

Freshwater prawn, *Macrobrachium nobilii* a promising candidate for rural nutrition

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India's abundant freshwater resources include 2.25 million hectares of ponds and tanks, 1.3 million hectares of beels, jheels and derelict waters and 1.2 million km of irrigation canals and 3 million hectares of lakes and reservoirs¹ that strongly support inland aquaculture activities. At the moment, freshwater prawn production in India is mainly based on capture fisheries rather than on aquaculture. Freshwater prawn culture has undergone a phenomenal growth in the past two decades. Of the 100 species of freshwater prawns belonging to the genus *Macrobrachium* recorded worldwide, 40 species are found in India. Species growing to more than 15g are regarded as commercially important. Reports on the prawn fishery of the longest rivers such as Godavari, Krishna, Ganges, Mahanadi, Hooghly and Cauvery in India indicate that the major commercial species are *M. rosenbergii* and *M. malcolmsonii*. However, other Palemonid prawns like *M. nobilii*, *M. lamarrei*, *M. scabriculum*, *M. birmanicum choprai*, *M. mirabile*, *M. rude*, *M. hendersonii*, *M. villosimanus* and *M. hendersonii* support local fisheries^{2,3}.

The Cauvery River, the fourth largest river in India, contributes a considerable amount of both fin and shellfish in the states of Tamilnadu and Karnataka. Regarding *Macrobrachium* diversity in river Cauvery seven species have been recorded recently, namely: *M. malcolmsonii*, *M. nobilii*, *M. scabriculum*, *M. lamarrei*, *M. rude*, *M. australe* and *M. emulum*³. Among these prawns, *M. malcolmsonii* is the most widely distributed and holds first place in the capture fisheries and commercial culture in and around the delta region. Juveniles are collected en masse during the monsoon season in Lower Anicut, a seed collection center

from which juveniles are used to stock farms in and around Tamilnadu⁵.

M. nobilii makes a significant contribution to prawn fisheries since it is abundant in the entire stretch of the Cauvery River. It is a diecdysic crustacean that molts and breeds around every 19 days. Female *M. nobilii* attains first sexual maturity at around 34 mm in total length and 0.45g in weight and reach a maximum size of 71mm (7.2g). The maximum size of male is 77mm and around 13g total weight³.

An average female incubates about 2,200 eggs/clutch for a fortnight⁶. After the embryonic development hatching takes place in 3 to 4 batches. To avoid batch hatching a hatcher device was designed⁷, which enables 70% successful, hatching simultaneously in a given time. Application of eyestalk ablation increases molting and spawning frequency and produces an average of around 5,900 eggs per prawn⁸. The culture of *M. nobilii* has been encouraged due to early maturation and reproduction in captivity and year-round breeding which facilitates the collection of egg-bearing females at any time. Even though it is smaller in size, this species of

freshwater prawn is accepted by consumers and has a higher survival rate. Differential growth between sexes encourages monosex culture since males grow faster than females. Hybridization with other desirable species may be a promising endeavor and provide a valuable contribution to rural nutrition⁸. Egg bearing females have a higher calorific value as compared to *M. malcolmsonii*⁸, and are an excellent source of PUFA, which are fatty acids essential for human health along with a balanced level of amino acids essential to the growth and nutrition of human beings. The sun-dried juveniles of *M. nobilii* are used for preparation of fishmeal and prawn feed. *M. nobilii* hand collected by the



Macrobrachium nobilii: The female (above) has a stouter body than the male (below) which sports larger chelae



women fish-folk are generally sold in the local markets at the rate of Rs.100/kg for adults and Rs. 60/kg (1 US\$= Rs. 45) for juveniles in the local market.

Macrobrachium nobilii is an affordable food accessible to the poor rural people, for whom the major commercial species are a daydream.

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References

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Farming freshwater prawns: A manual for the culture of the giant river prawn

FAO has released a new publication - the definitive and practical guide to the farming of giant freshwater prawn *Macrobrachium rosenbergii*.

After a preliminary section on the biology of freshwater prawns, the manual covers site selection for hatcheries, nurseries and grow-out facilities, and the management of the broodstock, hatchery, nursery and grow-out phases of rearing. Harvesting and post-harvest handling are also covered. The management principles described are illustrated by photographs and drawings. The manual contains annexes on specific topics such as the production of larval feeds, size variation, and stock estimation. The final annex is a glossary that lists not only the terms used in the manual itself but also those which may be found in other documents.

Editors note: This is simply the best technical manual I've seen. You can download it for free from our website <http://www.enaca.org/modules/mydownloads/visit.php?cid=74&lid=350>.

Snapshots of a clean, innovative, socially responsible fishfarm in Sri Lanka

Pedro Bueno, NACA

If there is something worthy to mention about the Jaysons Farm – an 80-acre spread in Chilaw that contains a fish and shrimp hatchery, a commercial fishfeed mill, and a complex of earthen shrimp and fish ponds with over 60 acres of water surface – it is that it does not add to the pollution load of the Dutch Canal, a marvelous piece of work done by the Dutch hundreds of years ago for water transport. The collapse – from diseases - of the shrimp farms located along this canal has been largely attributed to the pollution of the water by discharges into it from hundreds of these farms and the intake of the dirty water by the same farms. The Jayson's Farm draws water not from the canal but from the coast, through a 4 km pipeline, thus avoiding intake of the polluted canal water. It recirculates the water and therefore does not discharge its own used water into the canal.

The used water recirculation system is simple and effective. The water channels leading from the ponds to the used water purification pond are lined with seagrass to absorb ammonia. The 3-acre, 4-foot deep purification pond likewise contains the grass but also tilapia and milkfish. In fact tilapia is now a major part of the farm's output. Its other important function is to help clean up the shrimp pond water and, as with the trials being done elsewhere, for its "probiotic" effects on the shrimp. Milkfish is being tried for the same purpose. Plans are also to raise more of it for food. Water stays for 3 days in the purification pond before it is re-used.

They employ the people in the community where the farm is located, as regular and contract workers. They have not had social conflicts, no poaching, no sabotage, no labor complaints. Daily workers for seasonal activities are paid more than the minimum wage and meals. The farm contributes to community activities.

I was walked around the farm by Mr. Vasantha Jayasuriya, the young managing director and chairman of the Jaysons Group of Companies, which

owns Jaysons Farm. Here are the highlights, in pictures:

Mr. Athula, the farm manager (left) and Vasantha flank me in front of a strip of mangrove bordering the Jaysons Farm (1), which they have left untouched. Addendum: Mr. Athula was invited by the World Bank to the Washington consultation of stakeholders to discuss the result of the work of the Consortium Program of WB, FAO, WWF and NACA in Shrimp Aquaculture and the Environment in order that he could describe the Jayson's Farm experiences and take part in the discussions to determine the next steps for the consortium but, as Vasantha clarified, when I insinuated they might not have wished to reveal their farm innovations, it was because Athula was unable to obtain a US visa, despite several letters from the Bank addressed to Jaysons Farm, to Athula, and to the US embassy in Colombo,

(2) The pond is a water purification pond using seagrass, tilapia and milkfish as filters; (3) the waste-water channels are also planted with the seagrass, this one leads to the purification ponds. Such is the clarity of the purified wastewater, I could see the bottom of the 4-foot pond

(4) These very healthy and unblemished shrimps were taken out of a grow-out pond that is stocked purely with shrimp but beside a similarly sized pond stocked with tilapia. The shrimp pond water is pumped into the tilapia pond, to enable the fish to clean up the detritus including uneaten feed, and then gravity-flowed back (at the other end of the tilapia pond) into the shrimp pond. Addendum: Vasantha and Athula harvested a few more of the shrimp for dinner that night at the company's excellent Golden Mile Restaurant located on a fine strip of beach in Colombo. There we were joined by the third member of the Jaysons Farm Team, Mr. Chanaka Perera, Technical Director and superintendent of the feed mill.

The farm can be contacted at: Jaysons@dynanet.lk; Fax: 94-1-716424.