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CONVERSION FACTORS FOR LENGTH MEASUREMENTS
## OF ATLANTIC MACKEREL

by

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Introduction

Standardized methods for taking and reporting length measurements of fish species under ICNAF regulation have recently been recommended (ICNAF Sampling Year-book, Vol. 19) to ensure that data submitted by Member Countries are compatible. However, historical and possibly some recent data for mackerel have not been measured by the same standard. Three possible lengths may have been reported – fork length (FL), natural total length (TL) and compressed total length (CTL). Of these, fork length is now accepted as the length to be reported for all mackerel data.

Materials and Results

Mackerel samples collected by Canada in ICNAF Divisions 4T, 4V, 4W and 4X in 1975 were measured for FL, TL and CTL to obtain conversion factors for the three lengths. Definition of these lengths are shown below:
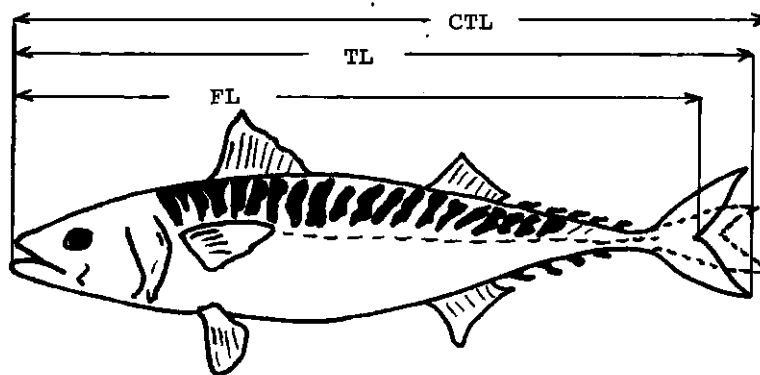
A total of 1,666 measurements were taken and regression lines of the form $X = A + BY$ were fitted to each of the six combinations of length. The mean and range of lengths included in the analysis are shown in Table 1.

Table 1.

	Minimum	Maximum	Mean
Fork Length	18.8 cm	45.2 cm	33.48 cm
Total Length	20.3 cm	48.4 cm	36.16 cm
Compressed Total Length	20.6 cm	48.8 cm	36.74 cm

Initial analyses indicated no significant differences between the conversion factors for males, females, or areas, thus the data were combined for the present calculations. Results of regression analysis indicate a close approximation to a straight line for each of the equations (Table 2). All measurements are in centimeters.

Table 2.

$$FL = -0.0382 + 0.9270 \ TL \qquad R^2 = 0.97$$

$$FL = 0.0348 + 0.9105 \ CTL \qquad R^2 = 0.98$$

$$TL = 0.0412 + 1.0787 \ FL \qquad R^2 = 0.97$$

$$TL = 0.0669 + 0.9822 \ CTL \qquad R^2 = 0.99$$

$$CTL = -0.0323 + 1.0982 \ FL \qquad R^2 = 0.98$$

$$CTL = -0.0681 + 1.0181 \ TL \qquad R^2 = 0.99$$

The fact that the intercept of each of these equations is not equal zero suggests that the relationships may be slightly curvilinear for small lengths but the error introduced by assuming a straight line is minimal. In addition, using only the slope coefficient should suffice in making length conversions; the level of precision employed in measuring fish is not normally to two decimal places, thus the intercept term is of little value in practical applications.

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