
Forest fisheries	71	5017 (ha)
Reservoir fisheries	2	2553 (ha)
Individual ponds	361393	55430 (ha)
Community ponds	6308	5141 (ha)

Source: Das et al, 2018.

Aim and Methodology

“The future of aquaculture in Assam depends largely on the commitment of farmers, entrepreneurs and government towards ensuring a more prosperous ecosystem for fish farming in the state” (Borthakur, 2023). Therefore, the study is interested to have a detailed survey on the trend of the different aspects of fishing industry in India as well as in Assam. The objective is further extended to study the scope of fishing industry in Assam.

For the trend analysis, the study depends upon the secondary information. Data is collected from the reports by authentic government departments and research papers. Scope is studied in the form of the discussion on employability in this sector, nature of generation of expenditure scenario by the government on fisheries sector in the form of different schemes. In order to achieve this objective, secondary information is collected from annual reports and research articles. To study the on-going schemes of fisheries, information is collected from internet and also co-coordinators of the schemes in ‘Directorate of Fisheries, Assam’ are interviewed. The results are analyzed through descriptive statistics such as tabular and diagrammatic representation and descriptive methodology is also applied.

Results and Discussions

Trend of fishing industry in India and Assam

In the recent years, the fishery sector in India is growing at a very faster rate. Fish production in India has reached 125.90 lakh tons in 2018 from 24.42 lakh tons in the year 1981. Similarly, the growth rate of the sector has reached in at 10.14% per annum in the year 2018, where it was accounted as 0.08% in the year 1982 (GOI, 2018). Figure 1 explains the trend of growth of fish production in India.

In figure 1, it is evident that the fish production in India has taken an encouraging upward trend in the recent years. It is also seen that inland fish production is contributing to a large extent towards the rise in total volume of production. Initially the volume of inland production was much low, but with time, it took a sharp upward swing and from the year 2000-2001 it become higher than the marine fish production. In the year 2017-18, inland fish production was recorded as 89.02 lakh tons and marine fish production was 36.88 lakh tons. Not only on the ground of fish production, India is showing an impressive growth in the production of fish seed. The production of fish seed in India has increased from 9639 million fry to 52262 million fry between the year 1985 and 2018 (GOI, 2018).

Looking at the scenario of fishing industry of Assam, it is completely based upon the inland water sources. The volume of fish production in Assam shows a steady growth over time. The statement has been supported by the study of Yadav et al (2020) and also forecasted that in the coming days by 2023, the Assam’s potential nutritional demand for fish can be expected to be fulfilled. It is shown in the figure 2. However, on the ground of fish seed production, Assam has shown a significant growth over time. The trend of fish seed production in Assam is shown in the figure 3.

In the year 2018-19 the total fish production has gone up to 3.31 metric tonnes (MT); much closer to the total nutritional demand for fish (3.43 MT) during the same year in Assam (Yadav et al, 2020). The state is also having a large quantity of registered raw fish market for the sale of these fish and the markets are spreading across the districts; Kamrup district is having the highest numbers of such markets (Deka, 2021). The growth and development of fish is highly dependent on the fish seed’s quality (ANON 2017). In case of fish seed production, 21 government and 500 private hatcheries are present in Assam using different types of standard technologies for the production of good quality of fish seed (ANON, 2018; Debnath et al, 2020).

Scope of Fishing Industry in Assam

Fishing and fishery industry has a great scope for expansion and development in Assam. Looking at the per capita fish consumption in Assam, .67 kg of fish of value Rs. 75.28 per day is consumed by the people of rural areas of Assam. In urban areas, the value is Rs. 103.05 and about .77 kg of fish is consumed per day. Out of 1000 people in Assam, 804 persons I rural areas and 750 persons from urban areas consume fish (GOI, 2018). This surely indicates a great demand for fish products in Assam. Hence it paves a wider scope for this industry.

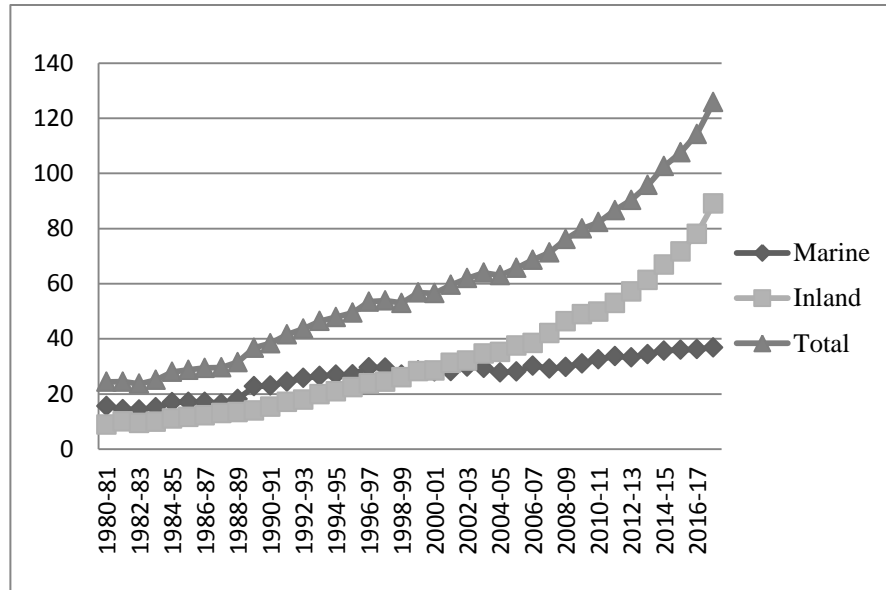


Figure 1: Fish Production in India
 Source: author’s own analysis using the data available in Handbook of Fishery, GOI

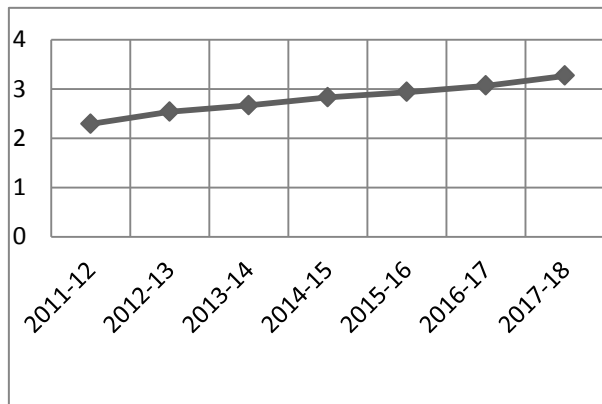


Figure 2: Fish production in Assam
 Source: author’s own analysis using the data available in Handbook of Fishery, GOI

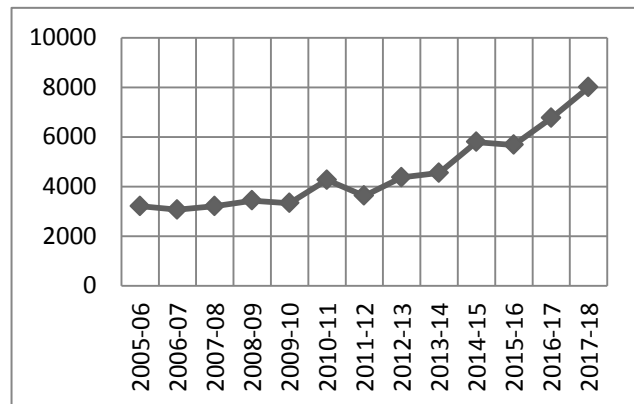


Figure 3: Fish seed production in Assam
 Source: author’s own analysis using the data available in Handbook of Fishery, GOI

Table 2: Potential and Actual Rate of Fish Yield in Assam

Resource	Potential productivity (kg/ha/yr)	Present fish yield rate (kg/ha/yr)
Floodplain wetlands (beels)	300 (Capture fisheries)	221 (Un-stocked)
	1500 (Culture based fisheries)	450 (Stocked)
Reservoirs	100	-
River: Brahmaputra	900 kg/km/yr	190 kg/km/yr
Tributaries	450 kg/km/yr	

Source: Das et al, 2018

Table 2 gives an idea about the resource wise potential and actual productivity of fish resource in Assam. It is very clear that there is a huge stock of resources for the production of fish. The potential for fishery production is much high in the state. Amongst them, the floodplain wetlands, which are also locally known as the beels across the basins of Barak and Brahmaputra rivers provide ample scope for the sector and are also considered as important source of fish production in Assam (Nath et al., 2017; Borah et al., 2020; Sarkar et al., 2020). These wetlands are also the huge reservoir of numerous types of fish and some of them are having great demand in both national as well as international markets (Kar, 2019). However the state has not yet reached the level of fish production as per the level of potential productivity. With the proper implementation of schemes by the government and optimum utilization of the funds the sector has a great scope to expand its capacity in the coming days.

The sector provides both direct employments at the primary level in the form of producing units as well as indirect employment through the value chain associated with the fishery industry (Yadav et al, 2020). There are a number of communities having their livelihood from river based activities; most significantly from livestock and fishing (Saikia and Mahanta, 2023). Looking at the employability of the sector, it is providing the source of full time, part time and seasonal occupation to a huge volume of population in the state. Both male and female population is involved in the sector, indicating a large scope for greater employment generation by the fishing industry in Assam in the coming days.

Figure 4 presents the different types of employment opportunity generated by the fishery sector for both male and female population of the state of Assam. The state also has a huge potential for the dry fish marketing; which is considered as one of the oldest method of animal protein preservation technique (Debnath et al, 2020). Fish drying is one of the very popular flavoring agents in various food items and a least expensive process of preservation of food (Purkit et al, 2018). The consumer of dry fish is the highest in northeast India and the “Jagiroad dry fish market” is Asia’s largest market for dry fish (Aziz et al, 2019). Dry fish industry is also providing employment to the people involving in the process related to the respective industry and generating a source of primary income to them (Debnath et al, 2020).

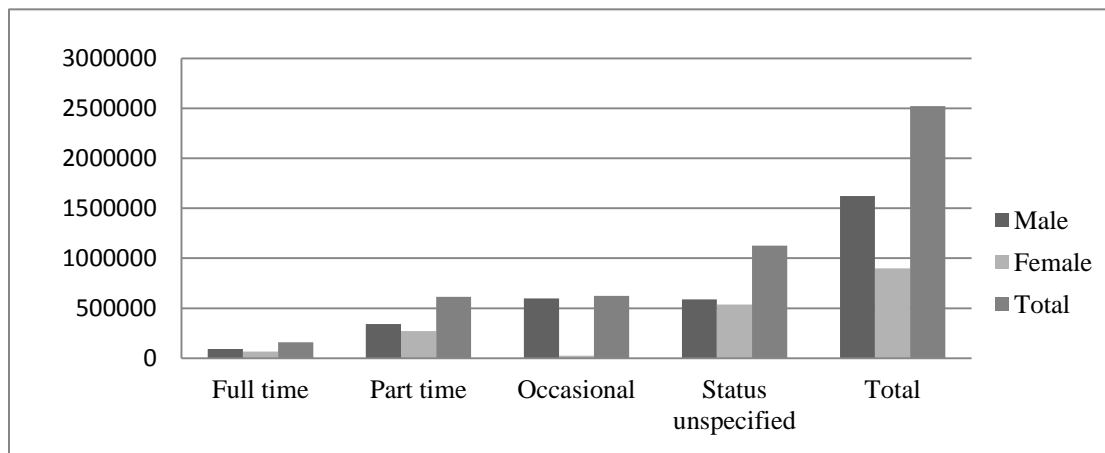


Figure 4: Employment in Fishing sector of Assam

Source: author’s own analysis using the data available in Handbook of Fishery, GOI

Projects and Schemes in Assam

Looking at the schemes and expenditure environment in the state, both state and central government is spending a huge amount of money on the development of this sector. The expenditure on fisheries has increased from 851.8 lakh in the year 2005-06 to 3892.9 lakh in the year 2017-18 (Goi, 2018). Both central and state governments are spending an impressive quantity of money in this sector through various schemes since long. This section briefly discusses about the schemes on fishery development presently being operated by the central as well as the state government in Assam.

Rashtriya Krishi Vikas Yojana (RKVY)

It is basically a state plan scheme with special additional central assistance. It was launched by the Ministry of Agriculture & Farmer Welfare, Government of India and National Development Council (NDC). In the year

2016-17, Rs. 3300.00 lakh was approved for fisheries development under the scheme of RKVY and the sanctioned amount was Rs. 203.00 lakh. In 2017-18, Rs. 3600.00 lakh was proposed (Directorate of Fisheries). The schemes under RKVY for the development of fisheries are:

- Production Growth
- Infrastructural Development
- Special Schemes
- Flexi Fund
- Administrative Cost.

Numbers of schemes and projects are running under these heads. RKVY is considered as one of the prominent on-going schemes for the development of fisheries and fishing culture in Assam.

Blue Revolution

It is a central factored scheme, launched during 2015-16 with an aim to achieve economic prosperity of the country, the fishers and the fish farmers. The implementation procedure under this scheme is 80:20; that is 80% of the financial assistance is given by the central government and the rest of 20% is shared by the beneficiary or the state government (Directorate of Fisheries). After the implementation of blue revolution, excluding RKVY, all the central factored schemes are clubbed under this scheme covering wider range of schemes and projects under it. Blue Revolution is considered as one of the most important schemes contributing towards the development of fishing and fishery sector of the state.

National Fisheries Developmental Board (NFDB)

NFDB is an autonomous board, established in the year 2006, under the administrative control of the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, Government of India. Its aim was to increase fish production and productivity in the country and to coordinate the development of fisheries in an integrated and holistic manner. It is an important central factored scheme of the country, contributed towards the development of the sector to a large extent. However, in Assam, after the implementation of Blue Revolution, this scheme is inactive in the present days.

Assam Agribusiness and Rural Transformation Project (APART)

Presently an important scheme APART, on fishery development is running in Assam. APART is launched in 2017. It is a five year project, introduced and funded by the World Bank. The project will continue till the year 2022. The technical know-how for this scheme is being provided by the World Fish, a Malaysia based organization related to aquaculture. The financial assistance for it is provided by the World Bank.

Rural Infrastructure Development Fund (RIDF)

RIDF is maintained by the National Bank for Agricultural and Rural Development (NABARD). Digging fishery for each household is the basic aim of this scheme. Under this scheme, each individual having a land of at least .5 hector, can apply for fishery. The government will dig the fishery without any cost. However, the households will not be provided any assistance for the inputs such as the fish seed, food for fish and other fishery related costs. The first phase of the scheme is almost completed in Assam till date.

Chief Minister's Samagra Gramya Unnayan Yojana (CMSGUY)

This scheme is financed by the state government of Assam. CMSGUY works in collaboration with the RIDF scheme. The RIDF scheme builds the fishery only and don't provide any financial assistance for the sustainability of the fishery. The CMSGUY scheme will provide the financial assistance for the sustainability of those fisheries, which are build through the RIDF scheme. That is this scheme provides financial assistance to the households for the inputs of the fisheries, such as: provides fish seed, concentrate ration for fish and other fishery related inputs.

State Owned Priority Development (SOPD)

It is a state funded scheme in Assam. It has various dimensions. One of its dimensions is associated with the fisheries sector of Assam. The schemes under SOPD are such as:

- Matsya Jagaran: construction of new individual ponds and fish culture.
- Matsya Jagaran: input cost of the new individual ponds constructed in the previous years.
- Seed Bank Programme: construction of new individual ponds for fish seed rearing.
- Majuli development programme.

- Assistance to women SHGs for production of value added fish products.
- Training of beneficiary and farmers.

The projects are implemented through the release of funds in a way that 90% of the scheme expenditure is shared by the government and 10% by the beneficiary (Directorate of Fisheries).

Conclusion

In a traditional scenario, in rural livelihood, having a pond in each of the household is much common in Assam; where people nurture fish for their normal day to day consumption. The rivers of Assam are also a great source of fish product. The growing demand for fish, increasing potential of this industry in creating employment, growing concentration and importance by both the central and the state governments indicates the greater opportunity in this sector. Assam also has a good market for fish. However, the available resources for fish production in the state are yet not fully explored. The previous discussion in this paper has indicated that Assam has a huge scope in the fish producing sector. It is very important for the administration to look after the proper utilization of the financial resources coming through different schemes. With proper management, optimal utilization of the financial and natural resources in a sustainable manner, it can be expected that the fishing industry of Assam will take a sharp upward trend in the coming days.

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