

Banned without effect

Wild Shrimp Seed Collection in Hoogly
Estuary, West Bengal
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Travelling into the heart of estuarine West Bengal, we discovered hundreds of fishermen collecting hapless little creatures from the turbid waters of the River Hoogly. Stamped on paper as a banned activity, these fisherpeople



nonchalantly went about their daily collection without a qualm. Wild shrimp seed in the Hoogly estuary in eastern India, even today, remains widespread and engages a great part of the river bank

population. During peak season (May-June), (when our team conducted a survey comprising of about a hundred odd houses in the Raichak area) the whole village was seen to be collecting seed including men, women and children. The group of seed collectors consists of a wide array of people, from young boys with small sieves and active seasonal fishermen with several gears to women who use indigenously fashioned nets to glean the waters. The middlemen who procure the seed, usually visit the area twice a day to purchase the seed from the collectors. They then sell it further, to rich fish farmers.

Gears used for the operation are very fine sized mesh (mosquito nets with about 1 mm mesh), nets and trawls, pushed or passively set against the tidal current. To segregate the shrimp seed, the fisherman uses a small plastic plate, spoon or shell to lift up the shrimp juveniles. The shrimp seed differs depending on gear as well as seasonal and hydrological conditions and the daily catch during peak season can be as much as 100 to 500. The daily price per seed differs between seasons as well as time of the day. On average the middleman will pay about Rs. 0.20 to 0.50 per seed but in the study area, researchers found the price to be as high as Rs.1 for a single 5 mm sized seed.

The larger issue that haunts environmentalists is that during collection, other aqua species that are caught are destroyed. This bycatch is dominated by cnidarians, molluscs, other crustaceans and fish larvae. During segregation of shrimp

seed, the bycatch was observed to be emptied on to the levee where it quickly sundried and died. Data procured from here showed a target species ratio of 6 percent only. Thus there remains an enormous gap between bycatch and target species which poses as a threat against other populations and the whole estuarine ecosystem.

The objective of this survey is to ascertain the extent of the collection undertaken and the sale channels in the Hoogly estuary. The livelihood of the fishermen and the potential problem

with bycatches in seed collection will also be outlined as a threat against the ecosystem of estuarine Ganga.

The natural stocking procedure was abandoned due to low efficiency and the risk for unwanted predators entering the pond. Seed or eggs for stocking were caught in the wild and the resource seemed to be never ending. The development of shrimp farms in West Bengal, Orissa and Andhra Pradesh has been explosive. *Penaeus monodon* is the main species for commercial shrimp aquaculture in India as well as in the rest of the world. To meet the demand of seed from aquaculturists, hatcheries are coming up. The development of hatcheries may have reduced the need for wild caught seed, but the practice is still prevalent because wild seed is believed to have more disease resistibility. In recent times there has been an increase in the demand for tiger shrimps in the global market. This has led to an increase in cultivation of tiger shrimps and therefore a major increase in the exploitation of wild shrimp seed as well as a high demand for hatchery produced seed and lower mortality.

Life cycle of a shrimp

For all known members of the *penaeid* family, the development from egg to adult, are similar. It is characterised by the change of habitat, depending on the developmental stage, where the adults spend their lives offshore and spawn at depth of 30 to 60 metres. When the egg hatches the nauplii start feeding on plankton. In the post larval stage they migrate to near shore areas, like estuaries or mangrove coasts, where the nursery grounds are located. In this nutrient rich water further growth takes place and when the shrimp is in a subadult stage it migrates again to offshore areas. It is thus collected at its post larval stage when it looks for nursery grounds near the shores. The shrimp post larvae are very tough and do not suffer damage from handling (collection, segregation and distribution). We could not procure data on mortality rates during collection and segregation but transportation from the middlemen to the stocking ponds resulted in a mortality rate of 4 to 10 percent according to the survey.

Survey method

The Raichak area was visited in early May 2007. Information about fishing methods in wild seed collection

Location: The study area is located in the Raichak area of South 24 Parganas, (closest railway station is Diamond Harbour), West Bengal, where the River Hoogly takes a wide turn southwards. It is about three hours by road (74 kms) from Kolkata. The river is broad here, with wide riverine dark, sticky, mud filled banks and high levees.

was collected by open ended interviews with seed collectors in the field and by direct observations. Regarding information about daily and seasonal catches, price, market channels and distribution of wild caught seed, it was collected using interviews, mainly with key informants and middlemen. A total of hundred households were surveyed and in most

Background

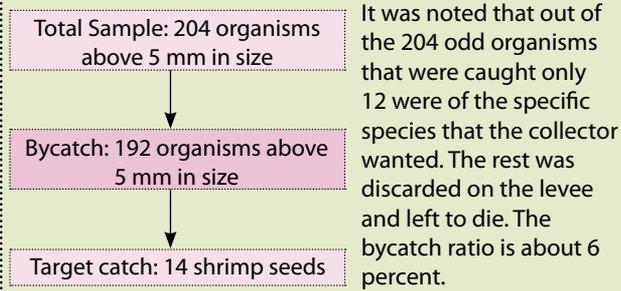
Brackish water aquaculture has a long tradition in the world. Paddy fields in lowland areas were used for culturing finfish and shellfish. Spring tide water brought juveniles into the field and after 8-9 months the finfish and shellfish were harvested. Soon the farmers realised that aquaculture had a good potential and that it could be highly profitable. Salt marshes and mangrove forests were cleared to give way to earth walled ponds.



Mobile buyers

Segregation sampling

To segregate the organisms were transferred into a bucket and 10 litres of water was added. Before sub sampling (B), the catch was homogenised by stirring. Ten sub samples of 1 litre were taken from each catch, stirring in between. Each sub sample was then segregated for large individuals, approximately 5 mm and more. Of each sub sample the number of shrimp seed selected (C) was counted.



cases information was cross checked by repeated interviews separated by days. Most of the interviews with local government were conducted in English and the interviews with the local people were conducted in a Bengali dialect. Worth mentioning here is that although the seed collectors were unperturbed there was a scepticism about our team asking questions about seed collection, especially among the middlemen. For example it took several visits to assure people that we were not 'government people' to deport them for ignoring the ban.

“ Data for calculating bycatch ratios in wild seed

The collection of wild shrimp seeds from the natural waters was in fact, a practice adopted by the traditional shrimp farmers, for a long period. At that time, commercial shrimp hatcheries were not under operation and natural collection was the only alternative. However, ever since the popularisation of scientific shrimp farming in the country by agencies such as MPEDA, the dependence of natural seeds has come down drastically. It was MPEDA who pioneered the concept of modern hatcheries in India, through the setting of two state of the art, advanced commercial hatcheries: one at Vizag (TASPARC) in Andhra Pradesh and the other at Gopalpur (OSSPARC) in Orissa. These hatcheries were established with overseas technical support. The setting up of these hatcheries by MPEDA paved the way for establishment of about 300 hatcheries by the private sector. As a result, the coastal shrimp culture sector in the country is able to procure the required seeds from the commercial hatcheries. But wild seed collection appears to prevail in some part even then. This is perhaps due to the cheaper cost of wild seeds in the local market, and the fact that a fraction of the poor fishermen community is still thriving on this business.

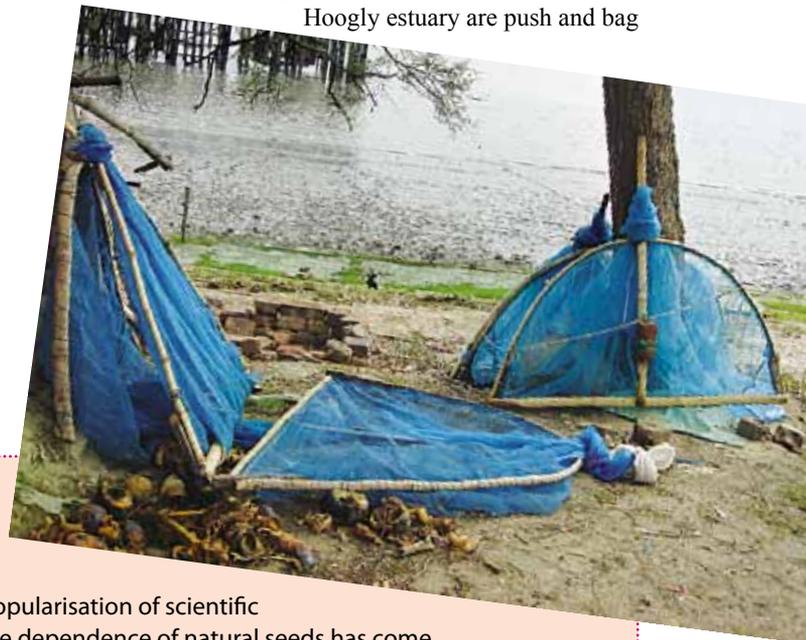
We understand that some of the state governments like the Government of Orissa have already banned natural seed collection. But despite the ban, illegal collections continue in certain pockets. Development of alternate employment for those engaged in this activity, could control this to some extent. Maybe taking up of cage farming for finfishes, crab farming and fattening and other coastal aquaculture activities like seaweed cultivation etc. could give a better livelihood option. Schemes envisaged under SGSY by Department of Rural Development, MPEDA, Ministry of Agriculture etc. will have scope on these aspects. Therefore, development of coastal aquaculture has definitely a role for increasing the coastal employment opportunities.

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collection in Raichak was collected from two samples collected during incoming high tide. Two bag nets were set perpendicular to the tidal flow at a location used by Hannan a local seed collector. The gear measured 7 meter in length and 1 meter height. The mesh size was about 0.5 to 2 mm. This set of gear was chosen due to the locality and the fisherman's experience. The samples (catches) were bought from the fisherman.

Findings

Today the local seed collectors say that there has been a decrease in wild seed abundance over the last years. The daily catch could be 100 to 500 seed per active fisherman per day during peak season in a recall period of ten years. Now, as our survey showed that, on an average only 60 to 100 seed per head and day was collected during the survey period of early May. Most dominating gears in wild seed collection in Hoogly estuary are push and bag



nets. The bag net is preferred due to its relatively small size, easy manageability and its efficiency compared with other gears available.

Seed Sale

Once the fishermen and their families segregate the shrimp seed from the rest of the catch they sell it as soon as possible due to the risk of the seed dying. Although the shortest chain of distribution would be in two steps where the collector sells directly to a farmer, this does not happen in Raichak. The seed collector sells his catch to another collector, a 'mobile' buyer who usually visits the area twice a day. The mobile buyer often travels on a scooter or a cycle (one buyer had a 'scooter van', a contraption which is a cycle driven cart fitted with an engine) with some Styrofoam boxes. The engagement in seed collection is however not a year long occupation. During off season seed collectors go for deep river fishing or to a lesser extent agricultural work. Only a few persons, about 18 percent of the total household surveyed are totally dependent on the seed collection all year around. Worth mentioning is that these figures regarding occupation are somewhat uncertain due to varying quality of answers given during interviews.

Ban against seed collection

There is a ban pronounced against seed collection. The Coastal Aquaculture Authority Act, 2005 has clearly banned the collection of wild seeds for aquaculture purpose. As per the clause 8.1 of the Guidelines issued under the above Act for regulating coastal aquaculture, the following terms are very clear on these aspects,

- only healthy and pathogen free seed from registered hatcheries should be used for stocking.
 - Seed collection from the natural resources should be banned by the State Government with a view to protecting a large spectrum of fin and shell fish species from being destroyed.”
- Accordingly, the State Governments have been empowered to ban seed collection from the wild.

The situation of wild seed collection in Hoogly estuary is precarious. Unfortunately this is a situation shared with other



Gender segregation in collection schedule: As families are occupied in seed collection the involvement of each member is daylong. However an interesting pattern of gender segregation was noted during the study. The adult members along with young boys of the family usually collect seed at a specific site which they lay claim to for the specific time period. They usually choose early to mid-morning to collect the seed. After resting through the afternoon as the evening tide returns they lay bag nets and procure fresh catch till sun down. The women on the other hand complete household chores and join the men mid morning. Once the men pack up, women of different families, group together and share common sites through the afternoon, to collect shrimp seed. The equipment used is common property and shaped indigenously from mosquito nets. Bag nets are set perpendicular to the shore line or incoming tidal current. In this way the amount of water passing through a bag net is considerably higher than through a push net and consequently more shrimp seed are likely to be caught. And as the usage of bag nets is higher among men the number of seed collected is also higher.

areas in India with similar conditions. The ambitious project to support shrimp farms with hatchery produced seed at least to some degree has failed. A major part of the poorer population in villages in Raichak is unemployed. These people are to a great extent dependent on fishing and wild seed collection. Although a ban exists against wild seed collection, the economic and bureaucratic situation in the State impedes implementation. Every middleman is aware of the ban and does not willingly talk about procurement to a stranger. Most worrying about wild seed collection is that when using fine meshed gear, catches will

constitute not only by the target species but also by a wide array of other organisms. Even though survey sampling was localised it still indicates that bycatch ratios can be staggering. If the bycatch could be released back into the waters, the impact of seed collection on the ecosystem would be minimal, but most fishermen tilt the bycatch out on to the levee where it quickly sundries to death.

The questions remain -why does the collector leave the bycatch on the levee? Is it time saving? The answer is somewhat illogical as segregation most often takes place in the absolute vicinity of water. But even if the organisms were to be put back, would they survive? They would perhaps if physically unharmed, away from the heat of direct sunlight. But despite all here is a ban that till date remains without effect.