

Southeast Asian Fisheries Development Center

Aquaculture Department

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Spawning and rematuration of tiger prawn

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SPAWNING AND REMATURATION OF TIGER PRAWN

Spawning of "sugpo" or the tiger prawn (*Penaeus monodon*) generally takes place between 8:00 p.m. and 6:00 a.m. although most females spawn between 10:00 p.m. and 2:00 a.m. Normally at rest or slow-moving at the bottom, a female about to spawn becomes restless and starts swimming upwards in circles. The eggs (and sperm) are released, often forcefully, as she swims and may continue even as she returns to the bottom. Active movements of the swimming legs or pleopods disperse the eggs and the nonmotile sperm. Spawning lasts from 2 to 7 minutes.

Ovarian discharges released into the water together with the eggs form bubbles completely covering the water surface as an effect of aeration. After a few minutes, the bubbles break up and disappear within half an hour after spawning. The discharges turn into pink to orange scum forming along the sides of the spawning tank a thin to very thick ring which hatchery technicians often take as a sign of spawning. In the absence of aeration, no scum is formed.

Of a given batch of ripe (Stage III and IV) (See AFN VI(4) 1988 for stages in maturation of ovary) females, some will spawn completely, others partially, while the rest may not spawn at all. Partial or non-spawning is associated with stress due to transport, handling, crowding, etc. Both unspawned or partial spawners will either spawn or continue spawning in the next 2-3 days or absorb their ovaries. Partial or complete spawning can be determined by holding the female against a bright light - some of the anterior or posterior portions of the ovaries remain in partial spawners while complete spawners have no traces of the ovaries.

A gravid female that does not spawn for the 2-3 successive nights but remains in Stage III or IV without regressing may have the "white ovary" or "milky ovary" disease. Infection by a protozoan (microsporidian) parasite causes the ovaries to become whitish or milky and yet retain the diamond or butterfly outline visible externally.

In nature, *P. monodon* females probably have multiple spawnings in a year. Penaeid or marine prawns have a short life of 1-2 years, as documented for *P. merguensis* and *P. semisulcatus*. Data for broodstock of other species that have matured without ablation show that on the average, *P. merguensis* females spawn once every 2.6 months, and *P. japonicus*, once every 2.8 months.

Of a given number of ablated *P. monodon* females that have spawned once, at least 50% will spawn a second time and 15% a third time. Subsequent spawnings may take place as quickly as 3-5 days after the preceding one. Rematuration rates can be increased by reducing factors that cause post-spawning mortality among spent females, thereby increasing their chances to remature and spawn again. Nevertheless, both maturation and hatch rates progressively deteriorate 6-8 weeks and 10-12 weeks after initial ablation of wild and pond stock, respectively.

Source: Lecture Notes of J. Honculada-Primavera, Scientist, SEAFDEC Aquaculture Department, Tigbauan, Iloilo, Philippines. 1988.