LENGTH-WEIGHT RELATIONSHIP IN THE MALABAR SOLE, CYNOGLOSSUS MACROSTOMUS NORMAN

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ABSTRACT

The length-weight relationship of the Malabar sole, *Cynoglossus macrostomus*
Norman was studied. The difference between the regression coefficients of males
and females was not significant at 5% level. Hence a pooled estimate was made
for males and females and the length-weight relationship is described by the
formula $W = 0.000007872 \ L^{2.9145}$.

The Malabar sole, *Cynoglossus macrostomus* is an important constituent
of the fishery along the Malabar and South Kanara coasts. Although the different
aspects on the biology of *C. macrostomus* has been studied by Seshappa and
Bhimachar (1951,1954, 1955) there is no information on the length-weight
relationship of this important species. A detailed investigation on the biology
of *C. macrostomus* was taken up during the period 1969-1973 and the present
communication relates to the study on the length-weight relationship of the
species.

A total of 1420 fishes consisting of 658 females in the size range of 83-
173 mm and 762 males in the size range of 84-168 mm collected during the
period 1969-73 from the trawl landings of the Mangalore area were studied.

TABLE 1. *Comparison of regression lines analysis of covariance*

		d.f.	Sum of squares and products		Sy²	Regression coefficient	d.f.	s.s	m.s.
			Sx2	Sxy					
L	Within								
1	Males	761	4.44298463	13.51433883	46.74270	3.04173	760	5.635793444	0.007415517
2	Females	657	4.26363908	11.88958583	42.09888147	2.7886	656	8.94357715	0.0136335
3							1416	14.57937059	0.010296165
4	Pooled W	1418	8.70662371	25.40392466	88.84158147	2.914476	1417	14.71877455	0.010387279
5		Difference between slopes					1	0.13940376	0.13940396
6	Between B	1	0.03960973	0.08676968	0.19007975				
7	W + B	1419	8.74623344	25.49069434	89.03166122		1418	14.73962426	0.007178722
8		Between adjusted means					1	0.0208497158	

Comparison of slopes : $F = \dfrac{0.13940396}{0.010296165} = 13.5394$ with d.f. (1,1416)

Comparison of elevation : $F = \dfrac{0.0208497158}{0.010387279} = 2.007255$ with d.f. (1,1417)

Hence at 5% level, there is no significant difference.

NOTES

Fishes were measured and weighed within 3-6 h. after capture. The total length was measured to the nearest millimetre from the tip of the snout to the end of the longest caudal ray keeping the fish straight on the measuring board. Weight was recorded to the nearest gram.

The length-weight relationship was calculated by the least square method by using the Le cren formula $W = aL^b$ or its logarithmic form $\log W = \log a + b \log L$, where W = weight, L = length and "a" and "b" are constants.

The logarithmic regression equations obtained are as follows:

Males : $\log W = -5.3638 + 3.0417 \log L$.
Females : $\log W = -4.8462 + 2.7886 \log L$.

The corresponding parabolic equations are:

Males : $W = 0.000004327 \, L^{3.0417}$
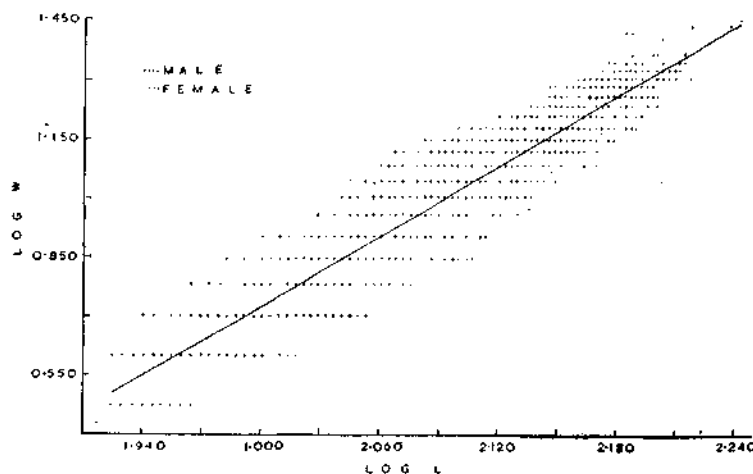Females : $W = 0.00001415 \, L^{2.7886}$

FIG. 1. Logarithmic relation of length and weight in *C. macrostomus*.

The significance of the differences between the regression coefficients for males and females was tested by the method of analysis of covariance (Snedecor 1956) and it was found that the difference between male and female regression coefficients was not significant at 5% level (Table 1). Hence, the sexes were combined and the resultant length-weight relationship is described by the equation:

$$\text{Log } W = -5.1039 + 2.9145 \text{ log L.}$$
$$\text{Or}$$
$$W = 0.000007872 \text{ L}^{2.9145}$$

The logarithmic values of observed weights and lengths are plotted in Fig 1 with the regression line based on the above equation fitted.

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