

M.S.51. UNNIKRISHNAN NAIR, N.—Studies on the Backwater Oyster *Crassostrea madrasensis* (Preston) of the Cochin Harbour—1985—Dr. N. Balakrishnan Nair.

1. A detailed study of the hydrography of the Cochin Backwaters, the habitat of *Crassostrea madrasensis* has been carried out. Data pertaining to air temperature, water temperature, salinity, dissolved oxygen, turbidity and rainfall have been collected and presented. The temperature fluctuation was in the range of 5°C only and that of salinity between 1.1% and 32.9%. Fairly steady salinity has been recorded during the pre-monsoon period (February to May) and distinct stratification during the monsoon period (June-September). Dissolved oxygen varied between 2.5 ml/l and 6.5 ml/l. Turbidity was highest

in June (27.9 p.p.m.) and minimum 10.2 p.p.m.) in March.

2. A detailed study on marine biofouling in the Cochin Backwaters has been made with special reference to primary film, settlement and growth of the fouling organisms such as hydroids, bryozoans, tube-dwelling polychaetes, barnacles and modiolus.
3. An account of the settlement of *C. madrasensis* in the Cochin Backwaters is presented. *C. madrasensis* a wide distribution in the backwaters. In the five stations investigated, no settlement of *C. madrasensis* was observed during the monsoon period owing to reduced salinity. Settlement in general was confined to the late post-monsoon period and throughout the pre-monsoon period.
4. Height-length studies in *C. madrasensis* revealed an exponential trend in the form $H = AL^B$. Larger deviations in height for longer oysters were observed. For oysters below 3.5 cm in height, height and length approximated. The ratio changed for oysters of 8 cm and above in height. Height-depth relation also showed an exponential relation in the form $H = AD^B$. The variations in height did not bring about corresponding variations in depth. The frequency distribution of the index of shape also showed that height and width are not directly proportional to increase in length.
5. The relation of weight to height, length and depth was examined by a multiple regression. t-tests showed that the regression co-efficients were significantly different from zero, suggesting that increase in height, length and breadth contributed to the weight in *C. madrasensis*. Partial regression co-efficients showed that weight is influenced by height, length and depth in their order of preference.
6. Condition index and percentage edibility for the total oyster populations were worked out. Condition index and percentage edibility showed a similar trend for the total population and also for males, females and indeterminates. Maximum condition index and percentage edibility were noticed during October which declined and reached the lowest in February-March. From April, it showed steady increase reaching the maximum again in October.
7. Studies on age and growth showed faster growth rate in *C. madrasensis* inhabiting the Cochin Backwaters compared to those reported from Madras. Salinity fluctuations and alteration of mesohaline and polyhaline condition at the Cochin Harbour influenced the growth in *C. madrasensis*. Growth was determined by the progression of model height during different months. The maximum size which oysters can attain (L_{∞}) and catabolism coefficient K , ($\log_e \tan \alpha$) were determined by Ford-Walford technique. The theoretical time at which oyster height is zero (t_0) was determined by plotting $\log_e (L_{\infty} - L)$ on t . From this, it was read as the time relating to $\log L$. L_{∞} was found to be 21 cm.
8. Biochemical studies have shown similar trend in the fluctuation of water content in male and female oysters. A definite pattern in the distribution of protein was noticed. It showed an inverse relation to glycogen. A definite shift in the values of protein corresponding to the reproductive phase of oysters was noticed. Fat content was low during December to May with peaks in September in both the sexes. Ash also showed a trend similar to protein.
9. Trace metal load of cadmium, copper, iron, manganese, zinc and mercury was estimated. The study has shown that heavy metal load in *C. madrasensis*

10. A brief account is furnished of the associates and their ecology. The parasites include, the boring sponge *Cliona*, the polychaete *Polidora ciliata* and the trematode *Bucephalus* sp. Several species of bryozoans such as *Electra bengalensis*, *Alderina arabianensis*, *Schizoporella cochinchinensis*, *Nolella paupensis*, *Bowerbankia impriata*, *Electra crustulenta*, *Victorella pavidata* and tubicolous polychaetes such as *Hydroids norvegica*, *Mercierella enigmatica* and crustaceans such as *Balanus amphitrite*, *Corophium triaenonyx*, *Sphaeroma walkeri* were recorded as associates. The formation of pearl in one instance has also been recorded in this edible oyster. The results of the present studies are discussed in detail with earlier work on oysters from India and abroad.