

Shell boring polychaete (*Polydora* sp.) infestation in black lipped pearl oyster *Pinctada margaritifera*

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Black lipped pearl oyster *Pinctada margaritifera* of size ranging from 3 to 40 mm were collected from the rocky beach of Lawson's Bay along Visakhapatnam coast and were reared in the marine hatchery of the Visakhapatnam Regional Centre of CMFRI. The oysters were reared in 1 t capacity fibre glass tanks in 32‰ filtered seawater, provided with continuous aeration and mixed microalgal diet comprising *Isochrysis galbana* and *Cheatoceros calcitrans*. During the course of domestication for a period of nearly 22 months, the oysters were regularly cleaned of fouling and boring organisms at monthly intervals. The growth was also recorded periodically. During this period, infestation by the shell boring polychaete *Polydora* sp. on *P. margaritifera* was observed. *Polydora* sp., is the most common shell boring polychaete reported in pearl oysters. *Polydora* sp. belonging to Family Spionidae, is an opportunistic polychaete found to infest pearl oysters, edible oysters, mussels, scallops and abalones. This annelid polychaete worm constructs a U-shaped burrow with mud and detritus, with opening at both ends. The polychaete worms bore into the shell from the margins as well as the centre. They tunnel through the horny periostracum and then into the prismatic and nacreous layers. The oyster responds by secreting a layer of conchiolin layer over the worm and the burrow, later covering it with nacreous shell, which results in the characteristic "mud blister". The blisters are of different shapes, viz., straight, wavy, u-shaped depending on the course of perforation (Fig. 1 and 2). Tumour-like protrusions are observed

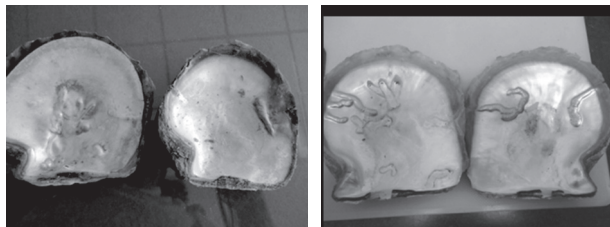


Fig. 1 and 2: Blisters and scars formed on the shells of *P. margaritifera* by *Polydora* sp.

near the adductor scar. Compound blisters are formed when two or more worms lay the tunnels close together. Blisters are found on single shells as well as on both shells.

The polychaete worm is yellowish brown/deep red in colour, about 3 cm long, segmented and has numerous bristles and tentacles all along the segmented body. The anterior region has several palps waving vigorously, and the posterior end is almost blunt and saucer shaped (Fig. 3 and 4). Another form of the *Polydora* sp. was also observed which had several palps on the anterior end, highly segmented body and lateral bristles but tentacles were absent. A tapering tail which was almost blunt and saucer shaped was present in this form (Fig. 5).



Fig. 3. *Polydora* removed from its dwelling tube; Inset: *Polydora* stretching out from the tubes

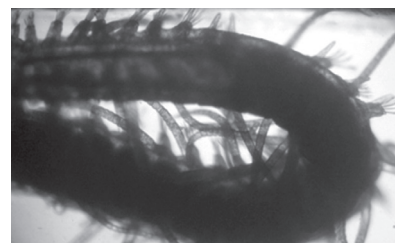


Fig. 4. Segmented body of *Polydora* with bristles and tentacles

The infestation was more in larger oysters (older oyster) than the younger ones. This has been reported in other pearl oyster species also, due to the erosion of the periostracum in older oysters. The infestation by the boring polychaete did not affect the growth and mortality was rare. In severe case of infestation, it affected the tissue of the oyster and was found to be highly emaciated. Such oysters will not be suitable for pearl production by nucleus implantation. Infestation by the polychaete was observed when salinity decreased to <20‰ and temperature below 24 °C. The method for control of this infestation was freshwater or high saline dips for 15-20 min.

Polychaete infestation has been observed earlier in other species of pearl oysters also viz., *Pinctada*

fucata, *Pinctada chemnitzii* and *Pinctada sugillata* when assessed both in wild and onshore culture conditions. Of the four species caught in wild, the infestation intensities recorded were *P. margaritifera* - 18%, *P. fucata* - 26%, *P. chemnitzii* - 24% and *P. sugillata* - 11%. After a period of six weeks, there was horizontal transmission of the infestation to *P. margaritifera* (6%), *P. fucata* (9%), *P. chemnitzii* (12%) and *P. sugillata* (8%) amongst the healthy stock while under low salinity (<22‰) and temperature (below 24 °C) the infestation was found to be 9% in *P. margaritifera*, 14% in *P. fucata*, 32% in *P. chemnitzii* and 18% in *P. sugillata*. However mortality was negligible (max. 7% in case of *P. chemnitzii*) in a period of one year of culture under onshore conditions.