Panulirus homarus homarus (Linnaeus, 1758)

Joe K. Kizhakudan

IDENTIFICATION

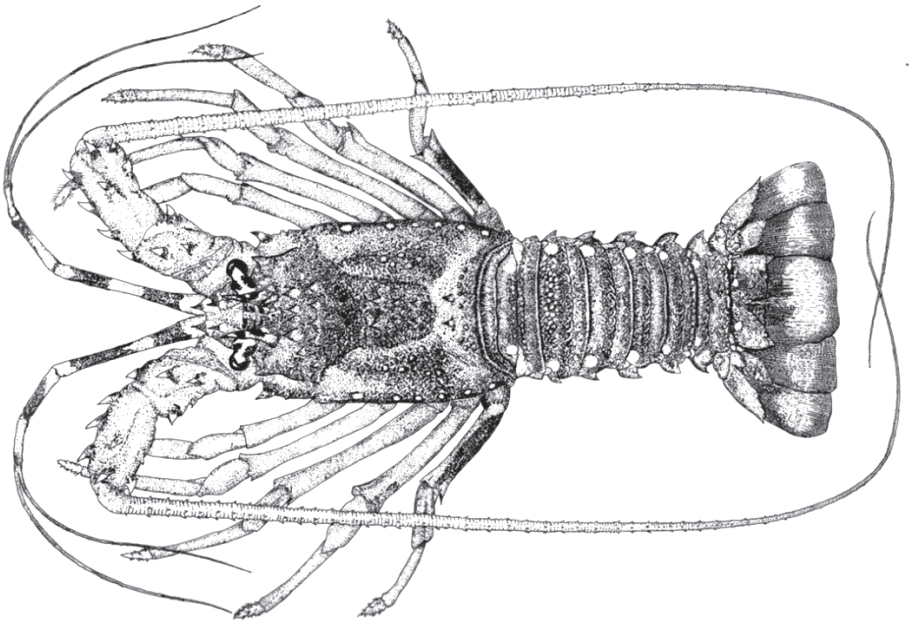
Order	:	**Decapoda**
Family	:	**Palinuridae**
Common/FAO Name (English)	:	**Scalloped spiny lobster**

Local names: Titan (**Gujarati**); Shevand (**Marathi**); Konju (**Kannada**); Parra konchu, Kadal konchu, Raalu konchu (**Malayalam**); Singi eral (**Tamil**); Rati royya (**Telugu**); Bama royya (**Oriya**); Kanta chingri (**Bengali**)

MORPHOLOGICAL DESCRIPTION

The scalloped spiny lobster has a darkish green to reddish brown carapace, with fine white spots. No distinct abdominal bands are present; legs uniform darkish green like the carapace with indistinct spots and stripes of white. A light anterior spot is present at the base of the abdominal pleura. Antennules are banded and the antennular plate has 4 large spines arranged as a square with small spinules in between. Exopod of third maxilliped is absent. Anterior margin of transverse groove of abdominal somites is crenulated and interrupted in the middle.

Source of image : RC of CMFRI, Cheennai



PROFILE

GEOGRAPHICAL DISTRIBUTION

This species is found throughout the Indian coast and has a broad geographic range from Indo-West pacific region, east Africa to Japan, Indonesia, Australia, New Caledonia and probably the Marquesas Archipelago.

HABITAT AND BIOLOGY

It is a reef dwelling species, most commonly associated with coastal fringing rocky reefs and inshore areas of rocky reefs (1-15 m). It is found at depths of 1 to 90 m. Juveniles and adults are omnivorous, feeding on small crustaceans, molluscs, worms and algae. It is a nocturnal animal. It is also a social animal forming groups within and beneath reef structures. It matures at around 12 months post-puerulus, when the size of the animal is about 300 to 500 g. Each female produces 1,20,544-4,49,585 eggs per spawning, releasing nearly 85.7 % larvae, and can spawn 3-4 times in a year. Egg incubation takes 24-27 days, hatching occurs at night and the first stage phyllosoma larvae (< 2 mm carapace length) are released. The phyllosoma develop through 11 distinct stages involving up to 20 successive moults

(instars) until the final stage, which has a carapace length of > 25 mm. The final stage phyllosoma metamorphoses into the puerulus, which is a free-swimming, non-feeding, transparent and lobster-like stage. This stage lasts for 2-3 weeks by which time the puerulus becomes pigmented and locates a suitable habitat. Following this, the larvae settle to the bottom, moult into the juvenile stage and become benthic. Maximum recorded total length is 31 cm with carapace length of 12 cm. Average length in Indian fisheries ranges from 20 to 25 cm.

PRODUCTION SYSTEMS

BREEDING IN CAPTIVE CONDITIONS

Captive broodstock development and breeding were carried out at National Institute of Ocean Technology (NIOT), Chennai, India in 2003. Rectangular tank painted with black food-grade, nontoxic paint was used for broodstock development. Shelter was not provided in the tank. The broodstock were stocked at the rate of 4/m^2 with a sex ratio (male:female) of less than 1. However the sex ratio was changed to 1.4 males to 1 female resulting from mortality. The brooders were fed *ad libitum* with live green mussel, *Perna viridis* supplemented with live marine clam, *Donax cuneatus*. Water was exchanged in tune of 80 % per day. The number of spawning per year per female was observed to be 2 to 4. Generally, spawning occur during night or early morning.

LARVAL REARING

Hatchery production of lobster larvae (phyllosoma) is technically challenging because of the prolonged duration of larval development, the large number of moults involved and the delicate nature of the larvae. The larvae were reared several times up to phyllosoma stage by various researchers. Large numbers (5,000) of phyllosomal rearing conversions were achieved till fourth stage at Kovalam Field Laboratory of CMFRI.

NURSERY

The nursery rearing of pueruli was carried out by collecting them from wild. The captured pueruli are very delicate with high associated mortality (> 50 %). The lobsters grow to 10-30 g in 3-6 months during nursery phase. Then, it is harvested and stocked to grow-out cages. Mortality during the nursery phase is as high as 40 %, but under optimal conditions, it is less than 10 %. It is fed with chopped fish flesh.

GROW-OUT

Grow-out till date has been based only on naturally settled pueruli. In certain countries like Vietnam and Indonesia pueruli are particularly abundant and are easily caught. Grow-out of tropical spiny lobsters has been performed in sea cages in Vietnam and Indonesia. In Vietnam, these cages are simple frames of netting staked into the seafloor in shallow waters (< 3 m). In Lombok, Indonesia, grow-out is performed in floating sea cages that have been adapted from grouper culture. These cages are 2 to 3 m along each side and 2 m deep. A typical lobster farmer in Indonesia would have

5 to 10 cages for grow-out. Lobsters are stocked in cages at 10-50 g size each. The smaller lobsters were stocked into cages with smaller meshes to ensure that they do not escape. Stocking density is upto 30 nos./m^2. As lobsters grow, they are periodically harvested and manually graded to minimise the size variation within each cage. Larger lobsters are stocked at lower densities, around 5 nos./m^2 at 200 g and 2 nos./m^2 at 500 g. In Indonesia, where *P. homarus* is most commonly farmed, the desired market size is 100-300 g, which takes about 9 months to reach. Farmed lobsters are traditionally fed a mixture of fish, crustaceans and molluscs sourced from the nearby fish markets. In Vietnam, a broad variety of trash fish species are used based on the budget and preference of the farmer. It grows to 250 g in 12-15 months.

FOOD AND FEEDING

Generally they are omnivorous, grazing primarily on small crustaceans, molluscs, worms and algae. In culture system, they were fed with mixture of low value fish meat, clam and green mussel meat.

GROWTH RATE

The growth rate of spiny lobster is reported differently by different workers. Trials in India with mussels and clams as feed have yielded maximum growth rates of 0.75 g/day, whereas in sea cages off Vizhinjam with artificial diets, 0.5 % growth rates/day are observed and in sea cages off Chennai, when fed on Tilapia meat, growth rate of 0.5-0.7 g/day is recorded.

DISEASES AND CONTROL MEASURES

The common problem in cage farming at Vietnam is the Milky Disease/Milky Haemolymph Disease (Rickketsia) which is treated by oxytetracycline (OTC) incorporation in diets. Red body (Gaffkemia like symptoms), black gill and tail rot are possibly rectified by better management practices and formalin treatments. Loose shell and soft shell syndromes are addressed by nutritional supplements and upkeep of salinity requirements. Continual exposure to low temperature coupled with long transportation stress causes reddening with associated *Aerococcus viridans* infection and heavy mortality. *Vibrio vulnificus* is the causative pathogen resulting in tail necrosis and affecting lobster growth rates.

PRODUCTION, MARKET AND TRADE

PRODUCTION

Information not available

MARKET AND TRADE

In Indonesia, it is harvested at 100-300 g, fetching US $ 30-40/kg. It is preferred by the Chinese and the Taiwanese at a size of 100-300 g. It is served as sashimi (uncooked lobster) but is more commonly cooked.

CHALLENGES TO MARICULTURE

The major constraint to industry expansion is the non-availability of seed. The main challenge for seed production is the incomplete cycle of larval production. Disease is a major constraint and spiny lobster farming in Vietnam has already experienced the severity of disease outbreaks. Surveys of lobster farms have revealed access to credit as a principal bottleneck. In India, where the industry is nascent, credit is even more difficult to obtain and is mostly arranged with family or neighbours at exorbitant rates. Artificial feed and control of diseases are key areas which need to be addressed for promoting the farming.

FUTURE PROSPECTS

The domestic as well international price as well as demand is very high for lobsters. Thus, if technology for seed production and artificial diet are developed with better efficiency and economic edge, then aquaculture prospects are very promising.

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