

BIOLOGY

- P. pelagicus* is a type of portunid crab that naturally inhabits sandy and muddy substrates; from intertidal zones to about 65 m offshore; near coral reefs, mangroves and seagrass and algal beds.
- This nocturnal crustacean is widely distributed throughout the Indo-pacific region: Philippines, Tahiti, Australia, Japan and east coast of Africa.
- Blue swimming crabs are carnivorous by nature and usually feed on fishes, mollusks and other crustaceans. They also exhibit cannibalism.



Adult male (left) and female (right) blue swimming crabs

- The life expectancy of blue swimming crabs is about 2.5–3 years. They weigh up to one kilogram and reach a width of about 20 cm depending on sex and region of origin.

SEXUAL CHARACTERISTICS

Male



- bigger
- dark-blue carapace, legs and claws
- narrow and angular abdominal flaps

Female

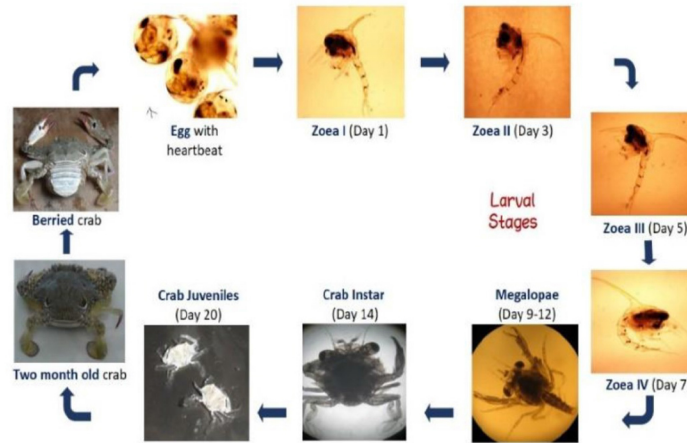


- smaller
- dull brown to gray carapace, legs and claws
- broad rounded abdominal flaps

Why the need for a seed production technology?

- Portunus pelagicus*, is a highly important commercial crab species in the Philippines. However, overexploitation has significantly reduced its wild population.
- The development of reliable seed production technology is very important for the sustainable growth of the crab industry.

Life Cycle



HATCHERY OPERATIONS

A. Preparation of Tanks and other Facilities

It is necessary to clean and disinfect the tanks and other facilities prior to larval stocking to avoid the growth of bacteria and other harmful organisms.



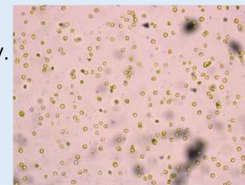
- Disinfect tanks using chlorine (10 ppm concentration) overnight.
- Scrub the tanks walls and surface using brush and detergent. Rinse with freshwater.
- Sun dry for at least 24 hrs.

B. Natural Food Production

MICROALGAE PRODUCTION

Two species of green microalgae are used in the crab hatchery, *Chlorella sp.* and *Nannochloropsis sp.* The following steps are used for outdoor culture:

- Get microalgae starter from the Phycology Laboratory.
- Fill 50% of the tank with filtered seawater.
- Add 50% microalgae starter. Aerate tank.



Chlorella sp.

- Compute the amount of commercial fertilizer to be added:

Urea - 50 g/ton
Ammonium sulfate - 10 g/ton
Ammonium phosphate - 10 g/ton

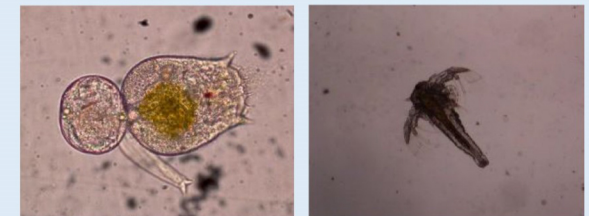
(Peak algal density will be reached after three days.)

- Scale up after three days.
- Culture period only lasts for 12 days. Afterwards, prepare tanks for new culture.

ROTIFER CULTURE

Once microalgal cultures are stable, rotifer (*Brachionus sp.*) production can start. The microalgae serves as rotifer food.

- Fill tank with at least 1 ton of microalgae.
- Add initial rotifer stock.
- Feed with microalgae (30% of the total tank volume) daily.
- Monitor cell count.
- Culture period is also 12 days. Afterwards, prepare tanks for new culture.



Brachionus sp. (left) and *Artemia* nauplii (right)

BRINE SHRIMP PREPARATION

Newly-hatched brine shrimp nauplii (*Artemia sp.*) is added to the larvae diet when the larvae reaches the Zoea 3 stage (Day 6).

- Incubate brine shrimp cysts in hatching tanks at a density of 2-5 g/L of filtered seawater.
- Provide vigorous aeration. In normal hatching conditions, cysts usually hatched within 24 hrs.
- To harvest, stop aeration and cover the top with black cloth. Since the nauplii are phototactic, they will accumulate at the lighted portion of the tank.
- Using a filter, slowly drain the tank through an outlet into a water-filled basin.

C. Broodstock Selection and Management

1. Obtain newly-caught wild berried crabs from local fishermen. Handle the crabs with utmost care to avoid stress. Check the eggs for viability, damage and pathogenic contamination. (*Note: It is advised to choose crabs with orange/brown eggs, so that any form of egg contamination can still be managed in the hatchery.*)
2. In the hatchery, immediately acclimate the crabs to their new environment. Place the crabs in a disinfected tank with a flow-through water system and adequate aeration.
3. Feed with fish, shellmeat or squid. Remove unconsumed food to avoid water fouling.
4. Monitor egg color and condition.
5. When the egg color becomes grey, separate the crab in a hatching tank. (*Note: Feeding is not recommended at this point.*)
6. Cover the hatching tank. Eggs usually hatch at around 2:00 – 5:00 AM.
7. After hatching, immediately remove the crab from the tank.
8. Close aeration and wait for the vigorously swimming larvae to accumulate at the water surface.
9. Collect the larvae.

INCUBATION PERIOD



6 days 5 days 2 days 1 day

* the number of days before hatching

D. Larval and Rearing

1. Using the sampling method, estimate the larval population.
2. Stock larvae at 100 ind/L in clean disinfected larval tanks filled with 90% sand-filtered seawater and 10% green algae.
3. Feed with rotifer at a density of 10 – 15 ind/mL concentration.
4. After three days, add formulated feeds (Japonicus) to diet.
5. Add *Artemia* nauplii on the sixth day
6. From day 3-5, change 20% of the water. On the 6th day onwards, change 50% of the water. Siphon unconsumed food and dirt from the tank bottom. Monitor water parameters.
7. The larval rearing period usually lasts for 9-12 days.



E. Nursery Rearing

1. Harvest the megalopae and restock at 20 ind/L in a different tank.
2. Place B-net cuttings in the tank to prevent cannibalism. PVC cuttings and sand substrate, can also be used.
3. Continue feeding with formulated feeds and *Artemia* nauplii.
4. Change 50% of the water daily. Siphon unconsumed food and dirt. Monitor the water parameters.
5. Once megalopae transforms into crab stage, feed with Acetes, minced fish meat or shellmeat.



F. Packing and Reseeding

Juvenile crabs (Crab 20) are packed in fry bags and reseeded in established fish sanctuaries.



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SEED PRODUCTION OF THE BLUE SWIMMING CRAB

(Portunus pelagicus)

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