

1977

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Yap, W. G., Orano, C., & Tabbu, M. (1977). Biology and farming of the green mussel *Mytilus smaragdinus*. SEAFDEC Aquaculture Department Quarterly Research Report, 1(2), 5-7.

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Biology and farming of the green mussel *Mytilus smaragdinus*

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The farming of the green mussel *Mytilus smaragdinus* is already well established in Bacoor Bay, Cavite and Sapián Bay, Capiz, two areas with resident mussel populations. Interest in mussel farming is high but the available areas are limited. In order to develop intensive mussel farming techniques in areas with poor or no natural spat settlement, knowledge on this mollusk's reproductive cycle, larval occurrence and spat settlement is essential. Towards this end biological investigations were carried out in Sapián Bay, Capiz from November 1975 to December 1976 with samplings conducted fortnightly.

Histological studies on the gonad reveal a high percentage of ripe and spent females during the month of April and May, and ripe to near ripe during November to December (Fig. 1). However, larval counts were highest on February 25, 1976 with 253 mytilid larvae per haul compared to 0-79 per haul during all other months (Fig. 2).

The high larval count was followed by the highest spat settlement during the next sampling period two weeks later, with the spat collector set in the water during the February 25 sampling. The four materials tested, blue polypropylene fiber rope, black polypropylene fiber (Tortell, 1975), and coir rope, all had their highest spat counts during this period with an average of 471 spats per standard 10 cm rope piece (Table 1). The range during the other time periods is 2-283 spats.

Of the 4 materials tested, the black fibrillated polypropylene film had the highest larval counts in 15 out of a total of 25 sampling periods. The blue rope was the poorest spat collector. Coconut husk was tested later on and it proved to have a very high catchability, with spats completely enveloping the husk surface.

Growth monitored from one cohort in Sapián Bay averaged 10 mm per month (Fig. 3). 50-60 mm is considered marketable size. Trial growth experiments with transplanted mussels were also conducted at Igang Bay in Guimaras Island, Makato River in Aklan, and a milkfish pond in Leganes, Iloilo. Survival in Igang was less than 50% after the second week, and the condition of the surviving mussels can be described only as "watery" with the mantle completely transparent. Mortality was minimal in Makato but the growth rate was only 30% that of Sapián Bay. The pond experiments were terminated due to severe crab predation.

The mussel farming industry was already well established in Sapián Bay by the time the year-long biological study was completed. A quarter hectare pilot farm for demonstration and experimentation was established in Himamaylan River, Negros Occidental. Current studies are centered on transplantation using local materials for binding spats to growing ropes.

Table 1. Spat counts from 10 cm rope pieces during peak and poor settlement months.

Spat collector	Feb 25 – Mar 9, 1976	Apr 7-21, 1976
Black polypropylene film	633	11
Black polypropylene rope	357	2
Coir rope	558	5
Blue polypropylene rope	339	1

Fig. 1. Reproductive cycle of *M. smaragdinus* from Sapien Bay, Capiz.

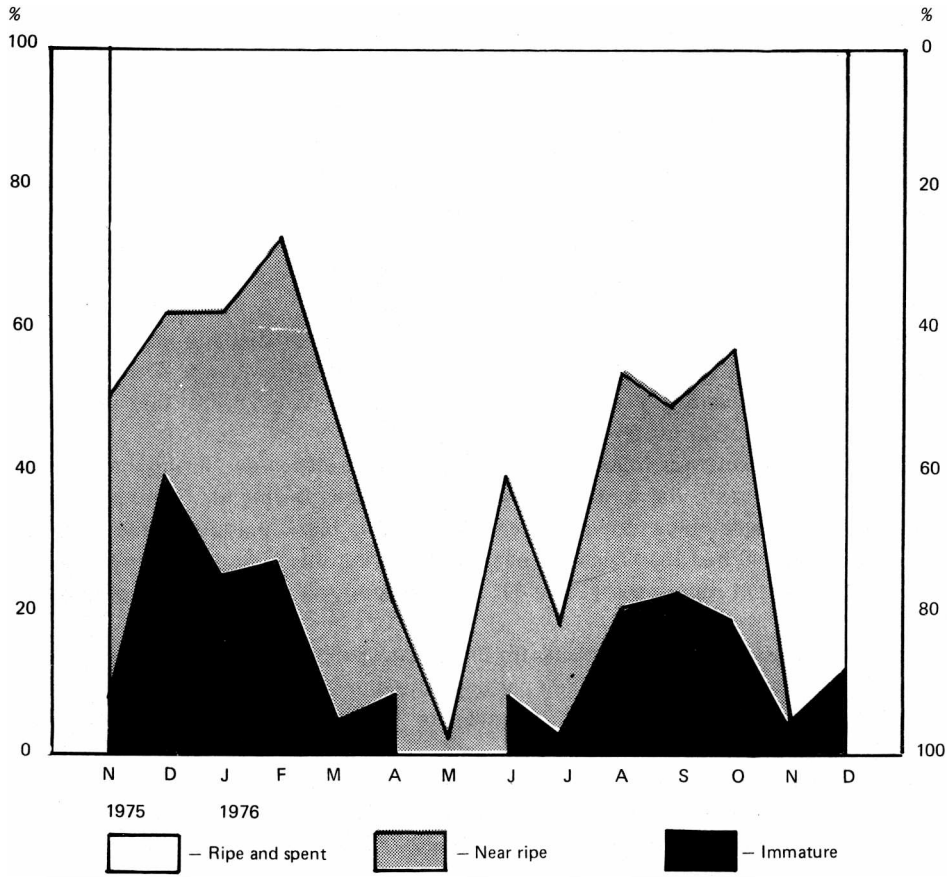


Fig. 2. Mytilid larval occurrence in Sapien Bay, Capiz.

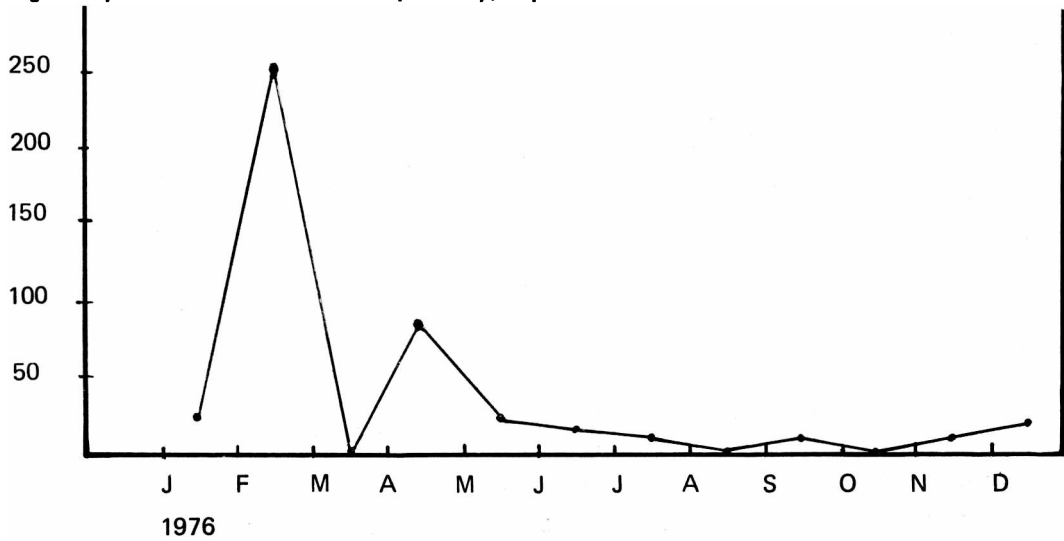
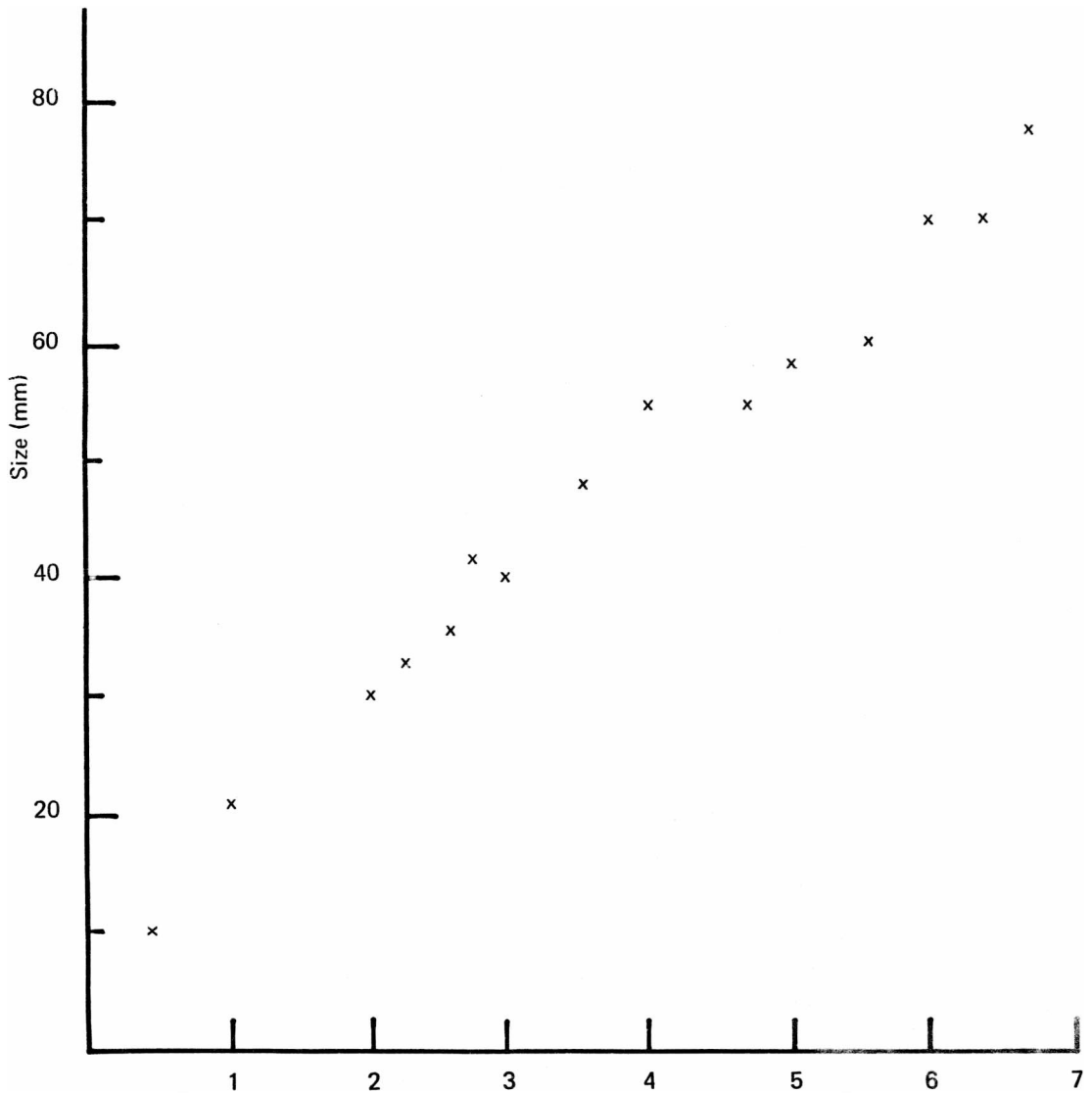


Fig. 3. Growth of the green mussel *M. smaragdinus* at Sapian Bay, based upon modal size in the size frequency of 50 to 100 mussels collected twice a month. Size is measured as the distance in mm from the umbo to the posterior tip.



Literature Cited

Tortell, P. 1976. A new rope for mussel farming. *Aquaculture*. 8:383-388. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands.

