

Other pre-project R&D efforts on *Macrobrachium* sp.

Freshwater Prawn Research at SEAFDEC/AQD

Maria Rowena R. Eguia, Maria Lourdes C. Aralar and Manuel A. Laron

SEAFDEC Aquaculture Department

Binangonan, Rizal

Philippines

The Philippines lags behind Thailand and Indonesia as far as research and commercial production of the freshwater prawn, *Macrobrachium* sp., are concerned. Although studies on *Macrobrachium* sp. (or *ulang* as it is locally known), started at the Binangonan Freshwater Station of SEAFDEC/AQD in the mid-1980's, research efforts were discontinued soon thereafter because of a) inadequate technical skills; b) problems with larval rearing and the domestication of wild stocks; and among others, c) the *Macrobrachium* sp. being considered in the Philippines as a low priority species in contrast to commercially important freshwater commodities like tilapia and milkfish. This was two decades ago and in retrospect, had researches continued, the freshwater prawn in the Philippines could have been successfully domesticated and current problems concerning limited aquaculture production of genetically depauperate non-indigenous stocks could have been resolved.

With the renewed interest in the culture of alternative species like the freshwater prawn, researchers at the Binangonan Freshwater Station started to conduct some studies on the refinement of breeding, larval rearing and culture of *Macrobrachium rosenbergii* in late 2003. These studies are briefly described below:

1) Evaluation of different live food organisms as starter food for freshwater prawn larvae

(Main proponent: MA Laron)

This study aimed to evaluate growth, survival and post-larval production of *Macrobrachium rosenbergii* when fed different live food organisms (*Moina*, *Artemia* and a free living nematode, *Panagrellus redivivus*). Results showed that growth (measured as mean developmental stage, MDS), survival and post-larval production differed significantly among the treatments. Final body weight of *Moina*-fed larvae was higher but not significantly different ($P>0.05$) from that of *Artemia*-fed larvae. However, survival of *Moina*-fed larvae was significantly low. Prawn larvae fed *P. redivivus* had poor survival and survived only for 8 days. Meanwhile the development of *M. rosenbergii* in this present study was faster in that 80% of the larvae reached postlarval stage after 20-25 days of rearing compared to the 34 to 36-day development period reported by Ang and Cheah (1986).

While *Artemia* is still the best natural food for *M. rosenbergii*, this study demonstrated the acceptability and potential of *Moina* as a starter feed for prawn larvae given the fact that increased body weight was observed in larvae fed *Moina*. However more work should still be undertaken to optimize the use of this and other promising alternative feeds.

2) Farming of *Macrobrachium rosenbergii* in modular cages in Laguna de Bay*

This study was conducted to determine the growth and survival of freshwater prawn in cages (2.5 x 1 x 1m³) as affected by different stocking densities (15, 30, 60 and 90 prawns/m²) and availability of natural food. The effect of these parameters on the population structure of different morphotypes and the degree of heterogenous individual growth (HIG) in male FW prawns was assessed. Results showed that mean sizes at harvest after 5 months of culture ranged from 14.3g for the highest stocking density to 26.3g for the lowest. Mean size at harvest, daily growth rate, and size class distribution were significantly influenced by stocking density with those at the lowest stocking density showing significantly better growth and overall proportion of larger prawns. Heterogeneous individual growth (HIG) was fairly evident in all treatments. The percentage of blue-clawed males (BC-males) was not influenced by treatment but the mean weight was significantly



higher in the lower stocking densities. Survival was highest in the lower stocking densities (55.3, 54.0, 52.7, and 36.9% for 15, 30, 60 and 90 prawns/m², respectively). Feed conversion ratio (FCR) improved with decreasing stocking density ranging from 2.1 to 3. Yield per cropping increased with stocking density and ranged from 1,874 to 4,530 kg ha⁻¹. Production values obtained in the cage cultured *M. rosenbergii* were comparable to or even higher than those reported from pond culture. Results show that the farming of *M. rosenbergii* in cages in lakes is a viable alternative to pond culture and has the potential of improve aquaculture production in lakeshore fish farming communities.

* results recently published in Aquaculture Research and cited as:

Aralar MLC, EV Aralar, MA Laron, W Rosario. 2007. Culture of *Macrobrachium rosenbergii* (de Man, 1879) in experimental cages in a freshwater eutrophic lake at different stocking densities. Aquaculture Research 38: 288-294

3) Reproductive performance of various stocks and species of FW prawn fed high and low protein diets

(Main proponent: MRR Eguia)

This preliminary study aims to determine the reproductive efficiency of FW prawn broodstock fed high- and low-protein diets. Thus far, two *Macrobrachium* sp. (hatchery-bred *Macrobrachium rosenbergii* and wild-sourced *Macrobrachium* sp.) are being evaluated. This strain evaluation experiment hopes to identify stocks and/or species that can later be used in improving the present hatchery stocks of *M. rosenbergii* either through crossbreeding/hybridization and other conventional selective breeding methods.

These studies and plans to genetically document stocks have been incorporated in the general proposal entitled "Genetic characterization, domestication and improvement of *Macrobrachium rosenbergii* in the Philippines" (Sulit, 2004).