Portunus (Portunus) pelagicus (Linnaeus, 1758)

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IDENTIFICATION

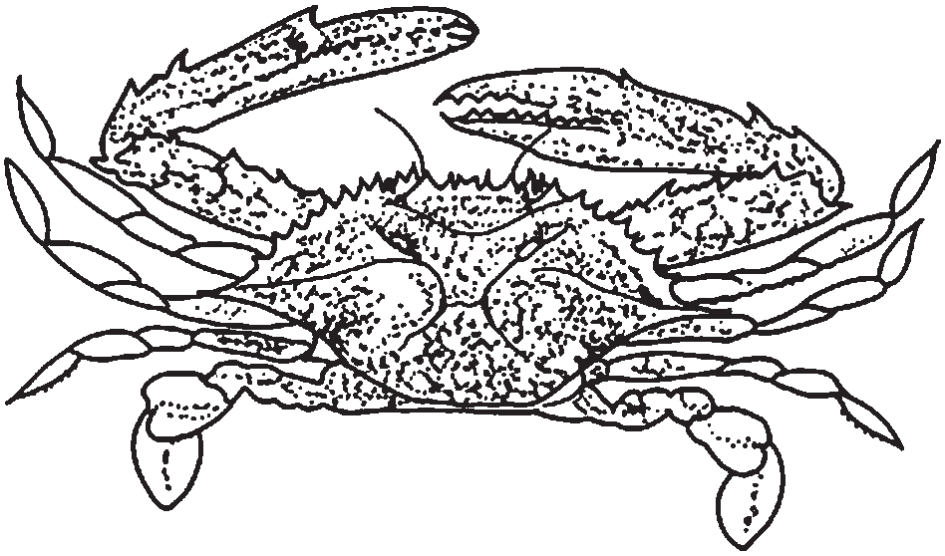
Order	:	**Decapoda**
Family	:	**Portunidae**
Common/FAO Name (English)	:	**Blue swimmer crab**

Local names: Karachla (**Gujarati**); Khekhara (**Marathi**); Denji (**Kannada**); Kora njandu, Kavalan njandu (**Malayalam**); Pulli nandu (**Tamil**); Gelai peeta (**Telugu**); Chitra kankda (**Oriya**); Naksakankda (**Bengali**)

MORPHOLOGICAL DESCRIPTION

Carapace rough to granulose, front with 4 acute triangular teeth; 9 teeth on each anterolateral margin, and the last tooth being larger than the preceding teeth. Chelae elongate in males; larger chelae with conical tooth at base of finger, typically males have bluish green colour markings and females are dull green or greenish brown.

Source of image : RC of CMFRI, Chennai



PROFILE

GEOGRAPHICAL DISTRIBUTION

The blue swimmer crab occurs throughout the Indian and the west Pacific Oceans: from Japan, and Philippines throughout south-east and east Asia, to Indonesia, the east of Australia, Fiji Islands and westward to the Red Sea and east Africa. It is present in the Mediterranean Sea as a lessepsian migrant, southern Pacific Ocean, along the coast of Egypt, Mozambique, Kenya, Israel, Lebanon, Turkey, the Syrian Arab Republic, Cyprus and the east southern coast of Sicily.

HABITAT AND BIOLOGY

It inhabits sandy and muddy bottoms in shallow waters at depths between 10 to 50 m, including areas near reefs, mangroves, seagrass and algal beds. Juveniles most commonly occur in intertidal shallower areas. Maximum carapace width is 20 cm for males with a common size of 14 cm.The recent revision in systematic places the dominant species in the eastern Indian Ocean as *Portunus reticulatus* and suspects the possibility of having a zone of hybridization in the Bay of Bengal for *P. pelagicus* and *P.*

reticulatus; studies are in progress to confirm this. The asymptotic length is estimated to range between 204.1 and 219.8 mm in males and 188.6 and 211.8 mm in females. Maximum size recorded in the fishery in India is 193 mm. The age at maturity is around 1 year. It is carnivorous feeding on a wide variety of sessile and slow moving benthic invertebrates (hermit crabs, gastropods, bivalves, ophiuroids and gammarid amphipods). It rarely consumes plant material.

As in other portunid crabs, copulation takes place only when the female is in the soft shelled condition, with a hard shelled male. Spawning occurs within 15-26 days after the copulatory moults, during the night hours. Fecundity ranges between 60,000 and 13,25,000 with an average of 5,44,782. The total days of incubation varies between 8-10. In most of the cases, nocturnal hatching of eggs is observed. When the larvae is about to hatch, the eggs are liberated from the pleopods by a conscious effort of the mother crab. The female raises its body with the help of its walking legs, its abdomen is fully stretched and its berry is vigorously jerked. Lifespan is around three years.

PRODUCTION SYSTEMS

BREEDING IN CAPTIVE CONDITIONS

The broodstock can be obtained from wild as well as culture. Berried females are caught from the wild. Berried females with yellow to grey eggs are selected and kept in holding tanks with a stocking density of 1 crab/t of water. Berried females are given a prophylactic treatment with potassium permanganate or formalin to prevent it from microbial and parasitic infections. The cultured crab of above 60 mm carapace width (CW) were selected and stocked in tank for captive maturation. The tank was of 2.5 m diameter with 8 t water capacity fitted with re-circulatory facility at bottom. An in situ sand bed filter of 5-10 cm height was set on a perforated, false bottom that was installed at about 15 cm height over the entire surface area of the maturation tank. An air-water lifting system was arranged in the tank through the air dispersing stones by fixing 4 PVC tubes in the peripheral region of the sand bed at equal distance so that water recirculation was maintained by lifting 300 % water/day. Daily, a 25-30 % water exchange was given and once in a week exchange was 100 %. The tank was covered to reduce light intensity. In captivity, the females are fed with prawn, mussel or squid and are provided with sand substrate and aeration.

Wild collected berried females yield good results when compared to laboratory reared females. The berried females with yellow eggs mature to black eggs in 5-7 days. Black egg berried females were transferred to hatching tanks. The fecundity of broodstock was usually between 0.4 to more than 1.5 million eggs depending on the feed and the crab size.

LARVAL REARING

The larval development includes four zoeal stages and a megalopa stage. The megalopa stage metamorphoses into the crab stage. Zoea is of typical brachygnath type. Zoea is with long rostral and dorsal spines and a short lateral spine on the carapace. The total duration of larval development varies

between 14-17 days. The first and second zoeal stages span for 3-4 days each, third and fourth stages are 2-3 days each and megalopa is for 3-4 days. The commonly used feed for larval rearing is a mixture of *Nannochloropsis* sp. and rotifers during zoea 1 to zoea 4. During zoea 4 to megalopa, *Artemia* nauplii are used as live feed. Apart from this, microbound diets are also used.

NURSERY REARING

The baby crabs are stocked either in tank or earthen pond at the rate of 400-500 nos./m^2. The tank bed should be provided with additional substratum and sand. The depth of the water column should be maintained at least 80 cm. Generally prawn and egg custard is fed to the baby crab in the first week of stocking at the rate of 20 % of their biomass. From the second week onwards, the baby crab can be fed with cooked clam meat, small shrimp in addition to egg custard at the rate of 20 % of their body mass. Water exchange on alternate day at the rate of 20 % is to be carried out. Once the baby crab attains an average size of 10 mm carapace width (CW) it can be stocked in grow out pond. Nursery rearing with first crab instar shows a survival of 8.6±0.91% after 15 days of culture.

GROW-OUT

Earthen ponds are preferred for grow out culture of blue swimmer crab. At Mandapam, Tamilnadu, India, grow out culture of the species was performed by stocking first crab instar at the rate of 26 crab/ 10 m^2 in 0.06 ha pond. They were fed on commercial shrimp diet. It yielded 784 kg/ha after 135 days of culture with 32.0 % survival. Salinity of 20-25 g/l was found to be ideal for grow-out.

FOOD AND FEEDING

It is carnivorous and feeds on a wide variety of sessile and slow moving benthic invertebrates (hermit crabs, gastropods, bivalves, ophiuroids and gammarid amphipods). In culture systems, clam meat, shrimps and artificial pellet feed can be given as a feed.

GROWTH RATE

The first crab instars grew from 3 mm CW to 12.13±0.85 mm CW in 15 days culture in FRP tank. The first instar crab grew from 3 mm CW (0.007 g) to 116±8.4 mm CW (111.8±24.6 g) in 135 days culture in earthen pond.

DISEASES AND CONTROL MEASURES

Moult Death Syndrome (MDS) and stress related syndromes are reported. It is host to a number of parasites viz., *Diplothylacus sinensis*, *Heterosaccus indicus*, *Sacculina granifera*, *Thompsonia dofleini* and *Thompsonia sinensis*.

PRODUCTION, MARKET AND TRADE

PRODUCTION

The total catch reported by FAO for 2014 was 2,12,612 t. The countries with the largest catches are China (52,577 t) and Philippines (34,076 t).

MARKET AND TRADE

There is an increase in demand for frozen and tinned crab meat throughout the Indo-West Pacific. It is sold in local markets as fresh or frozen or is sent for the crab-flesh canning industry. The price for the crab in local market in India is ₹ 160-200/kg.

CHALLENGES TO MARICULTURE

Availability of berried broodstock and mass mortality in early and late larval stages are found as major hindrances in the progress of culture of this species. Issues related to nutritional deficiency during larval feeding, MDS, cannibalism and differential growth needs rectification by developing balanced diets and rearing designs with shelters.

FUTURE PROSPECTS

Crabs are in high demand both in their hard-shelled form as well as in their soft-shelled forms. Pasteurized crab meat for canning is also a popular product. Crabs also attract good demand in the domestic market. Thus with their international as well as domestic demand and price their culture is bound to provide good remuneration for the fish farmers.

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