RELATION BETWEEN TAIL AND TOTAL LENGTHS AND TOTAL AND CARAPACE LENGTHS FOR THREE COMMERCIAL SPECIES OF PENAEID PRAWNS OF INDIA

S. Ramamurthy and M. Manickaraja

Central Marine Fisheries Research Institute, Sub-Station, Mangalore - 575001

Abstract

Prawns are brought to the processing factories in deheaded condition. In view of the fluctuating nature of the prawn fisheries and the importance of size composition in population studies, the relation between tail length and total length and total length and carapace length for male and females of *Metapenaeus dobsoni*, *M. affinis* and *Prapeneopsis stylifera* was calculated. The relationship appears to be linear for the range of sizes examined.

The prawn fisheries have assumed economic importance in view of their export potential. Among the difficult species, *Metapenaeus dobsoni*, *M. affinis* and *Parapenaeopsis stylifera* are commercially important on the southwest coast of India. In recent years, therefore, a chain of prawn processing factories has sprung up in the coastal districts, where deheaded prawns are brought from various primary units. With the fishing pressure ever on the increase in the
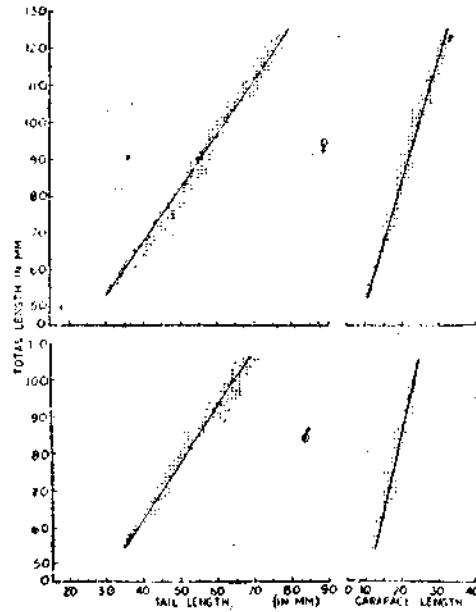
FIG. 1. The tail length-total length and the carapace length-total length regressions for
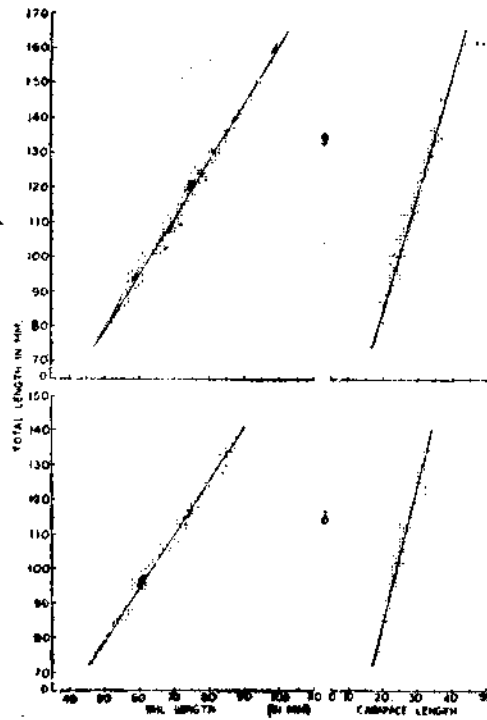M .dobsoni.

FIG. 2. The tail length-total length and the carapace length-total length regressions for
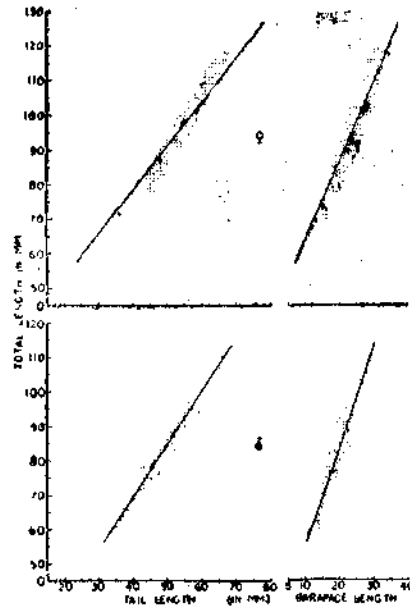M. affinis.

Fig. 3. The tail length-total length and the carapace length-total length regressions for *P. stylifera*.

coastal waters, the size composition of these species which affects the dynamics of their resources, forms a significant aspect of study. The total length and carapace length are commonly used to estimate the size composition. Therefore, the objective of this study is to determine the relation between the tail length and toal length and carapace length and total length of these species so that the measurements of tail (abdomen) could be used to calculate the other two parameters.

This study was based on the samples of prawns collected during January 1972 - April 1974 from the trawlers operating in depths of 8-25 m off Mangalore. Measurements of total length (tip of telsion to tip of rostrum), tail length (tip of telson to anterior margin of the first abdominal segment) and carapace length (dorsal portion of the postorbital margin to midposterodorsal margin of the carapace) were taken to the nearest millimeter. Equal proportions of prawns in each 5 mm group were taken as far as possible.

Regression equations (Table 1) were worked out by the method of least squares. In Fig. 1-3, the calculated relation between the various parameters together with the observed values is shown. The relation between the tail length and total length and carapace length and total length for both sexes of the three species appears to be linear, for the range of size examined.

TABLE V. *Relation between tail length* (Y) *and total length* (X) *and total length and carapace length* (Z).

Species	Sex (Size range in mm in brackets).	Equations.		Number measured
	Male (55 - 106)	Y = -0.34 + 0.645 X Z = -0.758 + 0.24 X		426
M. dobsoni	Female (55 - 125)	Y = -6.60 + 0.688 X Z = -5.431 + 0.302 X		494
	Combined (55 - 125)	Y = -1.387 + 0.644 X Z = -4.60 + 0.29 X		920
	Male (72 - 141)	Y = -0.79 + 0.645 X Z = -1.569 + 0.254 X		238
M. affinis	Female (74 - 165)	Y = 1.241 + 0.617 X Z = -5.604 + 0.301 X		374
	Combined (72 - 165)	Y = 1.387 + 0.619 X Z = -6.102 + 0.303 X		612
	Male (56 - 114)	Y = -5.048 + 0.65 X Z = -8.566 + 0.341 X		478
P. stylifera	Female (57 - 127)	Y = -21.557 + 0.782 X Z = -17.393 + 0.431 X		630
	Combined (56 - 127)	Y = -4.94 + 0.626 X Z = -12.558 + 0.383 X		1108