

that a greater number of female crabs usually spend more time outside the hosts than the females. The space between the gill lamellae shows tumor like outgrowth to avoid the

mechanical injury during active feeding, but remains clear, when there was no association of crab with the host. The food items were generally similar to that of their hosts.

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FOOD AND FEEDING OF NEWLY RECORDED JUVENILES *SOLETELLINA VIOLACEA* (Lam.)

ABSTRACT

The present paper deals with the food and feeding of juveniles *Soletellina violacea* (Lam.). It is the first time recorded in India at Mithbav Creek (Lat. 16°20'N, Long 73°25'E) at Sindhudurg district on west coast of India. It is observed that the rate of feeding was increased along with increase of salinity. The animals spend more time in feeding during post-monsoon than monsoon to avoid self dilution. The juveniles mostly feed on detritus, diatoms, ciliates, crustaceans remains etc. Detritus and diatoms constitute the major components of the food items. The percentage composition of diatoms varies from 9.52% to 42.00%.

IT IS a well-known biological and ecological fact that the food of an animal may be directly associated with its feeding habits and habitats. The animals exhibit such an ability to adopt themselves to life in so many different types of habitats. They have learned how to feed in variety of different ways.

The author wish to express their grateful thanks to Mr. Solen Whybrow of the British Museum for the exact identification of the specimen.

Soletellina violacea (Lam.) is a burrowing giant edible bivalve. It inhabits in pure soft sandy-muddy bottom upto a depth of few feet below the surface but maintains connection

with the surface water through extra large siphons. In Mithbav creek, the animals are found only in selected grounds, where the environmental conditions are suitable for survival.

Indian contributions on food and feeding of molluscs are by Durve (1960), on *Crassostrea cuculatta*, Joshi (1963) on *Katelysia mormorata*, Ranade (1964) on *Meretrix meretrix*. However, since this species has been recorded for the first time, nothing is known about its biology.

The samples of *S.violacea* (Lam.) were collected from the Mithbav creek for a period of fifteen months (1991-92) separately for morning, noon and evening. About 300 specimens were analysed for the study. As per

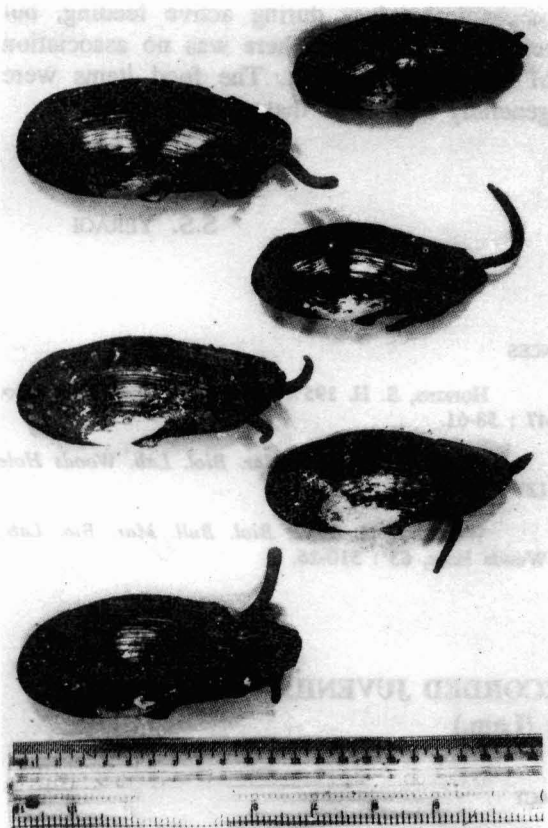


FIG. 1. Different size groups of *Soletellina violaceae* (Lam.)

the eye estimation method (Pillay, 1932) the stomachs were allotted points. Different food groups in each stomach were graded as 'plenty', common, 'occasional' and 'rare'.

With reference to maturation and spawning cycle, it is considered the standard length of

TABLE 1. Fluctuations in the percentage composition of different items of food in different length groups of Juvenile *Soletellina violaceae* (L)

Size group in mm of shell length	Diatoms %	Algae	Detritus	Crustacean remains %	Sand %	Miscellaneous %	Spongin spicules %	Foramifera Shells %
10-15	40.00	26.666	23.333	—	3.333	6.666	—	—
16-20	42.00	30.000	20.000	—	4.000	4.000	—	—
21-25	30.864	32.098	22.222	3.703	4.938	6.1	—	—
26-30	28.181	31.818	20.000	3.636	5.454	9.090	0.909	0.909
31-35	35.00	21.666	23.333	3.333	3.333	13.333	—	—
36-40	15.094	30.188	11.320	9.433	1.886	22.641	5.660	3.773
41-45	23.404	29.787	25.531	2.127	—	17.021	2.127	—
46-50	12.5	33.928	21.426	7.142	3.871	17.857	—	3.571
51-55	9.523	22.222	26.984	7.587	1.587	23.809	3.174	4.761

the shell upto 55mm as juvenile animals. Separate observations are given in Tables 1 and 2 and Figs. 1 and 2. Seven genera of diatoms viz. *Coscinodiscus*, *Navicula*, *Pinnularia*, *Rhizosolenia*, *Grammatophora*, *Diploneis* and *Cyclotella* were represented in the food of juveniles of all size groups. From Table 1, it is clearly seen that the juveniles of 10-30mm size groups mostly feed on diatoms than the other groups. The percentage of diatoms in the guts varies from 9.52 to 42.0% depending upon the size group of the juveniles. Detritus seems to be present more regularly than diatoms. Similarly algal mass are also seen regularly in all the size groups of animals. The percentage composition of algae were ranging from 22 to 33.0%.

Crustacean remains were found in the gut contents only during September, October and February. Their percentage varied from 2.12% to 9.43%.

Sand, sponge spicules, foraminiferan and miscellaneous matters occurred in small percentages in the guts of the juveniles periodically. The frequency of occurrence of the major food items in the stomachs of the juveniles as revealed by the number of stomachs examined and their number showing the presence of a particular food item is shown in Fig. 2.

Many environmental factors directly or indirectly affect the food, the feeding habits and habitat of *S.violaceae*. Every marine organisation has its own salinity tolerance range beyond the limits of the species to survive, resulting in a large scale mortality (Ranade,

PERCENTAGE OF PREVALENCE OF FOUR MAIN ITEMS OF FOOD IN DIFFERENT LENGTH GROUPS OF JUVENILE *S. VIOLACEA* (L)

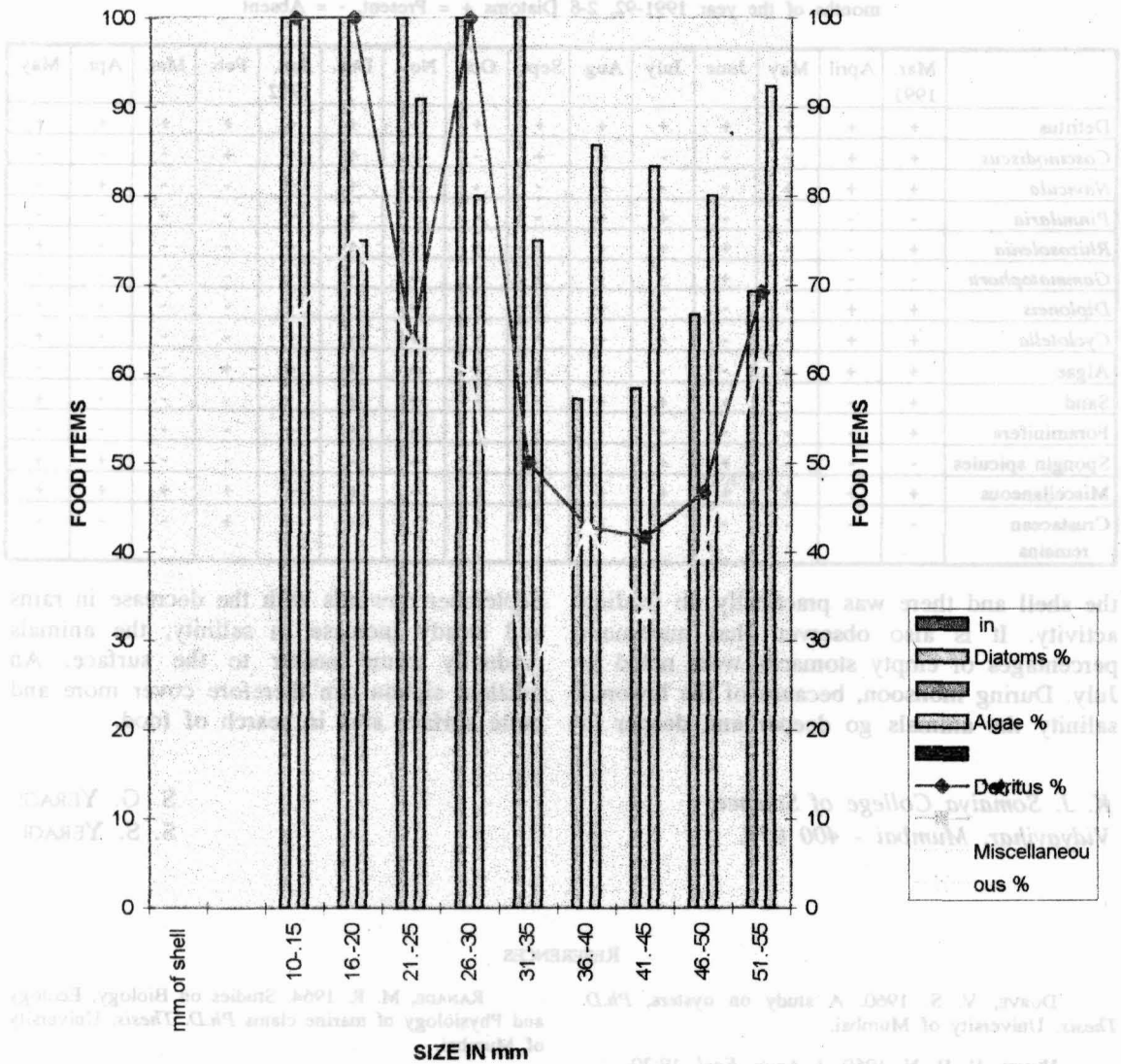


Fig. 2.

1964). It is true that during monsoon, every moment along with rainfall the salinity ranges goes on fluctuating, because of this *S. violacea* did not spend more time to feed. However, most of the times of observation, the specimens show empty stomachs. The animals spends more days in starvation and if the unfavourable condition continue further, they die.

In 1961 a calamity was witnessed by the author in Mithbav creek for *S. violacea*. The starvation and self dilution were the main causes behind the mortality. In 1961 there was continued heavy rainfall, which make the environment totally unfavourable to the animals.

It was seen that in monsoon almost all the stomachs were empty due to change in salinity. As a result the animals remain inside the sand to escape contact with the less saline sea water. However, less time is spent in feeding during these months from August-

TABLE 2. Qualitative analysis of different food items consumed by juvenile *Soletellina violacea* in different months of the year 1991-92. 2-8 Diatoms + = Present, - = Absent

	Mar. 1991	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 1992	Feb.	Mar.	Apr.	May
Detritus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Coscinodiscus</i>	+	+	-	-	-	+	+	-	-	+	+	+	-	-	-
<i>Navicula</i>	+	+	+	-	-	+	-	-	+	+	+	-	-	+	-
<i>Pinnularia</i>	-	-	-	-	+	+	-	-	-	+	+	-	-	-	-
<i>Rhizosolenia</i>	+	-	-	+	+	+	-	+	+	+	+	-	-	-	+
<i>Gammatophora</i>	-	-	-	+	-	-	+	+	+	-	-	-	-	-	-
<i>Diploneis</i>	+	+	-	-	-	+	+	-	+	-	-	-	-	-	+
<i>Cyclotella</i>	+	+	-	-	-	+	+	-	+	-	-	-	-	-	+
Algae	+	+	+	-	-	-	+	+	+	+	+	+	-	-	-
Sand	+	-	-	-	+	+	-	-	+	+	-	-	-	-	+
Foraminifera	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-
Spongin spicules	-	-	-	+	+	-	-	+	+	-	-	-	-	+	+
Miscellaneous	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Crustacean remains	-	-	-	-	-	-	+	+	-	-	-	+	-	-	-

the shell and there was practically no feeding activity. It is also observed that maximum percentages of empty stomachs were noted in July. During monsoon, because of the lowered salinity the animals go deeper and deeper in

September onwards with the decrease in rains and steady increase in salinity, the animals gradually come nearer to the surface. An inhalant siphon can therefore cover more and more surface area in search of food.

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