LENGTH – WEIGHT RELATIONSHIP OF A POLYCHAETE *NEREIS* (CERATONEREIS) *BURMENSIS* (MONRO)

ABSTRACT

Nereis (Ceratonereis) *burmensis*, an intertidal polychaete in the Vellar estuary, southeast coast of India, was studied to find out the relationship between length and weight, length and segment and weight and segment.

IN VELLAR estuary (Parangipettai, Lat. 11° 29′ N and Long. 79° 46′ E, Southeast Coast of India), the most abundant meiofaunal groups were polychaetes, nematodes, harpacticoids and copepods along with other shell fishes such as clams, mussels and oysters (Fernando, 1987). The biology of polychaete fauna of Parangipettai area have been studied (Balasubrahmanyan 1964, Srikrishnadhas et. al., 1981; Chandran *et. al.*, 1982; Rajathy, 1985; Fernando, 1987; Kandeepan and Balasubrahmanyan, 1992) but the biometrical studies about them are lacking. Hence an attempt was made to study the relationship between length-weight, length-segment and weight-segment of the polychaete *N. burmensis*.

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Random samples of 100 numbers of *N. burmensis* were collected regularly for a period of six months (March-August 1990) from natural population of the species in Vellar estuary, opposite to Marine Biological Station and the collections were always made from low-tide level in the morning. All specimens were collected by digging to a depth of 25 cm and sieving the mud to get even the smallest ones from the bed. Polychaete worms preserved in formalin were taken for the study and the worms were carefully sponged with filter paper to remove the external moisture and water adhering to the surface of the body. The total length in mm and total body weight to nearest milligram were measured by using a measuring board and sensitive weighing balance respectively. Further total number of segments in each worm was also calculated by counting under a binocular microscope.

The length-weight relationship could be expressed by the hypothetical cube law $W=CL^3$, "W" = Weight, "L" = Length and 'C' = Constant. Animals usually change their shape as they grow in length and hence the formula $W=aL^n$ (Le Cren, 1951) was used where L = Length of the polychaete W = Weight of the polychaete, a = multiplying constant and n = exponent of length. The parabolic equation $W=aL^n$ can be given in the logarithmic form as log W = log a + n log L, *ie.*, Y=a+bx where a = log a, b=n, Y=log W and x = log L which is linear relationship between Y and X.

In the present study, length – weight relationship in *N. burmensis* was found to be log weight = log -0.07188 + 1.3379 length. The value of 'n' will be equivalent to 3 in an organism which maintains its shape throughout the life without any change (Allen, 1938). The value 'n' was found to vary between 2.5 - 4 in fishes (Martin, 1949). Similarly the studies on length - weight relationship in bivalves showed that the value ranged from 2.5 to 4.5 (Hamai, 1934; Nayar, 1955; Wilbur and Owen, 1964; Durve and Dharmaraja, 1965; Kato and Hamai; 1975; Ansari *et. al.* 1978). However in *Teredo* 'n' value was found to be 1.37 showing a nearly linear relationship (Isham *et. al.*, 1951). In the present study also the 'n' value was found to be 1.3379 to the 'n' value of Teredo which is very near showing more linear relationship. The correlation co-efficient ('r') values for length — weight, length — segment and weight — segment of *N. burmensis* are

0.7512 ($P < 0.001$), 0.5186 ($P < .001$), 0.3457 ($P < .001$) respectively. The regression equations for length (L) — Weight (W), length (L) — segment (S), and weight (W) — Segment (S) of *N. burmensis* are given below,

$$\log W = -0.07188 + 1.3379 \log L$$

$$\log S = 1.4904 + 0.3155 \log L.$$

$$\log S = 1.6910 + 0.1448 \log W.$$

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