Collection of freshwater molluscs and sale of meat by women in Purba Medinipur, West Bengal, India

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Retail women traders extracting meat from freshwater molluscs (Pia globosa) at Mecheda point.

Economic benefits of common freshwater molluscs

The common freshwater snail *Bellamya bengalensis*, golden-coloured Indian apple snail *Pila globosa* and freshwater pearl mussel *Lamellidens marginalis* are naturally found in almost all Blocks of Paschim Medinipur[1] and Purba Medinipur districts in West Bengal. As gastropods, *B. bengalensis* and *P. globosa* have a spirally coiled univalve shell, while the bivalve *L. marginalis* is completely enclosed by pair of lateral shells. The meat of freshly collected adult *L. marginalis* is used by progressive *Macrobrachium rosenbergii* farmers in villages of Purba Medinipur as 25% of the daily supplementary feed ration. The meat is finely chopped, cooked with salt and turmeric, and softened. The chopped meat of these molluscs is used by small-scale catfish (*Clarias magur*) farmers in grow-out and broodstock ponds mostly in combination with other feed ingredients. Crushed *B. bengalensis* with shell is used to meet the protein requirements of farmed ducks in Purba Medinipur and other districts; others use boiled *B. bengalensis* and *P. globosa* with added salt to feed ducks. Crushed shells of *L. marginalis* are used @ 6-8% in formulated feed of three-month-old ducks. Machine-powdered shells of the molluscs are used in chicken feed in West Bengal as a calcium source, causing the eggshells to become desirably thick. Burnt shell lime (CaO) is produced from great numbers of shells of *P. globosa* and *L. marginalis*; that of the latter is used by women on riverbanks to segregate riverine *Penaeus monodon* seeds from other species. Live freshwater molluscs are natural biological purifiers, accumulate pesticide and heavy metal residues in the body from their habitat, and are used to assess and monitor the health of environment of open freshwater bodies.

More significantly, these are the “low-priced poor man’s meat”, aiding in rural nutrition. The Scheduled Tribe population in West Bengal comprises forty ethnic groups and

Paschim Medinipur, including Jhargram, is the most tribal-populated district in West Bengal (2011 census). Preparation of 'health food' from the meat of freshwater molluscs is frequent in homes of impoverished, underprivileged, and economically disadvantaged Scheduled Tribe and some Scheduled Caste people in villages of these two districts for meeting the daily protein needs of family members, traditionally preferred since long past. Owing to good nutritional value and taste, this unconventional animal protein is gaining popularity and acceptance amongst elderly middle- and high-income people in suburban areas, towns, and cities in West Bengal, who are conscious about its ethno-medicinal value. After collecting these molluscs, the elderly women of different Scheduled Tribe communities prepare soft mollusc-based family meals and sell small quantities of the raw meat in local fish markets after shell removal to generate some earnings. They eat cooked molluscan meat, wild edible mushrooms, pond mud dwelling *Amphipnous cuchia*, small riverine crabs, tubers, and *Moringa oleifera* flowers to derive necessary nutritional elements, not as pleasing tasty recipes.

Use in traditional medicine

Nutrient-rich molecules beneficial for human health are obtained from these edible benthic aquatic invertebrates. These 'village foods' are an under-exploited resource. Soup prepared from *B. bengalensis* meat used as a traditional remedy to treat asthma, arthritis, and joint swelling. Cleaned whole-bodied individuals are kept in water for few hours at home, and the water used as eyedrops to treat conjunctivitis. Consumption of the cooked meat is recommended for those suffering from vision problems and stomach upsets. Curry and soup prepared from *L. marginalis* meat is used as a traditional medicine to treat cardiac ailments and high blood pressure[2]. Freshwater snail meat used ethno-medicinally for treatment of poor eyesight, whooping cough, hypertension, arteriosclerosis, kidney-related diseases, and mineral deficiency[3]. Soup prepared from *B. bengalensis* foot is traditionally consumed by the tribespeople of Jharkhand state against bone and joint inflammation[4], a prestigious item of food here. In suburban areas of West Bengal, for children and elders, physicians recommend eating *B. bengalensis* to treat vitamin deficiency in body and nerve-related problems respectively[5]. Local experts opine that the slimy extract and meat of these species contains essential vitamins, allantoin, elastin, lectin proteins and minerals that may reduce the occurrence of human cancer and skin diseases; oligosaccharide serum secreted from body is used to treat pimples, maintain normal fairness of skin, and protect skin cells from harmful sunrays. Consumption of *B. bengalensis* and *P. globosa* meat is reputed to maintain proper distant vision.

According to some elderly women in Purba Medinipur and Paschim Medinipur districts with whom author met, men and women of Scheduled Tribes and Scheduled Castes use clear bluish slimy water contained inside *B. bengalensis* shell (4-5 drops/snail) just after extracting the meat as eye drops after getting up from sleep in morning, which they believe aids in clear vision. This information is passed down locally from ancestors to family elders to the next generation. Women during early period of pregnancy are advised to eat boiled *L. marginalis* with coriander leaves; the meat should be cooked for a minimum of 15 minutes. It is good for sportspersons and daily labourers as the meat contains retinol, tocopherol, cobalt, and high amount of zinc that facilitates increase in

Author with four tribal freshwater mollusc collectors.

Bellamya bengalensis.

Large Pila globosa.

Adult Lamellidens marginalis.

spermatozoa count in humans. In few fish markets in Kolkata city, molluscan meat is sold @ INR 200-300/kg and bought by elderly sections of society. Being a remedy for gout (a form of arthritis) in elderly men and women in urban and suburban areas of West Bengal, widows prefer to eat cooked meat during continuing 4-days observance of 'Ambubachi' in last week of June. These species are very good source of iron, that keeps away anaemia in children.

Collection of freshwater molluscs

During July 19-23, 2022, the author documented the state-of-the-art of large-scale collection and sale of these freshwater molluscs and retail trade of the meat for human consumption, conducted separately by two groups of professional village women on almost daily basis. Elderly Scheduled Tribe women belonging to BPL category, residing at Polanda Village (10-12 km from Akandi-Mondolpara village and in between Mecheda and Tamluk towns) under Raghunathpur-II Gram Panchayat in Sahid Matangini Block of Purba Medinipur; Balichak Village in Debra Block of Paschim Medinipur; and Shyamchak Village in Kharagpur-II Block of same district, collect these molluscs from natural stock as income-generating activity. Scheduled Tribe and Scheduled Caste women in a few other Blocks also involved in it, with the activity originating in 1978-1980.

In early morning, women enter static freshwater bodies in nearby and distant locations and move along slowly searching the bottom for *L. marginalis* and *B. bengalensis* with both hands. Handfuls of those picked up are kept temporarily in a sack-like small space made near abdomen and down to knee out of a portion of their traditionally worn folded cotton saree; it is termed '*sareer kochhor*' in local dialect. They are also kept inside a space made by folding an ankle-length outer skirt tied at the waist. Some *L. marginalis* collectors fit a cement- or gunny-bag on their back near the hip. For collection in depth of 1.2 m and above, Scheduled Tribe women dive and remain underwater for five seconds or more up to their capability with their eyes closed, but in less deep (waist-high water), hands are extended down after bending with head kept above the water level. *L. marginalis* is also collected from water hyacinth-infested areas of shallow wetlands. Tribal boys and youths dive into deep water bodies to collect them; less are available in shallow areas and more towards the middle. From medium-sized ponds with a good quantity of *B. bengalensis*, the women can collect around 5 kg in two hours.

With their sarees turning heavy, they put collected animals over the embankment of the water body. Until around 2.00 pm, each collector goes on moving from one area to another in the same water body and in those nearby. The entire collection of one or both species (10-50 kg/woman/day), are placed in 1-2 cement sacks of 25-50 kg capacity, light in weight made from woven polypropylene fabric. The women's eyes turn reddish after working for continuing 5-8 hours and they face hardship and bodily pain. Scheduled Tribe women of Polanda, Balichak and other villages collect molluscs from ponds and larger water bodies (4,000-5,000 m^2) existing in the same village. Or else, they board a local train at nearby railway station at 3.30-4.30 am, and travel to pre-planned sites in distant villages in Purba Medinipur and Paschim Medinipur and begin routine work from morning.

Tribal women collecting snails from a medium-sized pond.

Close view of collection of B. bengalensis.

Large carp culture water bodies at Moyna - good source of L. marginalis.

Some Scheduled Tribe women choose less-deep large pisciculture water bodies ('jheels' or 'jheel fishery' in local dialect) as *L. marginalis* and *B. bengalensis* collection sites, and able to get more every day; 2-4 women may work in single such water body. The owners of jheels are paid an amount of money, thereafter collectors are permitted to enter. Such water bodies are located at villages such as Moyna and Srirampur in Moyna Block; Ramtarak in Sahid Matangini

Block; Ranichak in Haldia Block and other places in Purba Medinipur. The jheel fishery of Moyna, Sutahata, Panskura, Sahid Matangini, Haldia Blocks in Purba Medinipur and the 'Moyna model' are well-known destinations practicing of major carp farming through-out West Bengal[6], and a good source of *L. marginalis*. Some women individually 'hunt' for these species every day in 8-10 small- to medium-sized ponds. Collection is easy during March-June as the water level recedes. The depth of such village ponds, typically older and a good source of *B. bengalensis*, is greater than that of jheels in Purba Medinipur. Many professional major carp farmers don't prefer their presence in fishponds.

P. globosa is collected by women from paddy plots in villages, which is easily done singly by hand-picking from low-lying water-logged plots (10-20 cm depth) with planted paddy saplings from early monsoon season. It emerges out from beneath the soil after the first rain in the season, remains alive up to 12 months in moist earth, and can survive in completely dried soil in main plot and marginal areas near narrow earthen embankments. After harvest of rabi paddy during April-May & May-June and another crop in November-December, experienced elderly Scheduled Tribe women collect *P. globosa* from the dried earth on the side of embankments using the sharp end of an iron sickle. Dry soil 10-15 cm deep is scooped out and live adults located; they are also collected from partially aquatic grass-infested and water-logged village lowlands, around 15-22 cm deep. Collection of the other two species is difficult during the monsoon months till September (though the availability of *B. bengalensis* is more) as the water depth increases in ponds and large water bodies; *B. bengalensis* are hand-picked from the less deep village ponds, canals, and water hyacinth-infested wetlands during the monsoon.

All three species are also found in littoral vegetation areas in the margin of beels, where they are collectively considered part of the 'weed-associated fauna'. During summer, *L. marginalis* and other species of edible freshwater mussel are obtained more from shallow sandy-bottom zones of slowly flowing rivers in villages and may be collected @ 4-20 kg/person in 4-5 hours. According to the women, these mussels contain more meat with regards to their body size, in comparison to *L. marginalis*.

Arrival at common point and sale of meat

Between 2.00-3.00 pm every day, around 6-9 women, each with 25-90 kg of freshly collected shellfish, arrive near the junction of Mecheda Central bus stand and National Highway-116 at Mecheda road bridge. Molluscs are brought in sacks loaded on a Matador Goods Carrier four-wheel and 10-seater 'Magic' vehicle, in the luggage compartment of a long-route luxury bus. Beside a road adjoining NH-116 (about 150 m from Mecheda bus stand and railway station), collectors from different villages ranging from 10-50 km away, and women buyers-cum-mollusc traders (retailers) gather and stay till 5.30-6.00 pm. *P. globosa*, *L. marginalis* and *B. bengalensis* are weighed all separately and sold to 12-15 women buyers every day, who are residents of Akandi-Mondolpara village (4 km from this point) under Santipur-II GP, Sahid Matangini

Above: Woman collecting B. bengalensis from a backyard pond. Below: Cleaning P. globosa for cooking at home.

Block, Kolaghat Police Station, Purba Medinipur. They typically belong to poor Scheduled Caste or Other Backward Class households and are of 45-65 years in age.

They buy whole-bodied *P. globosa* and *L. marginalis* @ INR 10-12/kg with price increasing to INR 12-15/kg in winter months, sometimes up to INR 25-30/kg, and pay instantly to collectors. *B. bengalensis* meat has the most protein content; sold normally @ INR 14-15/kg. Buyers reach Mecheda railway station carrying live molluscs (15-35 kg for every time; selectively single species or any two in total) in sacks at 2.30-3.00 am the next day. They board into the vendor compartment of the first Mecheda-Howrah local train, reaching places such as Santragachhi, Tikiapara, Dasnagar, Kadamtala, Sankrail, and Ramrajatala in Howrah district, West Bengal

(42-50 km from Mecheda railway station); regular sale and good demand for molluscan meat exists in fish markets of these suburban regions.

Excluding Saturdays, these women molluscan meat traders sit on the market grounds and roadsides at 7.00 am and cut open the shells of *L. marginalis* individually with a steel knife. The outer lip and peristome of hard operculum (aperture) plate of *P. globosa* and *B. bengalensis* is cut by hammering with the pointed end of an iron sickle. Soft meat from individuals brought out one after another, is sold to general buyers (customers) @ INR 10-15/100 g for *P. globosa* and *L. marginalis* and INR 15-20/100 g for *B. bengalensis*. Around 100-250 g of raw meat fit for human consumption is obtained per 1 kg of whole-bodied *B. bengalensis* and *P. globosa* after discarding the blackish non-edible portions of the whole flesh, and 250-350 g/kg for *L. marginalis*. Fresh meat of the three species is sold separately. A few women individually buy up to 45 kg from collectors during evening, with half used the next morning for extraction of meat and sale; the rest stocked at home in big water-filled earthen vessels 'maateer mejla' for a second day's use. After buying, some of them patiently cut the operculum of all *P. globosa* at Mecheda point till 6.00 pm. It remains alive, water comes out from shell, *P. globosa* sacks turn lighter in weight, and become easier to be carried to the marketplace next morning. Meat is extracted and sold quickly.

Some women observe fasting 'Upobash' for religious reasons on Thursdays and Saturdays, then buying and selling of molluscs occurs on a smaller scale at Mecheda point. Sometimes women traders bring out meat from whole-bodied individuals separately during 5.00-6.00 pm here, preserve it in crushed ice overnight, for sale to buyers at dawn @ INR 60-100/kg at Sankrail. During 1988-1995, women of Akandi-Mondolpara village bought molluscs @ INR 1-2/ kg and *B. bengalensis* meat sold then @ INR 5-6/100 g. They make return train journey to Mecheda boarding at Santragachhi, Tikiapara, Sankrail, Ramrajatala railway station at 12.30-1.30 pm. Before coming home, women traders stay at Mecheda point till 5.30-6.30 pm to buy and ensure the lot of fresh molluscs for the next day in desired amount. Good understanding, communication and faith exist between regular women collectors and buyers-cum-vendors (retailers), i.e., meat traders in money matters and assured supply of molluscs, with experience in the profession. Women traders wait for collectors to arrive; some sell meat of one species and some sell two species separately.

Cooking molluscan meat and other facts – women's point of view

The author was informed by women of Akandi-Mondolpara that from 5.00 pm up to 8.00 am next day, *B. bengalensis* (that bought by women traders) remains alive but *P. globosa* can survive for a much longer time. *B. bengalensis* resides in deeper portion of backyard homestead and other small- to medium-sized village ponds (600-2000 m^2) and jheels during winter (thus collected in lesser amount), coming up to the water surface and pond margin in spring, summer, and early monsoon months in the morning hours. It inhabits areas with thick deposition of decomposed organic matter on mid-pond bottom and towards the periphery, attaches to submerged hard objects, thin portion of tree roots, and stem of macrophytes under the water, sloping down to soil junction

Collectors unloading sacks of freshwater molluscs at Mecheda point.

Separation of B. bengalensis and L. marginalis after collection.

in knee-deep peripheral waters. It moves down in forenoon and later hours and becomes difficult to collect. During winter evenings, women place 2-3 large dry palm tree leaves over the mid-pond bottom; good numbers of *B. bengalensis* attached to its surface, which is lifted after 24-48 hours to get the animals. Of the three species, the least amount of meat is obtained from it, but it is collected abundantly by women in some village ponds, seemingly endless in number.

At the front yard of homes, women place freshly collected *B. bengalensis* over a large banana leaf, the opposite end of a 7-10 cm sewing needle or safety-pins used to extract meat after detaching the operculum (aperture) singly in 3-5 seconds. Meat is washed in water after adding common salt, again in hot water. *B. bengalensis* and *P. globosa* are kept intact in hot water for 5-10 minutes, with the operculum manually detached from the body easily. Cream-white *P. globosa* meat is extracted out with the pointed end of sickle; 40-50% of its inedible interior-most flesh separated and fed to ducks at home. The blackish portion of *B. bengalensis* flesh also fed, which improves egg yield. *L. marginalis* meat is extracted by women using 'boti' (30 cm high curved cutting blade held down on wooden platform) or a sharp knife. *L. marginalis* and *B. bengalensis* are caught in good numbers during dewatering of ponds and jheels or drag netting for harvest of freshwater fishes from it. *L. marginalis* is found

more in medium- to large-sized clean water bodies, slightly greenish, maintained for pisciculture with less clay percentage in the bottom soil.

In some village households, before cooking, whole-bodied *L. marginalis* is boiled for a few minutes and the meat extracted. Women spoke about *P. globosa* falling prey to exotic openbill stork *Anastomus* sp., which gather in good numbers at early morning in shallow wetlands and water-logged fields in Purba Medinipur. They draw long beaks into the bottom mud to get it, break open the shell in the mouth between the arched upper and recurved lower mandible and eat its flesh. The migratory brahminy ducks and herons also enter weed-infested wetlands in winter to feed upon *B. bengalensis*, *P. globosa* and other aquatic creatures. Large triangular-shaped split bamboo frame nets with wooden handles are used to collect *B. bengalensis* and *L. marginalis* from shallow wetlands for cooking at home, pushed forward over aquatic vegetation or the bottom. Animals are directly kept in an aluminium hundi or bucket.

As an instance of traditional heritage, even three centuries ago, very poor women collected *B. bengalensis* and *P. globosa* from narrow freshwater canals (near Damodar River) and local ponds in eastern Bardhamaan, West Bengal using 'gamchha' and 'jhuri' and ate its cooked meat during food scarcity. Less-spicy gravy-based curry is prepared using its meat, the edible vine of green gourd, *Asteracantha longifolia* plant ('kulekhara sak'), papaya, fig fruit, raw banana, and potato - a traditional health recipe for sick and recuperating persons at homes in Scheduled Tribe (Adivasipara) and Scheduled Caste dominated villages. *L. marginalis* meat is eaten by Scheduled Caste households after making a thick and tasty gravy with onion, garlic, potato, and spices.

Weighing and selling of P. globosa (above) and B. Bengalensis (below) to women retailers.

Quicklime production

Towards the end of market hours in Howrah at noon, women traders sell empty shells to local people @ INR 100-120/50-70kg, for clear white quicklime (CaO) production in Amta Block, Howrah and other places. In village conditions, heaps of sun-dried *L. marginalis* and *P. globosa* shell are burnt producing burnt shell lime or quicklime, superior in quality than limestone powder, used routinely by progressive major carp farmers as an essential input in jheels and fishponds under their possession. In small units in Purba Medinipur and other districts in West Bengal, pieces of fuelwood, dried cowdung cakes and kerosene oil are used in traditional circular big clay ovens termed 'chulha'. Dried shells are stacked inside chulha in layers over bricks as a base, and burnt at a very high temperature for 20-25 minutes with continuous waving of big hand fan to blow air inside it and keep up the intensity of the fire. Thermal decomposition of $CaCO_3$ occurs, burnt shells are pulverised, sieved and powdery CaO is produced; about 30 kg obtained from every 38-40 kg sun-dried shells.

Woman extracting B. bengalensis meat.

Limestone powder is harmful for human health but quicklime is edible with betel leaf when converted into slurry-type $Ca(OH)_2$; 150-180 kg produced from every 50 kg powdered burnt shell. It can treat jaundice in youths when eaten with sugarcane juice, may be consumed in wheat grain size daily by healthy adults. Since *L. marginalis* is collected in lesser amounts during the monsoon months, burnt-shell lime is not produced in this period. Treatment of its meat-extracted fresh shells with bleaching powder (@ 200-250 g/2-3 kg shell) and water eliminates the blackish brown colour, thereafter, made to burn. CaO neutralises water and bottom soil acidity in fishponds and disinfects the pond bottom.

News on women mollusc collectors

News appeared in a Bengali newspaper dated 9/5/2019 on daily collection of these freshwater molluscs by tribal women in the summer and early monsoon months from wetlands and other water bodies of Howrah district as means of living. The Lodha-Sabar people, an Adivasi of Munda ethnic group tribe, are less involved in crop cultivation and dependent on capture and collection of economically important living resource for food and livelihood.

From Kharagpur in Paschim Medinipur, 5-15 Sabar women go to Kharagpur-Howrah on the local train every day at dawn, and get off separately at Phuleswar, Abada, Bagnan, Mourigram railway stations in Howrah. After a thorough search and collection till late afternoon with full effort, they return and sacks of collected molluscs (either whole-bodied or extracted meat) are sold at Gidhni fish market in Jamboni Block and other markets in Jhargram and Paschim Medinipur. They collect molluscs from nearby water bodies in afore-mentioned stations or travel again by bus to villages at farther distances. Since recent past, they pay INR 4,000 for five months to owners of each large fish culture water body, and thereafter are allowed to enter for collection. At platform areas of Panskura, Haur and Radhamohonpur railway stations on their way of return, women traders (retailers) buy a portion of whole-bodied *P. globosa* and *L. marginalis* from them @ INR 5/kg and *B. bengalensis* @ INR 8/kg. Women collectors get cash in hand; the rest is sold to traders near Kharagpur station. Many mollusc collectors live at Chak Sahapur village near Balichak railway station in Paschim Medinipur. As these are much less abundant in seasonal water bodies in water-scarce regions in Jhargram District, Scheduled Tribe women travel to Howrah to collect. They also eat the cooked meat at home.

During and after the COVID-19 induced lockdown period since March 2020, many day labourers and low-income persons in rural West Bengal, as in Bispur village of Hingal-ganj Block, North 24 Parganas district, West Bengal, lost their jobs while in work outside West Bengal and had to depend upon these freshwater molluscs and leafy vegetables as a two-time meal daily. Local Scheduled Caste and Scheduled Tribe women seriously collected *B. bengalensis* from nearby ponds (Source: Anandabazar Patrika, 18/5/2021). In 'no work' circumstances in north Bengal, hundreds of Scheduled Tribe adults that are normally tea garden workers and their children depended on edible riverine snails, mussels, and crabs to combat nutritional deficiency (Source: ETV West Bengal, 4/4/2020).

End note

From a publication in 2008, we know that Scheduled Tribe and Scheduled Caste women of Pakui and Chak Sahapur villages in Debra Block, Paschim Medinipur, earn a living by selling *B. bengalensis* after collecting from natural sources in afore-mentioned places of Howrah. They either sold extracted meat in fish markets in Howrah @ INR 40-50/kg, or whole-bodied material to retail traders at Panskura and other places directly @ INR 2-3/kg. Each of them collected at least 20-30 kg of molluscs (three species in combination) every day; their income was INR 400-2,000/woman/month. At Gate Bazar in Midnapore town in Paschim Medinipur, 250-400 kg of *P. globosa* and *B. bengalensis* is available every day

Different method of extracting B. bengalensis meat.

for sale. Whole-bodied and meat-extracted material is sold here @ INR 4/kg and INR 50-60/kg respectively. Every day 60-70 kg of freshwater molluscs is sold at Miya bazaar in this district[5]. Makhanbabur bazaar in Haldia is a prominent place in Purba Medinipur where molluscan meat is sold. During February 2010 to January 2013, *B. bengalensis* meat was bought by general consumers in five different markets in Midnapore town @ INR 9-12/100 g and whole-bodied animals @ INR 6.90-9.80/kg, both retail rates, during pre-monsoon, monsoon, and post-monsoon periods. Daily income of *B. bengalensis* collectors at Pakui and Chak Sahapur villages was in the range INR 250-300 and for retailers (meat traders), it was INR 300-350[7].

In West Bengal, these freshwater molluscs are sold in markets of districts Purulia, parts of Bankura, undivided Midnapore (Purba Medinipur, Paschim Medinipur and Jhargram), Jalpaiguri, Howrah and parts of Kolkata. In a regular market in Jhargram, more than six bags (about 250 kg) of whole-bodied *B. bengalensis* sold @ INR 5-7/kg and *P. globosa* @ INR 4-5/kg. In some markets in Kolkata, extracted meat out of 10-20 kg whole material is sold every day in fish and vegetable markets with shell @ INR 10-12/kg and meat @ INR 40-50/kg[8]. At Gangnapur village in Nadia district, West Bengal, male *B. bengalensis* collectors sell extracted meat to traders @ INR 50-60/kg. They opined that it is easily available in local ponds, caught from turbid waters after clearing bushy water hyacinth, with meat squeezed out after hammering the operculum. Its meat costs INR 70-80/kg in market - much lesser than the price of the same amount of chicken, mutton, other non-vegetarian items that they can't afford to buy everyday (Source: G. Singh, The Quint, 10/4/2018). Sri S. Singh Roy, proprietor of Makalpur organic farm, Polba-Dadpur Block, Hooghly district, West Bengal informed the author that *B. bengalensis* helps as 'floor cleaner' and in removal of silica from village ponds. It is a zero-cost protein, easily digestible, a wonderful nutritional supplement in villages that needs to be promoted and may be included in the Mid-day Meal programme for primary and upper-primary stage children in schools in suburban and rural West Bengal in near future.

About 5,000 villagers inhabiting in vicinity of East Kolkata Wetlands and Canning-I Block in South 24 Parganas District, West Bengal collect *B. bengalensis* from medium- and large-sized freshwater bodies as means of livelihood. The meat is sold at Ultadanga, Ballygunge, Dum Dum, and Garia fish markets in Kolkata city and outskirts @ INR

100-250/kg (Source: Eisamay News channel, 27/3/2017). After collecting molluscs in a thin, coarse cotton towel worn at the lower abdomen (termed 'gamchhar kochhor') and split bamboo basket, non-professional Scheduled Tribe women sell *B. bengalensis* meat to a few customers in local markets in Purba Medinipur only in small quantities @ INR 50-70/kg, along with edible roots of wild terrestrial plants having medicinal importance. As additional daily income, a few elderly women at Akandi-Mondolpara collect common edible freshwater plants *Marsilea minuta*, *Enhydra fluctuans*, *Ipomoea aquatica*, *Asteracantha longifolia*, *Cantella asiatica*, and *Nymphaea* sp. from natural freshwater bodies near home beforehand and keep small amounts with them for sale in Howrah markets in addition to molluscan meat, the main item. Often most of it remains unsold even being low-priced and good quality leaves. Many general buyers in city and suburban markets may not be aware of the health benefits provided by edible green aquatic plants. These poor Scheduled Caste women know much about it by virtue of their indigenous technological knowledge, work very hard for a decent living.

Meat of these three freshwater molluscs has a good market value in the south-western districts of West Bengal, with demand rising among middle and high economic classes, and provides an essential source of income for both poor women collectors and meat traders in Purba Medinipur and Paschim Medinipur. But the continuous capture of resources available in nature on a large scale and their supply for human consumption may cause marked depletion of stock soon. For *P. globosa*, predation by waterfowl and application of insecticide in wet paddy fields adds to the cause. In shallow and clean 160-600 m^2 backyard village ponds and 'doba', cultivation of *P. globosa* and *B. bengalensis* may be taken up after creation of a favourable environment for their natural breeding and adults stocked from outside. Scheduled Tribe and Scheduled Caste women in general and rural youths can do it with technical guidance of experts, little investment, and effort.

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