

Growth and survival of the green mussel *Perna viridis* (L.) under suspended conditions off Kovalam near Chennai

N. Ramachandran, P.Poovannan and K.Sreenivasagam

Central Marine Fisheries Research Institute, Cochin, India

Abstract

Studies on growth and survival of the green mussel *Perna viridis* under suspended conditions were carried out at Kovalam near Chennai. Mussel of 2.2 cm (1.03 g) average size transplanted on ropes suspended from a raft attained 5.8 cm (14.9 g) in 3.5 months during July-October period. Using an initial density of 1.4 ± 0.5 kg/m, a yield of 7.5 ± 1.3 kg/m/kg of young mussels transplanted was obtained. The survival was $52 \pm 9\%$ (in numbers). Results can be improved by further standardization of the initial density and size of young ones for transplantation.

The green mussel, *Perna viridis* (Mytilidae, Bivalvia) has occupied a significant position among the exploited molluscan resources from coastal waters of India. The study conducted by Paul (1942) has brought out some aspects of growth and reproduction in this species from Chennai harbour. The increasing awareness and interest in mariculture noticed throughout the world had prompted researchers to initiate experiments in mussel culture in India (Qasim and Achari, 1972). In this context, studies on the growth and survival of *P. viridis* under suspended conditions were carried out in the Bay of Bengal, off Kovalam, about 35 km south of Chennai ($12^{\circ}40' - 12^{\circ}50' N$; $80^{\circ}00' - 80^{\circ}20' E$).

The authors are thankful to the Director, Central Marine Fisheries Research Institute Cochin; the Scientist-in-Charge, Madras Research Centre of C.M.F.R.I.; the

Head, Molluscan Fisheries Division, C.M.F.R.I. and Shri K. Rangarajan, retired Scientist (S-3) of Madras Research Centre of C.M.F.R.I. for their support and encouragement.

Young mussels with an average length of 2.2 cm (1.03 g) were collected from the intertidal and submerged rocks along the Kovalam coast towards the end of June and beginning of July 1979. They were cleaned, weighed and transplanted on coir ropes by wrapping with cotton net clothing of small mesh size. The quantity of mussels used was 1.4 ± 0.5 kg per metre and seeded ropes were marked with plastic tags. These ropes were suspended from a raft moored in an area off Kovalam where the depth was 8m. Samples of mussels were taken from marked ropes periodically for growth studies. By the middle of October, ropes were brought ashore to ascertain the growth and survival of mussels.

The mussels on ropes had grown to 4.7 cm by mid-September and 5.8 cm by mid-October. In terms of weight, they attained 14.9 g (average) by middle of October (Fig.1). At this time, the estimated weight of mussel per metre of rope had reached 10.4 ± 5.2 kg, thus giving a yield of 7.5 ± 1.3 kg per metre per kg of young ones transplanted. The average growth rate in size was 1 cm and weight 3.91 g per month. This rate of growth in length is almost similar to that reported by Ranade *et al* (1973) for the species under suspended conditions in Ratnagiri waters and also to that reported by Paul (1942). Rao *et al* (1975) observed that green mussels get on buoys placed in Vengurla Bay, Goa had attained a length of 6 cm in six months. However, the monthly growth of this species on

culture ropes at Calicut ranged from 1.16 cm to 1.29 cm and at Karwar from 0.76 cm to 1 cm (Kuriakose *et al*, 1988). Farming experiments conducted in Goa waters (Qasim *et al*, 1977) had indicated that the growth rate of the green mussel from ropes as well as from natural beds showed strong seasonal variations. The yield obtained in the present study was slightly lesser than that reported from Calicut (Kuriakose, 1980). The variations noticed in these places were obviously due to environmental differences, initial density of transplanted mussels and their size.

The estimated number of young mussels used for transplantation was 1321 per metre (average) and the number remained at the time of removal in mid-October was 696 per meter. Thus the survival of mussel on ropes during the period of study was $52 \pm 9\%$. In a related species, *Perna indica*, Appukuttan *et al* (1988) noticed large scale "slipping of seed" during mussel culture operations off Vizhinjam. When compared to the 20-30% mortality reported from Goa (Qasim *et al*, 1972), the loss/mortality recorded in the present study was considerably higher. Comparatively rough sea conditions prevailing in the Bay of Bengal had been a constraint for better survival of mussels on ropes suspended from the raft.

The results of this study are useful for upgrading mussel culture and they indicate possibilities of mussel culture in this area twice a year, one beginning in December-January and another in June-July along with careful monitoring of the environment.

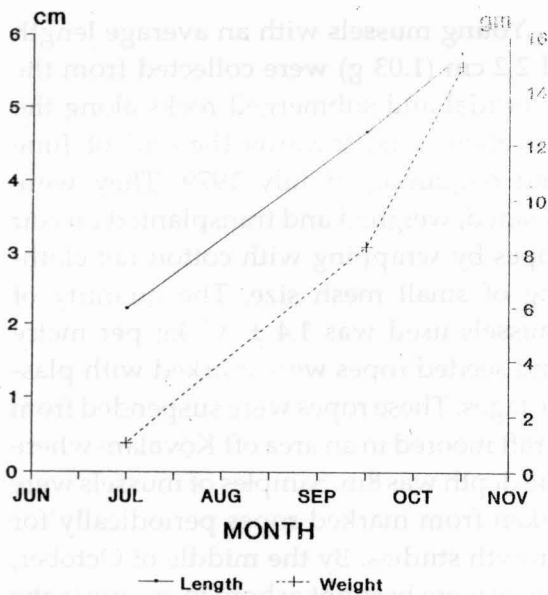


Fig. 1. Growth of *Perna viridis* under suspended conditions off Kovalam, near Chennai

References

- Appukuttan, K.K., T.P. Nair, Mathew Joseph and K.T. Thomas. 1988. *Bull. Cent. Mar. Fish. Res. Inst.*, **42 Pt.2** : 257-263
- Kuriakose, P.S 1980. *Bull. Cent. Mar. Fish. Res. Inst.*, **29** : 33-38
- , V.G. Surendranathan, and M.P. Sivadasan. 1988. *Bull. Cent. Mar. Fish. Res. Inst.*, **42Pt.2** :247-256
- Paul, M.D. 1942. *Proc. Indian Acad. Sci.*, **15B**: 1-42
- Qasim, S.Z. and G.P.K. Achari. 1972. *Seminar on Mariculture and Mechanized Fishing, Department of Fisheries, Government of Tamilnadu*, Abstract 13
- , A.H. Parulekar, S.N. Harkantra, Z.A. Ansari and Ayyappan Nair. 1977. *Indian J. Mar. Sci.*, **6**: 15-25
- Ranade, M.R., P.C. Raje and A.M. Ranade. 1973. *Curr. Sci.*, **42**: 584
- Rao, K.V., L.Krishnakumari and S.N. Dwivedi. 1975. *Indian J. Mar. Sci.*, **4** : 189-197.