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OCCURRENCE OF MUSSEL SEED ON DREDGER PANTOONS IN ENNORE ESTUARY, MADRAS*

Several species of fouling organisms settle and grow on ship hulls, pantoons, buoys, dredgers and other floating structures in the sea and in the backwaters and estuaries. At the mouth of Ennore Estuary, two dredgers are employed by the Ennore Thermal Power Station to regularly remove the sand. This is done to keep the bar-mouth open throughout the year so as to supply water to the cooling tower of the thermal power plant. The main dredger and its machine parts are supported by 2 rectangular side pantoons on either side, each of dimensions of 13 x 2 x 1.8 m (Fig. 1). There are also paired cylindrical pantoons located behind the dredger, each pair weighing 1.5 tonnes. The dredged sand alongwith a jet of water is forced through steel pipe line of 1/2 metre diameter, followed by vinyl pipe line. The latter rests on the pantoons arranged adjacent to one another at a distance of 1 to 2 metres. The pipe line system is of about 400 metres long. Each pantoon is a steel drum with a length of 3.5 metres and a diameter of 1.25 metres. The pantoon is partly immersed in the water and offers suitable surface for the settlement of fouling organisms.

The major fouling organisms observed on the pantoons were mussels, oysters and barnacles, of which the green mussel *Perna viridis* is the most dominant (Fig. 2). The pantoons are usually hauled up from the water during November every year for removing the fouling organisms and are re-floated in the water around February. Between February and November, heavy settlement of fouling organisms was noticed.

The extent of fouling on the pantoons can be understood from the abundance of the green mussels (Fig. 3). The total quantity of mussels on the pantoons was estimated by taking subsamples *i.e.*, the number and weight of mussels in 1/4 m^2, sampled randomly and raising them for the total area of settlement. In November of 1985 and 1986, the mussels removed from the pantoons amounted to 8.5 million (25 t) and 8.6 million numbers (27 t) respectively. The former came from 56 cylindrical pantoons and four rectangular pantoons and the latter from 48 pantoons. The size range of mussel recorded during 1985 was from 5 to 84 mm with modal groups of 15–19, 55–59 and 60–64 mm. In 1986, the size range was 5 to 69 mm, the modal groups being 10–14 and 55–59 mm. On both the occasions, young spat settled recently prior to removal of pantoons from water, constituted the bulk of the population to the extent of 64.4% in 1985 and 48% in 1986. Size range of this groups was from 5 to 29 mm which was ideally suitable for transplantation in mussel culture experiments. Details regarding the area of mussel spat settled, density, size range and modal size group are given in Table 1.

It is significant to note that millions of mussel spat are removed from the pantoons every year (Fig. 4) and thrown on the sandy beach. Shortage of mussel seed has been considered to be the major constraint in the intensification of mussel culture on industrial scale (Silas, E. G., *Bull. Cent. Mar. Fish. Res. Inst.*, **29**: 51-56, 1980). The large quantities of mussel spat which are available can very well be used for mussel culture in the backwaters or lagoons.

The above observations reveal the high magnitude of mussel seed settlement which occurs in areas like Ennore, and these can be effectively collected by providing suitable spat collectors.

Table 1. *Data on green mussel at the time of removal from the pantoons*

Details	1985	1986
1. Number of pantoons	56 cylindrical and 4 rectangular	48 cylindrical and 4 rectangular
2. Total area with mussel (m^2)	703	638
3. Estimated mussel (numbers)	8,558,322	8,615,638
(weight in tonnes)	24,733	26,961
4. Number of mussel/m^2	12,174	13,501
5. Weight of mussel/m^2 (kg)	35,183	42,258
6. Size range (mm)	5–84	5–69
7. Modal size groups (mm)	15–19	10-14
	55–59	55–59
	60–64	
8. Mean size (mm)	32.0	33.0
9. Mean weight (g)	2.89	3.13

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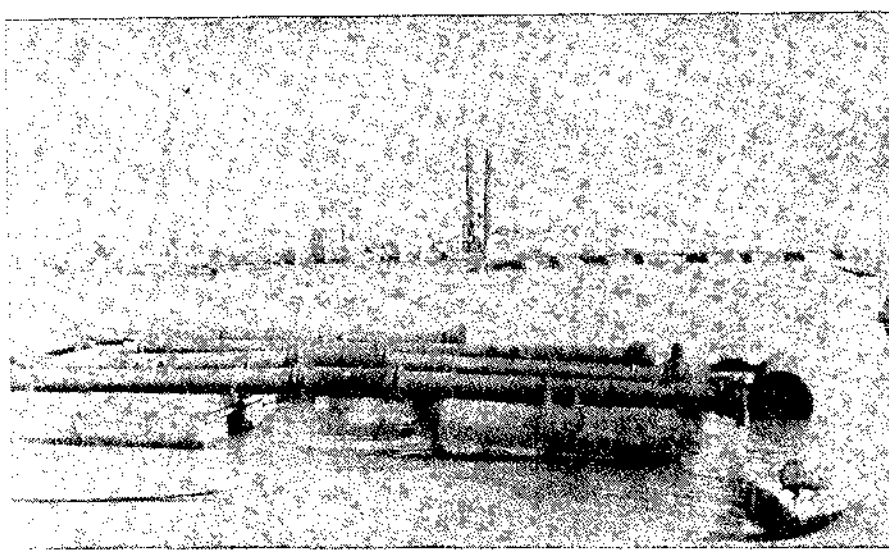

Fig. 1. The dredger and pantoons floated in Ennore Estuary.

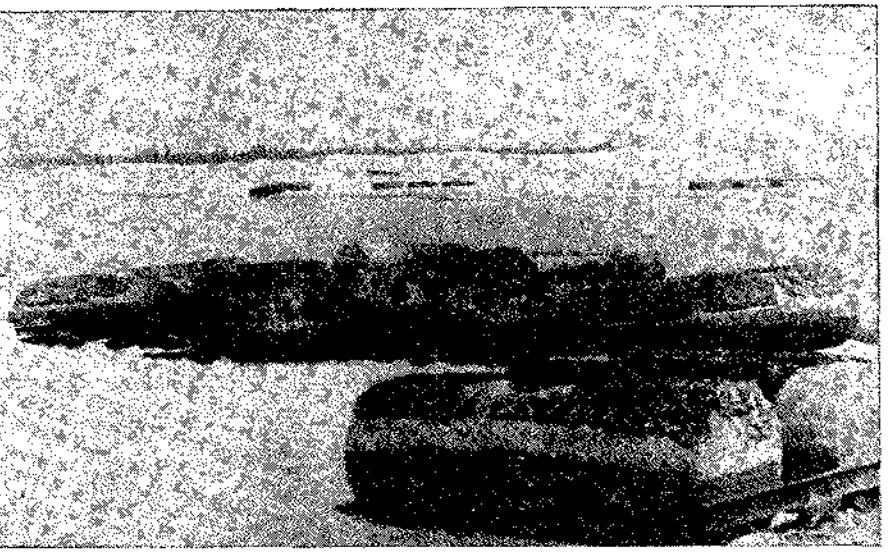

Fig. 2. Dense growth of green mussels, barnacles and oysters on pantoons.

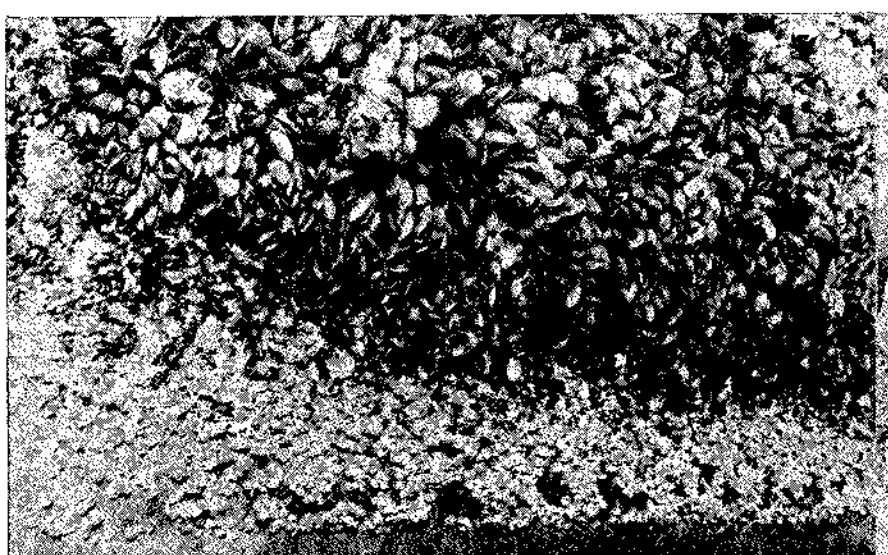

Fig. 3. A close-up view of the green mussels, oysters and barnacles on a pantoon.

Fig. 4. The encrusted organisms are being removed from the pantoons.