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59. ON THE LARGE SCALE PREDATION BY THE GASTROPOD, *(CYMATIUM CINGULATUM)* ON PEARL OYSTERS

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ABSTRACT

The predatory gastropod *Cymatium cingulatum* was found to occur in large numbers in the pearl oyster farm at Krusadai from February to July, 1986. They feed mainly on spat and young oysters below the size 40 mm in DVM and thereby causing large scale mortalities of pearl oyster stock. This menace was eradicated by periodical checking and hand picking manually. In all 50,901 oysters were found dead in the 4,010 cages inspected and 934 predators were collected and destroyed. The gastropods ranged between 21 and 88 mm in length.

INTRODUCTION

Certain predators pose serious threat to commercial molluscan culturist all over the world leading to considerable economic loss. Hence, effective checks and control measures have to be developed to eradicate the predators. Some known enemies of pearl oysters are drills, star fishes, crabs and fishes. Hornell (1922) has reported about the destruction of pearl oysters by the carnivorous molluscs belonging to the genera *Purpura, Nassa* and *Sistrum*. Presence of predatory gastropod *Cymatium* sp. in the pearl oyster beds in the Gulf of Mannar and pearl oyster farm at Tuticorin was reported by Jeyabaskaran et al (1983). In the present note, an observation on the occurrence of the predatory gastropod *Cymatium cingulatum* and its effect on pearl oyster farming near Krusadai Island in Gulf of Mannar is reported.

MATERIAL AND METHODS

Pearl oysters belonging to the species *Pinctada fuctada* are being farmed at Krusadai Island for the purpose of producing cultured pearls on a commercial scale. These are reared in box type cages of size 40 x 40 x 10 cm and suspended from wooden rafts and permanent structures erected with teak poles. During periodical cleaning of oysters and cages the presence of *C. cingulatum* was detected in February, 1986. Mortality of oysters in these cages was found to be high. Data on number of cages cleaned, number of oysters examined and number of oysters found dead were recorded daily to assess the extent of the damage. The predators were totally eliminated by the end of July, 1986 by repeated and intensive checking of cages and by hand picking.

OBSERVATIONS

It is observed, during predation *C.cingulatum* sits on the oysters and its proboscis gland secretes an acidic fluid which paralyses the oyster, as a result the shell valves remain agape to enable the whole of fleshy portion to be fed by the predator as reported by Thangavelu and Muthian (1983). As a result, the valves were found to remain open without damage to the shell, but the entire flesh devoured by the predator. Details of cages cleaned, oysters examined etc. are given in Table 1. From February to July, 1986 a total of 4,010 cages were cleaned and 6, 09, 680 *P. fucata* were examined. In all 934 *C cingulatum* were collected and destroyed. 50, 901 oysters were found dead ranging in Dorso Ventral Measurement (DVM) between 20 and 40 mm. The rate of mortality was found to be high during February (18.2%) and May (12.2%) followed by April (9.4%) and March (7.4%). The average mortality recorded for the entire period of observation was 8.3%. A maximum number of 425 *C. cingulatum* was

TABLE 1. *Particulars of the number of pearl oyster cages cleaned, oyster examined and* Cymatium cingulatum *recorded at Krusadai Pearl oyster farm from February to July, 1986.*

Month	No. of cages cleaned	No. of oysters examined	No. of oysters dead	No. of *Cymatium cingulatum* present	Percentage of mortality
February'86	434	65,190	11,875	172	18.2
March	1,241	1,86,199	17,435	425	7.4
April	1,002	1,50,295	4,756	92	9.4
May	685	1,01,604	13,162	147	12.2
June	408	70,392	2,574	70	3.7
July	240	36,000	1,090	28	3.1
Total	4,010	6,09,680	50,901	934	8.3

picked up in March. The size distribution of *C. cingulatum* collected from the farm is given in Table 2 Among the 934 predators collected,

TABLE 2. *Size distribution of* Cymatium cingulatum *observed in Krusadai pearl oyster farm from February to July 1986.*

Size range in mm	21-40	41-60	61-88
	Numbers present in each size group		
February'86	81	64	27
March	143	216	66
April	32	41	19
May	59	73	15
June	22	28	20
July	4	15	9
Total	341 (36.5%)	437 (46.8%)	156 (16.7%)

21-40 mm size group (341 nos.) constituted 36.5%, 41-60 mm size group (437 nos.) consisted of 46.8% and 61-88 mm individuals (156 nos.) were 16.7%. The maximum length of *C. cingulatum* observed was 88 mm and the minimum size was 21 mm. Comparatively young oysters less than 40 mm in DVM were found to be susceptible for predation.

REMARKS

Cymatium cingulatum is found to be the principal predator inflicting heavy casuality on pearl oysters in the farm at Krusadi Island. The maximum mortality of 18.2% caused by the predator was in February, 1986 and the average mortality for the period of observation was 8.3% vide Table 1. This appears to be less in comparision with the 13% mortality observed in Tuticorin edible oyster farm by Thengavelu and Muthiah in 1983, 17.4 to 40% mortality recorded in the pearl culture farm at Tuticorin by Jeyabaskaran et al (1983) and 30% mortality caused by oyster drills in Atlantic coasts (Adams, 1947).

Oysters of smaller size group (below 40 mm DVM) were found to be affected mainly and the rate of mortality was found to increase as the number of *C. cinglatum* increased. The fact that smaller size groups were mostly affected was observed earlier by Jeyabaskaran et al (1983) also. By repeated checking and hand picking manually, the predators can be eliminated,

It is a probability that these predators occurring in pearl oyster beds off Tuticorin (Jeyabaskaran *et. al*, 1983) might have found entry into Krusadai farm along with the stock of oysters collected at Tuticorin and transported to Krusadai. But there is every possibility of the local stock of *C. cingulatum* found in

Krusadai Island area (Satyamurthy, 1952) invading the pearl oyster farm and causing destruction.

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