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GROWTH RATE OF DIFFERENT BODY PARAMETERS IN *CIRRHINA MRIGALA (HAM.)*

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Growth rate of different body parameters and *their correlations* were studied *in Cirrhina mrigala*. The fastest growing parameter is the total length and slowest growing parameters are the snout to pectoral. The coefficients of correlation between the standard length and other parameters are highly significant.

INTRODUCTION

Biometric studies deal with the size relationship between the entire and parts of the body, and help in a variety of ways in fishery biological investigations Jhingran (1952 & 1959) described the length-weight relationship of mrigal specimens obtained from different sources *viz*. rivers, canals, tanks, and ponds. Chakraborty & Singh (1963), Pantulu *et al*. (1966), Kamal (1969 & 1971), and Hanumantha rao (1974) have done similar work on mrigal from riverine environment whereas Shrivastava & Singh (1964) worked out the inter-relationship between standard length and body weight of the same fish. However, there is no report on the biometric studies of *Cirrhina mrigala (Ham.)*. Hence, this communication finds a good scope for understanding the biology of *C. mrigala*.

MATERIAL AND METHODS

The material for the present study were finger lings, belonging to one source collection obtained from Fisheries Department Ujjain, M.P. They were introduced in Vikram University pond for the study of growth in composite fish farming during 1978-79. The fishes were netted out each month, brought to the laboratory, their weight and other body measurements recorded. The following parameters were studied *viz*. total length; standard length, snout to dorsal, snout to ventral, snout to anal, snout to pectoral and breadth at dorsal. The growth of the different body parts with reference to standard length were studied by regression analysis. Regression equation $Y = a + bx$, has the following values in relation to the standard length; Y = body measurement, b the regression coefficient, a = the intercept and x = standard length. The study was based on 163 specimens collected in different months.

Table I Mean values of different parameters in *Cirrhina mrigala* (weight in g and length in cm)

Date of collection	Total length	Standard length	Body weight	Head length	Snout to dorsal	Snout to pectoral	Snout to ventral	Snout to anal	Breadth at dorsal	Number of fish
12-10-78	7.45	6.05	6.66	1.3	2.4	0.95	2.77	4.92	1.72	35
16-11-78	12.5	10.5	21.0	2.00	4.02	1.6	4.64	8.26	2.89	10
16-12-78	16.5	13.5	40.0	2.5	5.31	2.1	6.13	10.91	4.00	20
10- 1-79	20.5	16.5	85.0	3.0	6.6	2.62	7.62	13 55	4.74	10
20- 2-79	24.2	19.84	170 0	3.41	7.8	3.1	8.9	16.0	5.6	36
25- 3 79	28.0	26.5	314.0	5.83	9.02	3.5	10.41	18.51	6.47	22
18- 4-79	32.4	29.7	500.0	6.1	10.44	4 1	12.04	21,42	7 49	20
20-5-79	35.0	30.0	550.0	6.5	11.28	4.48	13 01	23.14	8.09	10

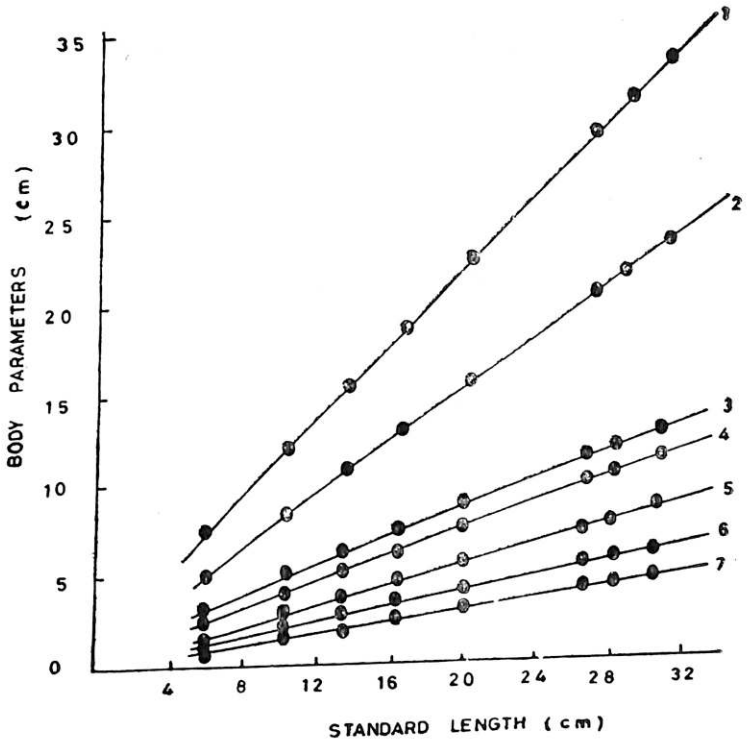

Fig. 1 Regression of different body parameters on standard length in *Cirrhina mrigala*, total length (1); snout to anal (2); snout to ventral (3); snout to dorsal (4); breadth at dorsal (5); head length (6); and snout to pectoral (7).

RESULTS

Mean values of different parameters are given in Table I. The regression equation gives parabolic form of different body parts in relation to the standard length as given below with coefficients of correlation.

Total length	$Y = 0.04 + 1.169\ x;$	$r = 0.967$
Head length	$Y = 0.41 + 0.176\ x;$	$r = 0.704$
Snout to dorsal	$Y = 0.31 + 0.358\ x;$	$r = 0.919$
Snout to pectoral	$Y = 0.03 + 0.146\ x;$	$r = 0.959$
Snout to ventral	$Y = 0.55 + 0.422\ x;$	$r = 0.963$
Snout to anal	$Y = 0.53 + 0.774\ x;$	$r = 0.968$
Breadth at dorsal	$Y = 0.34 + 0.410\ x;$	$r = 0.941$

The correlation between the breadth at dorsal and weight is 0.985.

DISCUSSION

Considering the linear correlation the fastest growing parameter is total length and slowest growing parameter is snout to pectoral (Fig. 1) as also reported in *Gadusia chapra* (Banerjee & Venkateswarlu, 1968), *Puntius sophore* (Banerjee, 1973), and *Catla catla* (Shrivastava & Pandey, 1981). Next to the total length, snout to anal is the fast growing parameter and head length is the slow growing parameter next to snout to pectoral; it corroborates to the observations of Banerjee & Venkateswarlu (1968), Banerjee (1973), and Shrivastava & Pandey (1981). Successive to snout to anal is the snout to ventral, and then snout to dorsal; these observations differ from the results obtained for *G. chapra* (Banerjee & Venkateswarlu, 1968) and *P. sophore* (Banerjee, 1973) where growth of snout to dorsal is faster than snout to ventral. This may be due to the morphological variation in the dorsal and ventral fins in *C. mrigala* and the fishes observed by them. However, same variation is also found in the case of catla (Shrivastava & Pandey, 1981).

Correlation studies show that all these parameters are highly significant in relation to the standard length. However, Banerjee (1973) found that the breadth at dorsal was not significant with standard length of *P. sophore*. The difference might be due to the fact that *C. mrigala* being a major carp, grows comparatively more in width than *P. sophore*. It was also confirmed by the study of correlation between the breadth at dorsal and body weight, which is highly significant denoting that the breadth at dorsal depends on the body weight. Similar results have also been recorded in *C. catla* (Shrivastava & Pandey, 1981).

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