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Size Related Metabolism in Rock Pool Fish *Blennius steindachneri* (Day)

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Oxygen consumption in relation to body size shows an exponential relationship in *B. steindachneri*, the exponent *b* being 0.6919. Comparison of the size related metabolism of *B. steindachneri* showed no significant difference with other fishes.

Several studies have been made on the size related metabolism of fresh water and marine fishes[1]. Rate of oxygen consumption in relation to osmoregulation in the *Blennius pholis* has been measured earlier[2]. Since no information is available on the relationship of body size to oxygen consumption in *B. steindachneri*, the present study is undertaken.

Fish collected from the crevices of rockpools at Visakhapatnam coast, were maintained for 24 hr before use in an aquarium containing 30 l of aerated running seawater (salinity 32‰ and *p*H 8) at 25°C.

Respiratory measurements were made using the method of Ganapathi and Prasada Rao[3]. Respiratory chambers of different sizes (265, 292, 500 ml) were used depending on the size (wet weight of fish 0.16-9.614 g) of the fish. Dissolved oxygen was estimated by Winkler's method[4]. Only one fish was used in each of the experiment. Animals were acclimatized in the respiratory chamber for 2 hr before the commencement of the experiment.

Oxygen consumption was measured every 30 min in the case of large (weight 5-9.6 g) and middle size (2-5 g) and every 2 hr in smaller (0.160-2 g) animals. Experiments were carried out for 6 hr. Average hourly oxygen consumption was calculated. At the end of the experiment the weight of the animal was determined. Allometric equation[5] was used to express the effect of body size on the oxygen consumption. Animals approximately of the same body weight were averaged and they were assorted into 25 different size groups.

Oxygen consumption in *B. steindachneri* varied from 0.1101 to 2.666 ml O_2/hr, and the metabolic rate from 0.6888 to 0.2773 ml/g/hr. The total weight of the animal ranged from 0.16 to 9.614 g. Oxygen consumption increased with increasing body wieght and the relationship is exponential. The regression value obtained for *B. steindachneri* for the total oxygen uptake against body weight is 0.6919 and the weight specific regression value $(b-1)$ is negative being -0.308. Correlation coefficient and the standard error are given in Table 1.

The *b* value of *B. steindachneri* is not significantly different from the *b* value of large poikilotherms, other teleosts and *B. pholis* (Table 1) indicating that the size related metabolism of *B. steindachneri* is not significantly different from them[7,8].

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Table 1—Comparison of Regression Coefficients of *B. steindachneri* with Other Fishes

B. steindachneri		Larger poikilotherms (Zeuthen: 0.75)	Common teleosts (Winberg: 0.8)[6]	Fishes				
				Carassius auratus (0.850)	*Catastomus commersonii* (0.864)	*Ictalurus nebelosus* (0.925)	*Baleophalmus bodderti* (0.791)	*Blennius pholis* (0.73)
No	25	a 0.0581	0.1081	0.1581	0.1721	0.2331	0.0991	0.0381
b	0.6919	b 0.5487	0.5486	1.4930	1.6251	2.2012	0.9358	0.3597
$(b-1)$	0.3080	c 0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

a = Differences between regression coefficients b = *t* value c = level of significance Values in parentheses represent *b* values

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