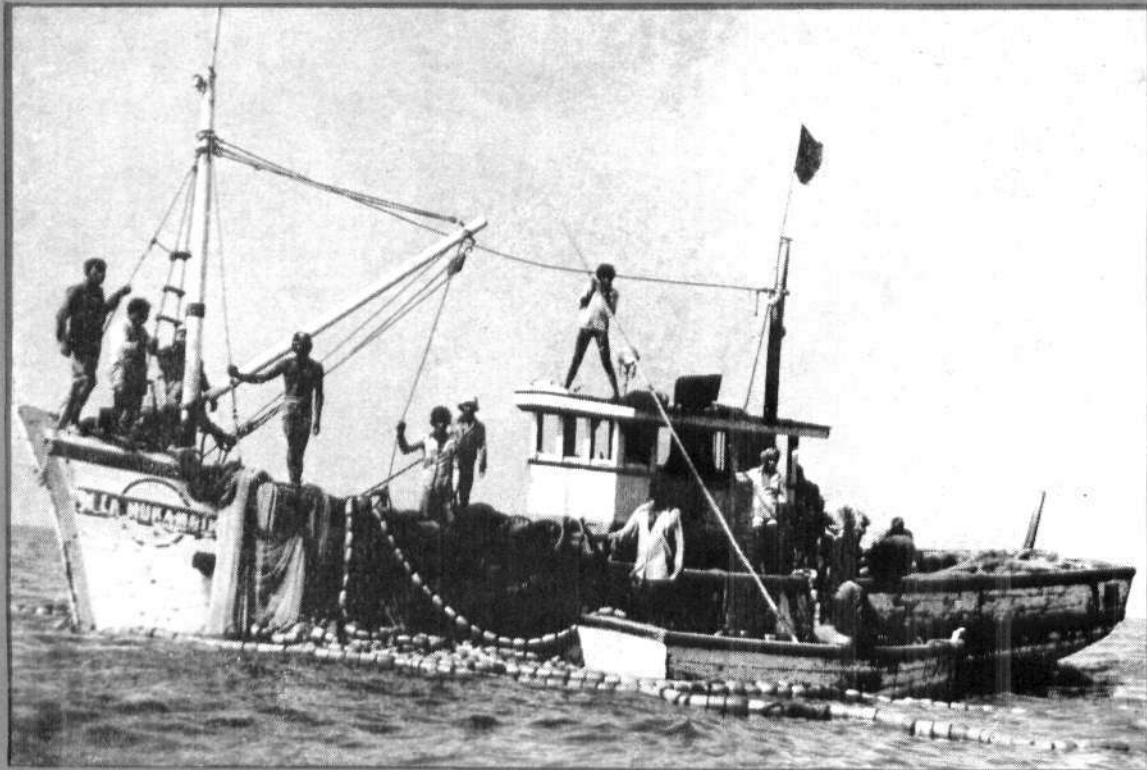




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GROWTH OF LARVAE AND SPAT OF THE GREEN MUSSEL *PERNA VIRIDIS* (LINNAEUS) IN HATCHERY*

Fertilised eggs and larvae of the green mussel *Perna viridis* (Linnaeus) obtained from the spawning of mussels in confinement were reared in the Kovalam Field Laboratory of the Central Marine Fisheries Research Institute and over 20,000 mussel spat have been produced successfully. The mussels in maturing stage were collected on 15-5-'87, kept in 50 l fibreglass tanks and conditioned for maturation by feeding them with phytoplankters like *Chaetoceros*, *Skeletonema* etc. They became mature and spawned on 22-5-'87 without any inducement, except for daily change of water. The water temperature at the time of spawning was 30.1°C and salinity 38‰.

On the completion of spawning, the mussels were removed and the spawn was kept undisturbed for 1 hr. Fertilized eggs, measuring 0.040–0.064 mm, were observed to sink to the bottom at first and after gastrulation

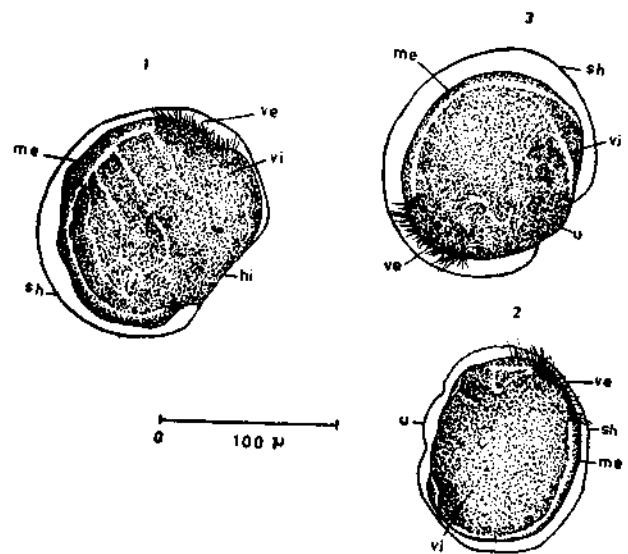


Fig. 1. 1 D-shaped veliger (4 days old)
2 Early umbo stage veliger (6 days old)
3 Umbo stage veliger (7 days old)

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Table 1. Growth of the larvae and spat of *P. viridis* in the laboratory

Day after fertilization	Length (mm)		Breadth (mm)		Height (mm)		Stage
	Range	Mean	Range	Mean	Range	Mean	
4th	0.048-0.096	0.065	0.048-0.112	0.096	—	—	D-shaped
7th	0.064-0.112	0.090	0.080-0.128	0.098	—	—	D-shaped & early umbo
11th	0.080-0.192	0.109	0.096-0.224	0.119	—	—	Umbo
15th	0.112-0.272	0.176	0.128-0.272	0.196	—	—	Pediveliger & eyed
19th	0.176-0.384	0.264	0.176-0.352	0.264	—	—	Plantigrade
23rd	0.224-0.498	0.298	0.224-0.432	0.306	—	—	Plantigrade
27th	0.256-0.720	0.449	0.272-0.640	0.429	—	—	Spat
31st	0.480-2.000	0.959	0.400-1.600	0.775	—	—	Spat
33rd	0.720-1.840	1.155	0.600-1.440	0.853	—	—	Spat
37th	0.880-4.000	1.753	0.600-2.440	1.195	—	—	Spat
40th	1.400-2.520	1.940	0.800-1.920	1.393	—	—	Spat
44th	1.700-5.000	3.500	0.900-2.500	1.700	0.200-1.200	0.700	Spat
48th	1.400-6.200	3.600	0.700-3.200	1.800	0.100-1.300	0.700	Spat
52nd	1.400-6.200	4.000	0.500-4.000	1.900	0.200-2.000	0.800	Spat
56th	2.500-8.300	4.500	1.400-4.700	2.800	0.800-2.900	1.600	Spat
60th	3.600-9.600	5.900	2.000-5.400	3.500	0.700-3.300	2.100	Spat

and appearance of cilia, they moved towards the surface. The water was then filtered through 40 μ filter to retain only healthy embryos. Further rearing was done in three 50 l fibreglass tanks.

Trochophore stage was attained 6-8 hours after spawning and the D-shaped veliger by 20-24 hours. The umbo-stage was reached by 7-9 days and the foot was formed between 10 and 14 days after spawning. With the formation of foot and disappearance of ciliated velum, the larvae tended to settle and at this stage, known as plantigrade, was observed on the 19th day.

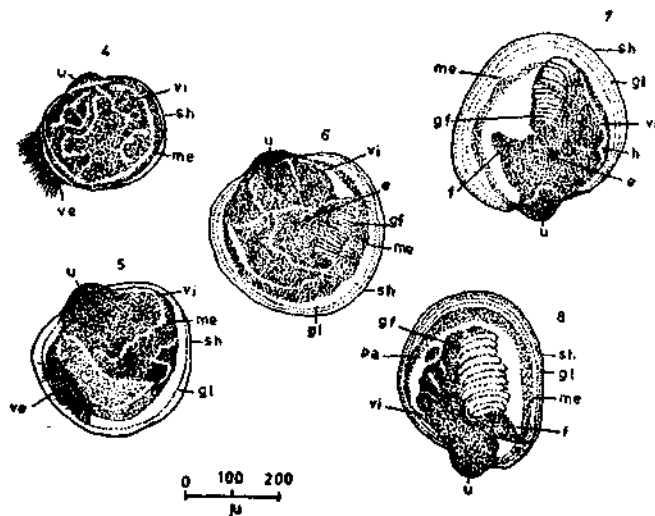


Fig. 2. 4 Umbo stage veliger (10 days old)
5 Pedi-veliger stage (12 days old)
6 Eyed-stage (15 days old)
7 Plantigrade (19 days old)
8 Spat (27 days old)

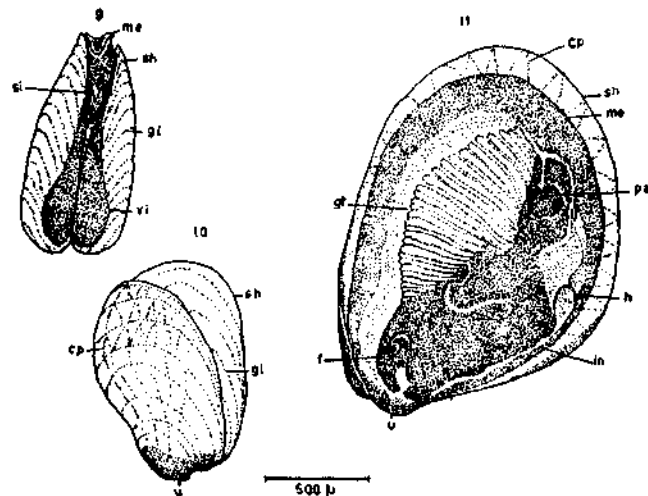


Fig. 3. 9 Anterior view of 33 days old spat
10 Empty shell of 37 days old spat
11 45 days old spat

Settlement of the spat was noticed from 23rd day onwards and continued till the 27th day. Active growth of the spat was noticed after settlement and they grew to 5.9 mm in length by 60th day. The different stages of development are shown in Figs. 1-7.

The larvae were fed with the culture of *Isochrysis galbana* from the 2nd day onwards. The strength of the culture used for food was 2,000 cells/larvae in the earlier stages and gradually raised to 3,000 cells/larvae later. After 45 days, the spat were fed with mixed culture of *Chaetoceros*, *Coscinodiscus* and *Skeletonema*. Water was changed completely on every alternate day. Aeration was given only after the settlement of spat.

Details of the growth of larvae in length (measured from hinge/umbo to the edge of the shell), breadth (maximum measurement perpendicular to hinge/umbo) and height (maximum thickness of the shell) are given in Table 1.

A total of 20,500 spat of *Perna viridis* were obtained from the experiment. The production could be increased substantially by improvement of water quality and reducing the density of the larvae. The work shows that there are good possibilities for production of green mussel seed through hatchery techniques. Large scale production of spat of this economically important species will be of immense help in conducting mussel farming.

Abbreviation used

Cp	:	chromatophore pigments
e	:	eye
f	:	foot
gf	:	gill filaments
gl	:	growth lines
h	:	heart
hi	:	hinge
in	:	intestine
me	:	mantle edge
pa	:	posterior adductor muscle
sh	:	shell
si	:	siphon
ve	:	velum
vi	:	visceral mass
u	:	umbo

