R & D Notes

Some Laboratory Indications for Crab Fattening*

A very important side information has been gathered from a 10-month (February to November 1978) study on the gonadal maturation of *Scylla serrata* at different salinity levels. Test salinity levels were: 30 ppt, 20 ppt, 22 ppt, 26 ppt and 28 ppt.

It was observed that at 26 ppt, lesser molts per crab per broodstock occured but with very high body weight increment. Meanwhile, more molts were observed at 30 ppt but with lesser overall weight increments. At the same time, survival of the captive crabs in the lower salinities was higher due to the lesser frequency of exposure of molted ("soft") crabs to the "hard" unmolted ones. Cannibalism was therefore minimized.

These observations suggest the possible practical application of water quality management in crab fattening systems whether in land-based tanks or in ponds. Such manipulation can lead to the maintenance of conditions suitable for growth of crabs. The market quality of these crabs would foreseeably be high and turnover would be faster. In addition to water quality management, a strategically arranged refuge system should offer the crabs more surface area for shelter and movement.

The main objective of this study on gonadal maturation was to find out at what salinity levels germ cells of male and female crabs would attain maturation. It was observed that at 26 ppt mating occurrence was highest from February to June, and highest at 20 ppt followed by 26 ppt from July to November. Gonadal condition indices were recorded highest at 28 ppt from February to June and at 20 to 22 ppt from July to November 1978.

*Contributed by Alice Fe Laviña of the SEAFDEC Aquaculture Department crab research project.

Advances in prawn research...

(from p. 3)

Pre-Program Status

At the time the SEAFDEC prawn program was being organized, the following situations were observed to be prevailing in terms of prawn research and development.

a) Basic techniques for prawn larval rearing had been worked out but refinement was needed to stabilize survival rates in hatchery. The feeds, consisting mainly of diatoms, were propagated in the larval rearing rank itself;

b) Mass mortalities in the hatchery were often unexplainable. If the mortalities were at all explained, these were made in purely physical terms such as nitrite/nitrate and ammonia levels in the water. Biological parameters like diseases and natural feed densities were not given as much attention and consequently remained unidentified. Prophylactic measures were non-existent.

c) Natural feeds production research was geared towards screening species from local waters as possible larval feed;

d) Nutritional requirement studies were non-existent; while feed development research was oriented towards artificial larval feed production for hatchery, pond feed development was neglected;

e) Hatchery was totally dependent on wild spawner supply. However, maturation inducement through eyestalk ablation in captive adult prawn has already been demonstrated at the experimental level;

f) Ecological research was geared towards spawner distribution and collection;

g) Research in the grow-out aspects was conducted in large ponds, often unreplicated;

h) Mortality of hatchery-reared fry during pond rearing was heavy. Techniques used were not much different from those used for milkfish;

i) Pond researchers wanted older postlarvae for stocking while hatchery workers wanted to harvest as early as possible.

Further Work

To increase growth and survival rates of larvae, nutrition and disease control studies were intensified. There are two distinct areas involved in the feed studies: feed for larvae and feed for juveniles and adults. Simultaneous with studies on the culture of such natural feeds as diatoms, brine shrimp and water flea, studies on unconventional sources of protein are also conducted. Attempts are being made to look for locally available materials which may be suitable for feed, such as defatted coconut meat, rice bran, shrimp heads, *Leucaena* seeds, *Atys* or tiny shrimps locally known as *alamang,* and soybeans.

Another research area is disease control. In an artificial ecosystem where density of the cultured organism is high, diseases can take a great toll. Identification, prevention and control of disease-causing organisms is essential in order to find the causes of and prevent mass mortalities and make larval rearing evolve from art to technology.

A technique which would enable Department researchers to predict the onset of diseases in hatchery tanks will have to be perfected. This makes use of a daily examination of 50 individuals in a population from the zoea stage to post-larvae 6, or six days past the larval stage. The patterns observed may give leads in the prediction of mass mortality. From these observations, researchers are now able to foresee the development of a nematode-caused and fungus-triggered mortality.

Real husbandry of sugpo can come only with the elimination of the hunting phase which shifted from wild fry to wild spawner acquisition. The full domestication of prawn therefore depends upon the development of a captive broodstock. Initial experiments showing the feasibility of inducing maturation of *Penaeus monodon* in captivity made it possible to plan a full-scale development of a captive broodstock to supply the spawner needs of prawn hatcheries. Studies on the domestication effort include feeding, molting, mating and spawning patterns of the animal.

The Department has concrete prawn hatchery tanks of 50-, 120-and 200-ton capacities. Studies are being conducted to