



Regeneration of the proboscis of cymatiid *Cymatium pileare* (Gastropoda:Prosobranchia)

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Cymatiids cause considerable damage to bivalve stock in molluscan culture. Bivalves are preyed upon by cymatiids with insertion of proboscis and interaction of radula and jaws. Rate of regeneration of proboscis in cymatiid was faster than predatory thiasid and muricid gastropods.

Prosobranchs of muricids, cymatiids and buccinids are reported for their predation on oysters¹. Cymatiids caused 13 % mortality of farm oysters². Muthiah *et al.*³ reported that cymatiids feed on oysters with radular mechanism by inserting their proboscis in between the two valves of oyster. The regenerative ability of proboscis tip of muricid gastropod *Urosalpinx cinerea* is on record⁴. Experimental amputation studies on *Thais haemastoma* and in *U. cinerea* have been reported^{5,6}. The present study was conducted to determine the rate of proboscis regeneration occurrence in *C. pileare* after experimental proboscisectomy in the laboratory.

Twenty specimens of *C. pileare* collected from pearl oyster farm at Tuticorin (lat. 8° 48' N, long. 78° 11' E) were maintained in a FRP tank of size 75 × 50 cm. During May-June 1993, 12 snails of size ranging from 45-72 mm were separately employed for this study and provided with oysters for feeding. Proboscisectomy was done when the gastropods were actively feeding on oysters at dusk. Snail as well as oyster which was preyed upon were removed from the tank. The valves of oysters were pressed tightly so as to avoid withdrawal of proboscis by the snail and the proboscis was cut quickly. The amputated portion of proboscis having complex buccal mass that remained inside the oyster was taken and measured. The length ranged from 7-11 mm and width 3-5 mm. For recuperation, proboscisectomized snails were kept individually in a numbered perforated plastic basket of 15 cm diameter having a lid. Five oysters of length 25-57 mm were always maintained in each basket and 6 such baskets were kept in a FRP tank (75 × 50 cm) having filtered seawater. Daily, while changing the seawater, observations were made for the oysters preyed upon by snails, and if any, replaced

from 26°-29°C and the salinity varied from 35.5-36 × 10³ and pH value averaged to 8.18.

One snail out of 12, laid egg case 14 days after proboscisectomy and incubated it; it was not taken into account. Other snails resumed feeding on oysters indicating the proboscis with its associated structures being regenerated and functional. The rate of regeneration of proboscis and resumption of feeding ranged from 15-25 days. The rate of regeneration of proboscis of cymatiids was faster than other group of molluscs; *Thais haemastoma*⁵ took 3 weeks for regeneration of distal proboscis portion and that of *U. cinerea* and *Eupleura caudata* regenerated⁶ in 11 to 34 days.

The larger snails in 60-70 mm length group resumed feeding on 20-21 days after amputation whereas 50-60 mm size gastropods took 15-20 days. Some in the length group of 45-50 mm started feeding 23-25

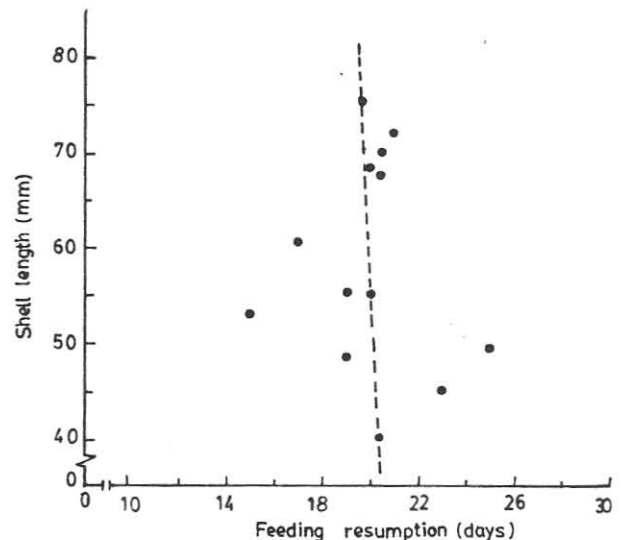


Fig. 1—Feeding resumption after proboscisectomy to shell length of *C. pileare*

days after proboscisectomy. The relationship between the length of proboscisectomized snails to the number of days for their feeding resumption was not significant (Fig. 1). Similar observation was made in *E. caudata*⁷ to the days of feeding after excision of accessory boring organ.

The present study is the first to report on the regeneration of proboscis in cymatiids, though it has been reported in the thiasids and muricids^{5,6}. The rapid regeneration of feeding organ ensures their better survival and best adaptiveness for the predatory behaviour. These observations on cartilage regeneration in invertebrates^{6,8} will be useful in the study on cartilage and skeletal regeneration.

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