

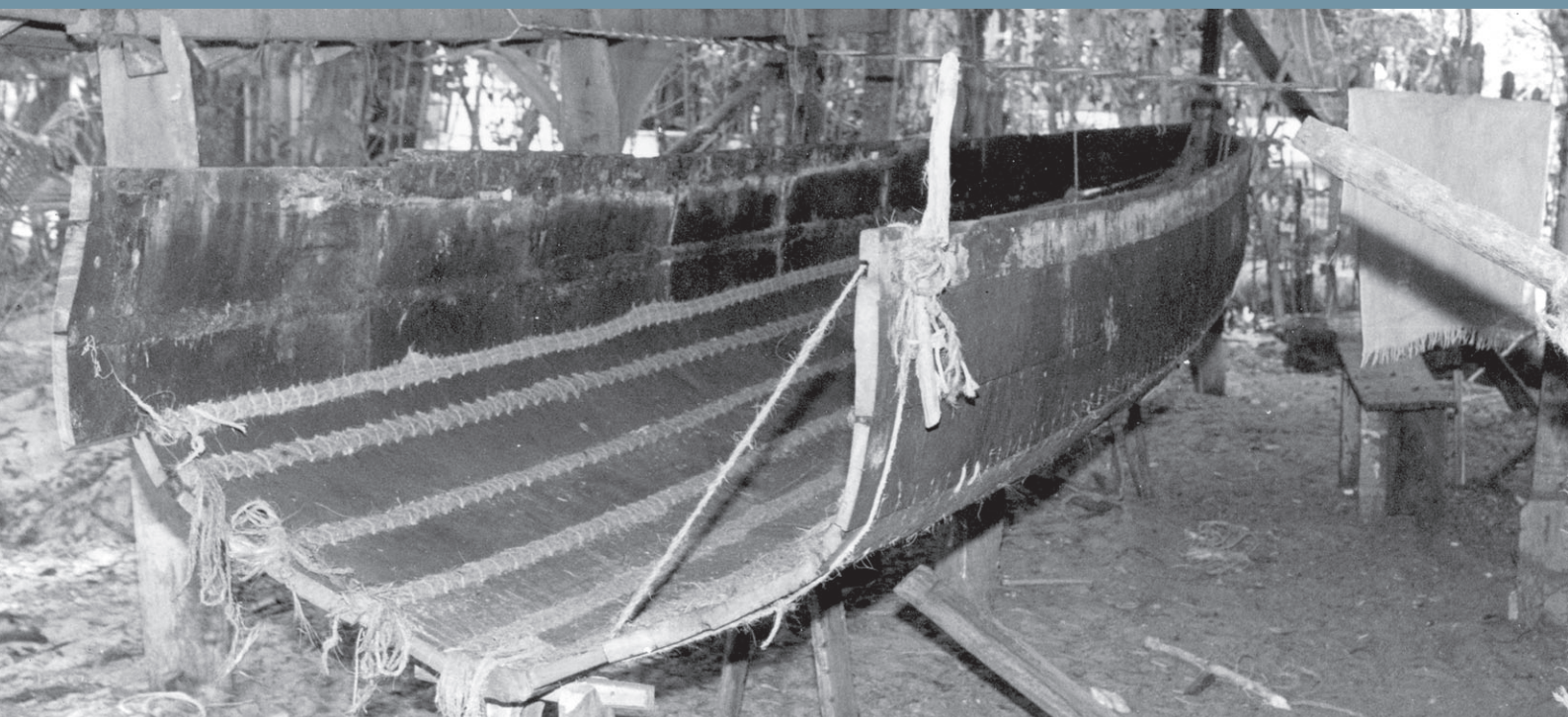
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Fishery of the sand lobster *Thenus orientalis* (Lund) by bottomset gillnets along Tamil Nadu coast

Sand lobsters are generally landed as a by-catch in shrimp and cephalopod trawl nets operating in coastal waters (20-60 m depths). The resource is most abundant off the north-west and south-east coasts. With the increase in demand for sand lobsters in export market, the resource achieved prominence in exploitation.

There was no record of a fishery for this resource employing gill nets in India. In Tamil Nadu about 15-30 t per annum are landed by the trawlers. Quite unusually it was observed that a special fishery for sand lobsters employing bottom-set gill nets exists in isolated grounds along Tamil Nadu coast.

Observations on this fishery were made during September 2003 to February 2004 at Beasantnagar, Kanathur, Kovalam, Oyyalikuppam/Pudupattinam and Cuddalore landing centres along the coastal stretch from Beasantnagar (in Chennai) to Cuddalore (towards the south of Chennai). The fishing grounds are located approximately 5-10 miles from the shore, with maximum fishing activity at depths of 20-40 m. The catch comprised of a single species, *Thenus orientalis*.

Fishery

The gear used predominantly was "pannu valai" operated as a bottom-set gill net. Generally the mesh size of this net varies from 60-65 / 80-85 mm and net is approximately 1-1.5 km long. The sand lobster fishery was carried out at depths beyond 20 m where the substratum is generally sandy. Other species encountered in the catches were cephalopods, elasmobranchs, sciaenids and threadfin breams.

The crafts used were FRP boats of about 18-20' OAL, operated by three fishermen. They set sail at midnight, reached the ground in three to four hours and set the net. Hauling was done after three to four hours. The

landing time was usually 10.00-11.00 a.m. Sometimes the nets were set at 3.00-4.00 p.m. and hauling was done at 6.00-7.00 a.m. the next day.

Interestingly the fishermen seem to be aware of the aggregation of juvenile sand lobsters in shallow coastal waters only since the last year when this phenomenon was first noticed. The juveniles settle on these grounds which are known to be rich for many forms of gastropods. These grounds are also ideal for portunid crabs and the cuttlefish *Sepia pharaonis*. Sand lobsters are also caught in other bottom-set gill nets such as kallu valai (tangle), mani valai, poku valai and kanavai valai. The exports rates were Rs.80-100/kg for lobsters less than 100 g and Rs.150-260/kg for larger lobsters.

Even though this resource was a major by-catch of a special fishery for the cuttlefish, *S.pharaonis* and soles in most of the fishing villages along this coast, the fishery at Oyyalikuppam/Pudupattinam was done exclusively for sand lobster. About 30 fishing units operated during the middle of September to November and landed approximately 5 tonnes of *T.orientalis* (2 kg per unit per day). The fishery continued in December and January, with catch rates falling to 0.5 kg per unit per day. The sizes caught in the pannu valai and nakku valai operated along the Beasantnagar-Pudupattinam stretch were generally in the range of 50-150 g. A reduction in the catches from nearshore waters (20-40 m depth) after November induced the fishermen to venture into deeper waters of 40-60 m depth, especially along the stretch from Pudupattinam - Cuddalore and further south, upto Nagapattinam. The size of the lobsters fished from these areas were in the range of 200-300 g, and about 40% of the females caught were berried during December, January and February.

Biology

The sex ratio was 1M : 1.2 F in the catches from Pudupattinam (20-40 m depth) and 1M : 2F in the catches from slightly deeper waters (40-60 m depth) along the Beasantnagar - Cuddalore stretch. In the Pudupattinam catches during September - November, the mean size of the males was 46.33 mm CL and females was 52.88 mm CL. The modal classes were 41-45 mm CL and 51 - 55 mm CL for males and 41 - 45 mm CL and 56 - 60 mm CL for females. Of the females studied, about 20% only were in a state of advanced gonadal development with 10% having nearly ripe gonads while less than one percent were berried. Among males, only three percent had developing gonads. In the catches from Beasantnagar - Kovalam stretch during December - January at depths of 15-20 m, the mean size of the males was 60.86 mm CL and females 56.75 mm CL. The modal classes were 56-60 mm CL for males and 51-55 mm CL for females. Of the females studied, about 2% were berried. In the catches from Cuddalore, the mean size of the males was 62.9 mm CL and females 69.8 mm CL. The modal classes were 55-60 mm

CL and 61-65 mm CL for males and 71-75 mm CL for females. Of the females studied, about 40% were berried.

They fed almost exclusively on gastropods with a weak operculum (*Babylonia* spp.). The natural preference shown by the animals for this feed and the abundance of *Babylonia* spp. in these grounds perhaps explains the reason for the mass movement of sand lobster juveniles and sub-adults towards these shallow grounds.

The size group analysis indicates the dominance of juveniles and sub-adults in shallow depths (up to 40 m depth), while there was a higher incidence of adults in deeper waters (40-60 m depths). Interestingly, the fishery in shallow depths was noted during the entire period of observation, while the fishery in deeper waters was noted only from December to February. This suggests a preferential movement of the animals with increasing size and maturity towards deeper waters and possibly towards a lower temperature regime.