

# 16. Fish Fermentation in the Floodplain: A Photo Essay

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## Summary

Fermenting fish is a familiar strategy of food preservation in Bangladesh. Although a number of fermented fish products are available, the most popular is *chapa* or *shidol*. Chapa has long been an important food in local diets, particularly in the north-central, north-eastern, and southern hilly regions. It is a delicacy and a common protein source in the diet of poor and middle-class people.

Thousands of men, women, and children are involved in the fish fermentation sectors. They supply the raw fish and are engaged in processing, which includes drying and fermenting, and in trading. This photo essay traces the process of making, marketing, and consuming chapa across the value chain. We aim to contribute an appreciation of the socially embedded practices around chapa and hence broaden understanding of fish fermentation in the floodplains of Bangladesh.

## Introduction

Fish is a natural complement to rice in the national diet of Bangladesh, giving rise to the adage '*Maache-Bhate Bangali*', literally meaning – 'fish and rice make a Bangladeshi'. The fish sector, second only to agriculture in the overall economy of the country, contributes nearly 60 percent of the daily animal protein intake, and 3.5 percent of GDP (DoF 2020).

Fish fermenting has long been a common strategy of food preservation in Bangladesh. Four different types of fermented fish products – chapa or shidol (alternatively shidhal), *nga-pi* and *lona ilish* – are produced in the country. The most popular of these is chapa or shidol. In terms of production and trade volume, chapa represents more than 80 percent of the fermented fish produced in Bangladesh. Chapa has long been a regular part of the diets of people of almost all categories particularly in the north-central, north-eastern and southern hilly regions of Bangladesh. Fermented chapa is produced in the floodplains of Mymensingh, Sylhet, Comilla, Netrokona, Brahmanbaria, Jamalpur, Sherpur and Kishoregonj (Hossain et al. 2015). Thousands of men, women, and children are involved in the wider value chain of chapa – in fishing, supplying raw fish, processing (drying and fermenting), and trading. The chapa is not only consumed locally but has high demand in overseas, as well, for affluent non-resident Bangladeshis living mainly in Europe and USA and poor labourers working in Middle Eastern and East Asian countries. Traditionally Bangladeshi women, particularly rural women, are seen as most fond of food products that are hot and spicy with strong flavour to a greater extent than the men in the households. Accordingly, women are considered to like chapa more than men.

Commonly four freshwater barbs and four coastal anchovies are used as raw fish to produce chapa along with a number of freshwater and marine fishes that are occasionally used.

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Table 1. The fish species used to produce chapa

Uses	Common English name	Scientific name	Bangla name	Waterbodies*
Major species	Swamp barb	<i>Puntius chola</i>	<i>Chala punti</i>	R-F
	Pool barb	<i>P. sophore</i>	<i>Bhadi punti</i>	R-F
	Ticto Barb	<i>P. ticto</i>	<i>Tit punti</i>	R-F
	Spotted sail Barb	<i>P. phutunio</i>	<i>Phutani punti</i>	R-F
	Hairfin anchovy	<i>Setipinna phasa</i>	<i>Phaisa</i>	E-R
	Scaly hairfin anchovy	<i>S. taty</i>	<i>Teli phaisa</i>	E-R
	Hamilton's thryssa	<i>Thryssa hamiltonii</i>	<i>Phewa</i>	E-R
Occasionally used	Oblique-jaw thryssa	<i>T. purava</i>	<i>Phewa</i>	E-R
	Rosy barb	<i>Puntius conchonus</i>	<i>Kanchon punti</i>	R-F
	Olive barb	<i>P. sarana</i>	<i>Sarpunti</i>	R-F
	Coitor croaker	<i>Johnius coitor</i>	<i>Poa</i>	E-R
	Kuria labeo	<i>Labeo gonius</i>	<i>Gonia</i>	R-F
	Butter catfish	<i>Ompok pabda</i>	<i>Modhu pabda</i>	R-F
	Butter catfish	<i>O. bimaculatus</i>	<i>Kani pabda</i>	R-F
	Hilsa shad	<i>Tenualosa ilisha</i>	<i>Ilish</i>	E-R
Toli shad	<i>T. toil</i>	<i>Chandona Ilish</i>	E-R	

\*The sources of the fresh/raw fish; R-F – River and Floodplain; E-R – Estuary and River

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Table 2. The *chapa* stakeholders

Stakeholder groups	Involvement in the <i>chapa</i> value chain
Fishers	Permanent or part-time. Catch fish from rivers, floodplains, and marine environments and bring to landing centers, wholesale, and retail markets.
<i>Aratdars</i> (Wholesaler)	Mostly act as commission agents Fermented fish yard owners purchase fish from them though auction. <i>Aratdar</i> , after keeping commission (2-5% of the sale price), pay the fishers.
Yard owners	Owner of one or more fermentation units. Arrange capital, hire labour, purchase raw materials, and send ready-to-sell products to wholesalers.
Moneylenders	Give loans to yard owners, fishers and others, charge high interest but provide loans anytime without much paperwork and collateral.
Labourers	Permanent and temporary labour, including children and women, involved with day to day activities: bringing raw fish, salting, processing (gutting, scaling, washing, cleaning, salting) drying, packing etc.
Punti oil producers	Usually, women involved in gutting and scaling of freshwater barbs who collect the guts, scales and other byproducts. Upon arrival at the home, they boil the collected materials and extract the oil. Yard owners purchase the oil which they use to condition the earthen containers used for fermentation.
<i>Motka</i> (earthen container) Conditioner	These workers condition the earthen container (known as <i>motkas</i> ) using punti oil.
<i>Motka vorani</i>	Fill the conditioned earthen containers with semi-dried fish using special techniques.
Storage area owners	Once the earthen pots are filled, the yard owners bring the sealed containers to the storage owners and store them for 4-6 months to allow proper fermentation. Storage owners charge money to the yard owners depending on how long the pots are stored.
Wholesalers	Generally, wholesalers are rich businessmen and have wholesale shops in large markets. They purchase fermented fish from the yard owners with cash and credit.
Retailer	Retailers have small shops in fish markets or at the side of roads. They also can be mobile street vendors. They purchase fermented fish from the wholesaler using cash and credit.
Consumer	Mostly poor and middle-class people of the greater Sylhet-Mymensingh-Dhaka divisions consume <i>chapa</i> . There are two common preparations: <i>chapa</i> paste and <i>chapa</i> curry with vegetables. Commonly, women are held to prefer <i>chapa</i> more than the men.

## The Process



*Figure 1.* a) **Fishers** catching freshwater barbs and other fish in the haor (floodplains) of Mithamoin Upazila (subdistricts) of Kishoreganj District in northern Bangladesh to supply to drying yards. b) A group of coastal **Fishers** catching anchovies, Bombay ducks, and eel gobies at a fishing ground in the Meghna River Estuary. The catch will be dried in marine fish drying yards.



*Figure 2.* a) Fish are purchased by **Yard Owners** in a wholesale market in

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Sylhet to be brought to one of the largest fish drying, fermenting, and trading sites in the northeast – Massimpur by the river Surma. b) **Cart Pullers** in Nazirar Tek in Cox’s Bazar bring a cart full of small marine fish purchased by a drying yard owner in the fish landing site close to one of the largest fish drying yards on the Bay of Bengal coast. For delivery of each cart full of fish from landing center to the drying yard (distance about half a mile), the cart pullers each receive Tk. 100-150 (USD \$1 to USD \$1.20).



*Figure 3.* a) Marine fish are sorted (species-wise), washed, cleaned, and salted in a Nazirar Tek drying yard, Cox’s Bazar. Most of the **Labourers** are Rohingya (a stateless community from Myanmar) women and children. b) **Labour** - Women and children are processing (removing scales, fins, and gut) freshwater barb in the haor (floodplain in the north-eastern part of Bangladesh) region of Sunamgonj.

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*Figure 4.* a) During processing of freshwater barbs (punti), the guts and other byproducts are collected to produce oil for conditioning the earthen pots used for fermentation. b) A women **Punti Oil Producer** is boiling the punti guts and other byproducts to extract oil. She will sell the oil to fermentation **Yard Owners** @BDT 150-200/L.



*Figure 5.* a) Freshwater barbs (punti) are sun-dried in the Hakaluki Haor area, Sunamgonj caught from nearby floodplain. The semi-dried punti will be fermented to produce chapa. b) Anchovies are sun-dried in Nazirar Tek. When they are semi-dried, they will be packed and sent to floodplain areas of Sylhet, Brahmanbaria and Mymensingh for fermenting to produce chapa.

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*Figure 6.* a) A **Motka Conditioner** is rubbing punti oil on the inner and outer sides of earthen containers (motka) to condition them. Conditioning is essential as fish won't be properly fermented if the container is not prepared in this way. The pot needs to be rubbed with oil several times over the course of two to three days of sun-drying until the pots can no longer absorb any more oil. b) Earthen containers are rubbed with punti oil and placed on the bank of the river Surma, Massimpur, Sylhet for sun-drying to ensure proper conditioning.



*Figure 7.* a) A **Motka Vorani** (Container filler) washes and soaks semi-dried fish in the water of the river Surma, Massimpur, Sylhet. b) The earthen containers are in position (half-buried). Conditioned containers are ready to

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be filled with wet semi-dried fish by pressure (in Bangla 'chap', the root of the term 'chapa'). To make the containers airtight, at the top of the pressed fish dried punti powder is spread over the fish and the contained wrapped and sealed with a plastic sheet.



*Figure 8.* a) Sealed containers (motka) filled with fish in Lalpur Fermentation Yard (the largest fish fermentation facility of Bangladesh), Ashugonj, Brahmanbaria. b) The fish-filled containers are stored in a shady storehouse for about 6 months to allow fermentation, Lalpur, Ashugonj, Brahmanbaria.

**Storage Owners** charge BDT 50-100 for each container from the fermentation yard owners.

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*Figure 9.* Once properly fermented, chapa containers are sent to different wholesale markets by the yard owners. Often middlemen purchase from the yard owners and sell chapa in wholesale and retail markets.



*Figure 10.* Retailers and street vendors sell chapa to **Consumers**. Punti chapa (BDT 800-1200/kg) fetches 3-4 times higher price than the phaisa chapa (BDT 250-350/kg) at the consumers' level. a) Phaisa (marine anchovy) chapa. b) Punti (freshwater barb) chapa.



Figure 11. a) A **Retailer** selling punti chapa along with other dried fish in a rural market in Mymensingh. b) Wonderfully arranged Phaisa chapa in an aluminum bowl to attract **Consumers** in a retail market in Sylhet.



Figure 12. Rural women prepare a number of mouth-watering dishes from chapa. a) Punti chapa (under the spoon) cooked with sweet gourd and spices – salt, turmeric, vegetable oil, coriander powder, ground cumin seed, ginger, onion, garlic and chili powder and served with a number of fried, mashed, and curried leafy vegetable and gourds. b) The tastiest hot and spicy garlic chapa (*bhuna*) - chapa and all the spices except garlic are dry-roasted in a pan for five minutes and garlic and lukewarm water added and boiled for ten more minutes.

## Conclusion

Fermented fish, particularly chapa, has long been a traditional and highly popular food in Bangladesh. Chapa is particularly important for poor consumers, and its production provides a livelihood for large numbers of people who have few alternatives from Sylhet, Mymensingh, and Comilla floodplain areas. In general, it is a delicacy for poor and middle-class consumers from these areas, but many better-off households also regularly consume fermented fish, and there is high demand among non-resident Bangladeshis, particularly people originating from Sylhet and living in the UK and Bangladeshi workers originating from north-east and north-central Bangladesh working in the Middle east, Saudi Arabia, and other countries.

## Note

All photos in this chapter are by Mostafa A. R. Hossain.

## References

DoF, 2020. National Fish Week Compendium (in Bangla). Department of Fisheries, Ministry of Fisheries and Livestock, Bangladesh. 160 p.

Hossain, M. A. R., Belton, B. and Thilsted, S. H. 2015. Dried fish value chain in Bangladesh. WorldFish, Bangladesh and South Asia Office, Dhaka, Bangladesh. 122 p.