LENGTH-WEIGHT RELATIONSHIP IN FOUR SPECIES OF THREADFIN BREAMS FROM MADRAS

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ABSTRACT

The regression coefficients of length-weight relationship of males and females of *N. mesoprion* are significantly different at 5% level. In *N. tolu*, *N. delagoae* and *N. luteus*, the differences are not significant. Hence, a regression equation common to both sexes is recommended for each of the latter three species.

INTRODUCTION

Apart from providing a mathematical relationship between the two measurements, length and weight, a regression of weight on length is required for incorporation in a yield equation of Beverton and Holt type. For this purpose, it is a prerequisite to examine whether separate regression equations for males and females are necessary or one equation for each species will suffice. In the present note, the length-weight relationships of four species of threadfin breams, viz., *Nemipterus mesoprion* (Bleeker), *N. tolu* (Valenciennes), *N. delagoae* Smith and *N. luteus* (Schneider) are reported.

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MATERIAL AND METHODS

Samples of the 4 species were collected from the trawl landing centre at Kasimedu, Madras during the years 1981 and 1982. Data on total length (from tip of snout to tip of lower caudal lobe) and weight (to nearest mm and 0.5 g respectively) were recorded separately in males and females.

The length-weight relationship was calculated by method of least squares using the equation

$$\log W = \log a + b \log L$$

where $W =$ weight in g, $L =$ total length in mm, and ‘$a’$ and ‘$b’$ are constants. The significance of difference at 5% level between $b$ values of the sexes in each species was tested by Analysis of Covariance (Snedecor and Cochran, 1967).

RESULTS

*N. mesoprion*

The study is based on 167 males ranging in total length from 93 to 195 mm and 245 females ranging from 97 to 185 mm collected during 1982. The equations obtained are:

Males: $\log W = -4.7926 + 2.9692 \log L$; $r^2 = 0.964$

Females: $\log W = -3.0602 + 2.1570 \log L$; $r^2 = 0.746$

The ANOCOVA test of significance revealed that the difference is significant (Table 1). In
Figure 1, the regression lines are plotted separately for males and females. Murty (1982), however, did not find significant difference between regression coefficients of males and females of *N. mesoprion* collected from Kakinada.

The difference between regression coefficients of males and females is not significant (Table 1). Hence the data on sexes were pooled and a single equation calculated for *N. tolu* from Madras:

Males: \( \log W = -4.7659 + 2.9341 \log L; \quad r^2 = 0.962 \)

The following are the regression equations of 143 males (range: 118-223 mm) and 200 females: \( \log W = -4.7395 + 2.9230 \log L; \quad r^2 = 0.960 \)

*N. delagoae*
females (range: 115–214 mm) collected during 1981:

Males: \( \log W = -4.9770 + 3.0149 \log L; \quad r^2 = 0.963 \)

Females: \( \log W = -4.9602 + 3.0240 \log L; \quad r^2 = 0.914 \)

The difference between regression coefficients of males and females is not significant (Table 1). Hence the data on sexes were pooled and a single equation calculated for \( N. \) delagoae

\( \log W = -4.9659 + 3.0186 \log L; \quad r^2 = 0.937 \)

\( N. \) luteus

The regression equations of 216 males (range: 118–225 mm) and 125 females (range: 118–209 mm) collected during 1981 are:

Males: \( \log W = -5.0355 + 3.0836 \log L; \quad r^2 = 0.862 \)

\( N. \) mesoprion

For a fish having an unchanging body form and specific gravity, the value \( b = 3 \), which describes "isometric growth." A fair number of species seem to approach this "ideal" (Ricker, 1958). But as the specific gravity and shape of the fish are subject to changes, this cube law need not hold good always. The values of regression coefficients of males and females separately for \( N. \) mesoprion and those of the other three species were tested against the theoretical value of 3 by the t-test. This is necessary to enable the use of the appropriate
form of Beverton-Holt yield equation. It was found that the \( b \) values are not significantly different from 3 in all cases except females of \( N. \) mesopriam.

**REFERENCES**

