



**CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE**

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R & D SERIES FOR MARINE FISHERY RESOURCES MANAGEMENT

**13. THE WINDOWPANE OYSTER RESOURCES OF
KAKINADA BAY**

Among the commercially exploited bivalve molluscs in India the windowpane oyster *Placenta placenta* (Linnaeus) (*Talapu gulla* in Telugu) is next in importance to the clams in quantitative abundance. A major fishery for this species exists in the Kakinada Bay where the annual production is about 5000 t. Production is about 1500 t/year of empty shells in the Pindhara Bay in the Gulf of Kutch and about 350 t/year in Naukim Bay at Goa. In the fishery at Kakinada Bay about 300 plank-built boats are deployed. This species occurs in stray numbers at several other centres along the Indian Coast. Considerable quantities of the shell are also collected from the subsoil deposits, particularly from the Vembanad Lake in Kerala State.

The windowpane oyster prefers soft muddy bottom (particle size below 0.125 mm). It thrives well in shallow bays (upto 5 m depth which are sheltered from strong wave action. Salinity of 10 - 34‰ is within the distributional range of this species.

Utilisation

P. placenta is fished for human consumption at Goa and at other centres it is not presently eaten. It may be mentioned that in the Philippines this oyster is cultured for its meat which is used in the preparation of a number of traditional dishes. The lime from the shell has wide industrial application, notably in the cement

industry. The shells are also used for the glazing of the windows, as decorative pieces and for making curios. Annually 20-25 t of the flat valve of this oyster are exported to Hongkong, Japan and Korea from Kakinada for making curios. The pearls retrieved from the mollusc are brittle and used in the indigenous system of medicine. In the Gulf of Kutch fishery, pearls are also extracted from this oyster and 37.6 Kg of them were collected in 1981-82.

Biology of *P. placenta* in the Kakinada Bay

The Kakinada Bay has a water spread of 146 km² and *P. placenta* is distributed along the southern and western sides in 40 km² area. In the bed, the population density is low at 2-15 oysters/m². *P. placenta* attains an average length of 122 mm in the first year, 157 mm in second year and 173 mm in the third year. Spawning is biannual in February-April and October-December; the oyster may spawn more than once during the same spawning season. Majority of the oysters mature for the first time at 53 mm. The condition index (percent of meat weight in total weight) varies from 8.7 to 18.7 and is high prior to or at the beginning of spawning and declines with the completion of spawning. Between 46 to 91% of the oysters are infested by the peacrab *Pinnotheres placunae* and the condition index is slightly lower in the crab-infested oysters. About 26% of the oysters studied contained pearls. The pearls measured upto 7 mm in diameter and 92% of them were below 2 mm. A maximum of 27 pearls were recorded from a single oyster.

Stock assessment in the Kakinada Bay

The parameters of the von Bertalanffy equation for growth in length of *P. placenta* are estimated as $L_{\infty} = 186.6$ mm, $K = 0.7802$ per year and $t_0 = -0.3543$ year. During 1978-81 the natural (M), fishing (F) and total (Z) mortality rates have been estimated at 1.3, 2.7 and 4.0 respectively. The age at recruitment (t_r), age at first capture (t_c) and fishable life-span (t_{∞}) are estimated at 0.12, 0.89 and 3.4 years respectively. Under the current value of t_c (0.89 year) the yield per recruit (Y_w/R) increases rapidly to 22.37 g against the F at 2.2; at higher levels of F also the Y_w/R increases, but only a maximum of 24.46 g can be obtained with F at 12.0. In the present state of the fishery, with F at 2.7, the Y_w/R is 22.90 g and further increase in the effort would therefore give only marginal increase in the yield which may not be remunerative, though the same does not affect the stock adversely. It was also observed that maximum yield can be obtained at $t_c = 0.8$ year which is close to the current value. The present length at first capture (116 mm) is much greater than the length at first maturity of 53 mm. Hence there is no danger of overexploitation through recruitment overfishing even at higher levels of F . Hence the present t_c and F can be maintained with advantage.

Currently two factors namely fishing the windowpane oyster by hand (which limits the catching efficiency), and the low market demand insulate against overfishing. However, any change in the pattern of fishing such as the introduction of dredge or other mechanical gear is likely to affect the stock adversely.

It may be mentioned that the total stock of *P. placenta* in the Kakinada Bay was estimated at 12,500 t during March/April 1983 and the gap between the present production and potential is narrow. These studies show that there is not much scope to step up the production.

Recommendations

1. There is urgent need to popularise the meat of the window pane oyster as food. (2) The current age at capture of 0.89 year and the fishing mortality rate of 2.7 can be maintained with advantage. (3) There is not much scope to step up production.

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The conclusions/recommendations made in this series are subject to revision with addition of further information on the resource.

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