

# Collection of tubifex worms from the Adi Ganga canal, West Bengal as means of livelihood

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Sample of tubifex in Sri Alam's home.

Openly-flowing sheets of malodorous black water in Kolkata city are obviously a matter of extreme dislike for people, but such water is the lifeline of two communities: Firstly the fish farmers beyond the eastern fringes of Kolkata who depend upon domestic sewage of the dry weather flow channel as a source of nutrients to sustain plankton production in fish ponds/wetlands; and secondly, the semi-poor city people, who harvest the tubifex worms (*Tubifex tubifex*) as a livelihood, from a stretch of foul and derelict waterway named Adi Ganga. The present communication is similar in nature to a publication<sup>1</sup>, which had highlighted on the harvest and sale of live tubifex worms by the poor from the heavily-polluted Saigon River, which supports ornamental fish production in and around Ho Chi Minh City, Vietnam.

## The Adi Ganga

Adi Ganga is a course of the Hooghly/Bhagirathi River in Kolkata city. The Hooghly flows by West Bengal and forms part of the mighty Ganga downstream. It is a 15.5km stretch of canal from Hastings to Rajpur in outskirts of Kolkata

and appears for much of its length like a flowing sheet of wastewater. On its way, it crosses Rajpur, Garia, Tollygunge, Kalighat, Alipore, Khidirpore and Hastings in succession and finally confluences with Hooghly River at the point Dahi Ghat. Several settlements of mostly poor people and cowsheds are established on both banks of its entire stretch; temporary toilets open directly into water of the Adi Ganga. Sewage-fed water becomes enriched with organic matter, favouring the natural production of tubifex worms on the stretch of quiet muddy land on both banks, left uncovered during the ebb tide and in bottom sediment. The availability of tubifex worms provides a livelihood opportunity to poorer local people; particularly it is collected in the 2,000 m stretch between Hastings and Kalighat crematorium.

## Use of tubifex for larvae of cultivable catfishes in West Bengal

Apart from being a favoured food of aquarium fishes, tubifex is also crucial as live food for early stages of hatchery-produced economically-important catfishes. In production



*Exposed bank of Adi Ganga.*



*Mud collection - another view.*



*Sieving mud and detritus from the Adi Ganga.*



*Silt is the main source of tubifex, collected in a container.*



Continuous water-flow system in tubifex containers.

of fry stages of *Pangasianodon hypophthalmus*, minced tubifex worm is used as feed everyday @ 3kg/1,320 m<sup>2</sup> pond in addition to powdered milk suspension and a liquefied mixture of groundnut oilcake, shrimp feed dust and Agri-Min feed supplement from the first until tenth day after stocking *P. hypophthalmus* spawn in earthen nurseries (Sri Babul Majumdar: personal communication). In hatchery conditions, finely-chopped tubifex is supplied from the seventh day onwards to young *Ompak pabda*, twice a day at about 25% of the body weight of spawn up to 15 days<sup>2</sup>. In addition to zooplankton, chopped tubifex filtered through a nylon net, adequately washed in freshwater and disinfected with didecyl dimethyl NH<sub>4</sub>Cl has been fed to larvae of *Clarius batrachus*; the fry stages (15 to 45 days) strongly prefer whole tubifex worm and shows best growth and survivability with tubifex, among other feeds used. Better growth from tubifex may be attributed to higher crude protein content (65%) in comparison to other feeds<sup>3</sup>.

### Working in dirty waters

I conversed with Md. Dastagir Alam and his nephew Mr Sonu Ahmed, residents of Canal Road, Khidirpore, near Hastings on the eastern bank of the Adi Ganga. They have been involved in this profession, collecting, gathering and selling tubifex worms on a commercial basis, since 2003-2004. Every day Sri Alam works for 3.5-4 hours, normally from 10am until 2pm or during the ebb tide covering a distance of 150-200 m. He walks uneasily through foul muddy conditions and collects palms full of thick soft mud from undisturbed exposed banks of the Adi Ganga by scratching over it with fingers quite a few times in many areas. Sediment material lying at 15-18 cm depth beneath water column is also collected by right palm.

After collecting 12-15kg each time in a fine-meshed nylon net (which takes the shape of a white mesh string bag), the entire material is sieved in water at 0.45-0.60 m depth. Clay particles and muck are cleaned and filtered out and the tubifex worms and detritus are retained inside the net. This semi-solid detritus-type material, weighing 1.0-1.5 kg, is kept in large durable translucent plastic packets. The practice of mud collection and sieving is continued many times at different locations and 60-70 kg of material that is retained is accumulated in plastic containers, Sri Alam explained. It is a tedious process of cleaning several kilograms of muck and working in dirty water in the hope of finding tubifex worms. The worms are abundant in organic-rich waters because of the rich food supply, and because they have a high tolerance for low dissolved oxygen conditions.

### Isolating tubifex worms

After collection, the entire wet semi-solid silt material is brought at home and evenly spread in a 1.2 m x 0.9 m chamber (temporarily constructed with bricks) with a plastic sheet laid at the bottom. Tube well water is added to a depth of 12-15 cm. A large squarish floating frame made of mosquito net cloth is placed over the spread mass and finally the entire structure is covered with two sheets of old flex material such that the inner surface of flex does not come in contact with net frame. Within next one hour, in conditions of the complete absence of light and when temperature at the bottom starts to rise, tubifex worms leave the silt/sediment material, start surfacing and reach the surface of the net frame, moving through its mesh from below. Sri Alam collects the mass of tubifex over the net frame, washes it 2-3 times with clean water to remove residual mud and packs it in 500 g glass bottles. Each such bottle of tubifex is sold to aquarium shops for Rs 16-18/-. Tubifex is also transported to the site of



*Sri Sonu collecting mud from bank.*



*Silt material retained in nylon net.*



*Mincing of tubifex worms.*



*Preparation of tubifex for mincing.*



*Sieving of initial material in water.*



*Silt material containing tubifex.*



*Sri Alam collecting mud material.*



*60-70 kg of silt, the result of a day's collection.*



buyers in plastic containers; 3 litres of clean water is added to every 6 kg tubifex. Some professional ornamental fish farmers in Amtala region of South 24 Parganas procure tubifex worms of Adi Ganga @ Rs 25/- per tea-cup full of mass (Sri Tapan Mondal: personal communication).

In post-monsoon, winter, pre-summer and summer months, Sri Alam gets 6-8 kg tubifex every day from the silt material collected and earns Rs 200-300/- by supplying it to ornamental fish culturists and aquarium shops in the same evening at places like Behala, Amtala, Bishnupur in South 24 Parganas District; Belepole, Domjur, Howrah CTI near Dasnagar in Howrah district and even to *C. batrachus* seed producers in North 24 Parganas District, West Bengal. The practice becomes more cumbersome during the monsoon months when Sri Alam has to work for 7-8 hours a day at 1.2 m water level, even at ebb tide. His monthly income ranges between Rs 6,000-8,000/- (US\$86-100). If not sold completely on same day, Sri Alam stores his mass of tubifex worms in temporary rectangular storage chambers 1.2 m<sup>2</sup> in area with 20-22 cm water depth. In the absence of a continuous mild clean water flow system, he makes water replenishment once in every 45-50 minutes.

### Risk and threat involved

According to Sri Alam, this practice begun in 2003-2004 when there was a good demand of tubifex amongst seed producers of *Clarius gariepinus* at some scattered areas of Bongaon, Basirhat in North 24 Parganas District. Early fry of *C. gariepinus* in hatchery conditions were fed with 'blood' material prepared after mincing tubifex worms. Presently seed production of *C. gariepinus* is forbidden in West Bengal but sectors/vocations like ornamental fish farming in backyard

ponds and indigenous magur *C. batrachus* seed production in cement cisterns have developed and prospered, where tubifex worms have a significant contribution.

The practice of tubifex collection from Adi Ganga has suffered a setback. Initially 30-40 slum inhabitants in the region between Hastings and Alipore (700-750 m) were involved in it but presently it has come down to 5-6 persons. One had earned Rs 500-600/- / day during 2003-2004 by supplying tubifex to aquarium shops but presently its demand as ornamental fish food and market price has reduced. Protein-rich dry granule-type feed brought into market by Chinese ornamental fish food manufacturers are preferred by aquarium shop owners in West Bengal over tubifex worms. Tiny dough balls made of wheat flour heated in frying pan, dry wheat flour in baked/heated form or pieces of half-cooked chapati roti (flat round bread comprising wheat flour, salt and water cooked on griddle) are also being fed to red molly and other live bearers and gold fish under culture, Sri Alam stated.

Collection of tubifex worms from the sewage-laden waters of Adi Ganga involves high risk of skin infection to people like Sri Alam and others. Small pieces of broken glass, shaving blades, tin sheets, discarded syringes, stitching needles and fountain pen nibs are components of rubbish dumped on the banks of Adi Ganga. These may inflict painful bruises and wounds on those walking barefoot through the muddy waters. Some people have had to leave this profession on account of such incidents.

Scientists of ICAR-CIFA have developed production systems of cultured tubifex in captivity<sup>2,4</sup>, which will serve as a source of supply in addition to that exploited by skilled persons from natural repositories such as the Adi Ganga.



Tubifex worms in ornamental fish farm.



*Tubifex stored in C. batrachus hatchery.*

#### References

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