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STUDY OF CONDITION INDICES OF THE GREEN MUSSEL *PERNA VIRIDIS* FROM MANDI SHORE IN RATNAGIRI DISTRICT OF MAHARASHTRA STATE, INDIA.

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ABSTRACT
The green mussels *Perna viridis* from Mandvi shore in Ratnagiri district of Maharashtra state were collected and lengthwise grouped as small, medium and large. Different methods were used to determine condition index of the mussels using Ci-volume, Ci-shell and Ci-body. The results showed that the mussels from Mandvi shore irrespective of the size grouping almost showed equal values of Ci when any of the method was used, however, calculation of Ci - vol gave higher values for all the groups.

KEY WORDS: Condition indices, mussels, *Perna viridis*.

INTRODUCTION

Shellfishes are having immense importance in the fisheries. Bivalves especially are preferred by the coastal people as poor man's food previously. Day by day other people also prefer them as sea food. Perceive of literature reveals that research work has been done on the bivalves like *Crassostrea madrasesnsis* Nair and Nair (1987), *C. virginica* (Rainer and Mann 1991). Filgueria *et al* (2008) while studying *Mytilus galloproviancialis* found that condition index have significant effect on the allometric relationship in which weight was the dependent variable. Rahnama *et al* (2011) studied the effect of Lead bioaccumulation on Condition indices of Zebra Mussel *Dreissena polymorpha*. Due to lack of detail information about condition index of the mussels from India especially from Maharashtra coast, the present study was done to estimate the Condition index values of *Perna viridis.* In the present study an attempt was made to use indices based on measurements of volume and weights of *P. viridis* using different methods, viz. Ci- vol, Ci-body and Ci-shell to estimate the condition indices of different sized mussels from Mandvi shore in Ratnagiri district of Maharashtra state.

MATERIALS AND METHODS

The green mussels *P. viridis* were collected from Mandvi shore in Ratnagiri district of Maharashtra state. They were brought to the laboratory. The condition index was calculated according to Rainer and Mann (1992). All the mussels were measured for length to facilitate subsequent examination of sizes and grouping. Seven mussels of three different sizes, viz. small, medium and large of shell length 95-112mm, 113-115 mm and 116-125mm, respectively were grouped. After removal of attached epifauna and debris shell cavity volume of individual mussels of each group was estimated from the difference between the volume of water displaced by live animal and the volume displaced by clean separate valves after removal of the meat. Displacement was measured by keeping the individual mussel in water filled container equipped with an overflow pipe. Dry meat weights and dry shell weights of the individual mussel belonging to each group were estimated after drying to constant weight at $97\pm1^{o}C$ in a hot air oven. The following three relationships were used to estimate condition indices.

1. Ci - Volume = dry meat weight x 100/shell cavity volume,
2. Ci - shell = dry meat weight x 100/shell weight and
3. Ci - body = dry meat weight x 100/shell weight + tissue weight.

Equation 1 and 2 are similar to those described by Rainer and Mann (1992). Equation 3 is that of Rao (1956) and Baird (1958). The average values of seven mussels of each group were used in calculation.

Table.1 Descriptors of different sized *Perna viridis* used in the study of condition index

Descriptors	Size groups		
	Group - I	**Group - II**	**Group - II**
Shell Length (L)	95-112mm	113-115mm	116-125mm
Whole Animal Displacement Volume	45-56ml	51-67ml	58-69ml
Shell Displacement Volume (D)	12-17ml	13-20ml	18-21ml
Shell Cavity Volume (V-D)	33-39ml	38-47ml	40-48ml
Meat Dry Weight	3.7-4.69gm	4.6-6.56gm	3.8-6.91gm
Shell Dry Weight	33.93-44.12gm	31.95-54.31gm	43.95-54.1gm

Table.2. The values of Ci - volume, Ci – shell and Ci- body of the mussel *Perna viridis* from the Mandvi shore in Ratnagiri district.

Groups lengthwise (mm)	Ci – volume	Ci - shell	Ci - body
95-112	9.487-12.424 (10.95±1.468)	8.386-13.821 (10.16±1.783)	7.737-12.142 (9.207±1.469)
113-115	8.026-13.957 (11.25±2.450)	11.825-9.546 (11.15±1.138)	8.714-10.77 (10.02±0.928)
116-125	9.5-15.022 (12.688±2.334)	8.646-14.71 (11.79±2.483)	7.958-12.82 (10.532±1.994)

RESULT AND DISCUSSION

The various descriptors of the mussels viz. shell length(L),whole animal displacement volume (V),shell displacement volume(D), shell cavity weight were measured (Table.1) .The mussels from Mandvi shore gave Ci - vol value in the range of 9.487-12.424 for small sized mussels, 8.026-13.957 for medium sized mussels and 9.5-15.022 for large sized mussels. On the Ci-shell basis the values ranges from 8.386 to 13.821 for small, from 11.825 to 9.546 for medium and from 8.646 to 14.71 for large sized mussels, while Ci - body were in the range of 7.737-12.142, 8.714-10.77 and 7.958-12.82 for the above respective groups. The results showed that the mussels from Mandvi shore irrespective of the size grouping almost showed equal values of Ci when any of the method was used, however, calculation of Ci - vol gave higher values for all the groups. Fatima *et al*. (1985) found a trend in gradual decrease in condition index with increase in size of mussels in most of the samples. The direct relationship between condition index and size was also observed in oyster *Crassostrea rivularis* from Karachi by Quasim *et al*. (1985). Tidal levels could affect the growth pattern of the mussels facing varying tidal exposure was shown by Barkati and Chaudhari (1988) in *Perna viridis* from Karachi coast. They found that the condition index of mussels from the habitat which remains submerged for prolonged period clearly demonstrated higher condition index throughout most of the year as compared to that of the mussels from the habitat which get exposed. . Mussels in the present study at the Mandvi shore is always experiencing splashing of the waves with surf formation and always gets exposed on low tides. This might be the probable reason for the results obtained. Crosby and Gale (1990) studied the condition indices and suggested that Ci-shell is an absolute index .

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