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Mud crab hatchery and nursery operations

Quinitio, Emilia T.

Aquaculture Department, Southeast Asian Fisheries Development Center

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Total investment cost for hatchery is P1.9 million. Return on investment after a year is 38%, payback period is 2 years.
Total investment cost for nursery is P155,000. ROI after a year is 106%, payback is 10 months

Farming of mud crab *Scylla* species has been practiced in the Philippines for decades, but it has received more attention recently due to the decline of the tiger shrimp industry. Mud crab has been identified as an alternative export and cash crop because of its high demand in many countries, profitability, environment-friendly culture system, and ease of transport.

Mud crab production in coastal areas in 1996 is 363 metric tons (mt), but decreased to 51 mt in 2000. However, production in brackishwater pond increased from 2,440 mt in 1996 to 4,495 mt in 2000. This decrease in production in coastal areas could be due to the collection of juveniles for stocking grow-out ponds and mangrove pens.

The expanding market for mud crab is the cause of intensified collection of wild juveniles. To counter the threat to wild population and ensure the sustainability of mud crab farming, there is a need to produce juveniles in hatcheries.

Hatchery-reared juveniles have growth performance similar to the wild. The advantages of using the former include uniformity in size; certainty of identification, especially in smaller juveniles; availability throughout the year; and absence of predators and other undesirable species.

Mature female with dark orange ovaries obtained from either brackishwater pond or mangrove could be held in tanks until the eggs are spawned or released and attached to the flap. Berried female (with eggs) may also be held in a tank until eggs hatch.

Egg hatches to zoea 9-14 days after spawning. Zoea passes through five stages (zoea 1 to 5), after which it becomes megalopa. The megalopa molts once and assumes a crab-like appearance. The small crab molts several times until full maturity.

Broodstock are fed mussel, marine worm, fish, or squid with or without artificial diets. A water depth of 30-40 cm is maintained. About 80% of the water is changed daily. Water temperature and salinity are maintained at 26-29°C and 30-34 ppt.

Zoea eats rotifers (*Brachionus*). Rotifers eat a wide variety of microalgae but *Nannochlorum* (formerly identified as *Chlorella*) is commonly used in hatchery because it is easy to culture. The



Mud crab megalopa obtained 16-18 days after the first larval stage (zoea) PHOTO COURTESY OF E. QUINTIO

production of natural food has to be synchronized with the hatchery operation so that food will be available as soon as eggs hatch. In addition to *Brachionus*, zoea is fed *Artemia* nauplii.

Megalopa is also fed *Artemia* nauplii. Small crab is fed minced trash fish, mussel, small shrimp (*Acetes*), or bivalves twice daily to satiation. The amount and size of feeds are adjusted based on the consumption and size of crab.

The rearing water is replaced at 30% daily starting day 3 and up to 80% as larvae grow longer. At the crab stage, about 30% of the water is replaced daily during the first five days, and every two days thereafter.

Stocking density of megalopa in tank is two individuals per liter. Black nets and cut PVC pipes are distributed as shelters when megalopa becomes crab instar.

In net-cage culture, megalopa is stocked at 50-70 individuals per m². About 50% of the water is replaced weekly. Megalopa are fed *Artemia* during the first two days. Food is then changed to minced fish and mussel. Nets and seaweeds can be used as shelters.

After harvest, crab juveniles can be transported even without water. Transport is preferably early in the morning or late afternoon.



Technology presenter and contact person

Emilia Qunitio is a Scientist at SEAFDEC/AQD. She joined AQD soon after obtaining her BS degree from the University of the Philippines in Diliman. From the same university, she finished her MS Fisheries in 1980. In 1995, she obtained her Doctorate in Fisheries Science from Hokkaido University, Japan.

Dr. Qunitio has been working on the various aspects of culture of mud crabs *Scylla serrata*, *S. olivacea*, and *S. tranquebarica*. Email: etqunit@aqd.seafdec.org.ph