

Length-weight relationship in larvae and postlarvae of the anchovy,
Engraulis encrasicolus (L i n n a e u s, 1758)

Slobodan REGNER

Institute of Oceanography and Fisheries, Split, Yugoslavia

The length-weight relationship in the anchovy larvae showed the initial increase of weight followed by weight decrease near complete yolk absorption. The length-weight ratios in postlarvae indicated the exponential relationship.

La relation taille-poids chez les larves des anchois a révélé l'augmentation initiale du poids suivie par la diminution près de l'absorption complète du sac vitellin. La relation taille - poids chez les stades postlarvaires a démontré le rapport exponentiel.

Mean dry weights of anchovy yolk-sac larvae and postlarvae, reared in experimental tanks, were measured. Standard lengths of larvae and postlarvae preserved in 2% formalin in sea water solution, were taken. Larvae were divided into three length groups of 1.99, 2.66 and 3.18 mm SL, and postlarvae into ten length groups of 3.16, 4.44, 5.74, 7.28, 7.99, 8.96, 9.00, 10.43, 11.25 and 13.69 mm SL. Before weighing the larval fish were rinsed in distilled water and dried for one hour at 110°C.

Comparison of the lengths and weights of larvae showed the weight increased from 0.0132 mg in the first length group to 0.0148 mg in the second, but weight decreased to 0.0133 mg in the third length group (Fig. 1 a). Furthermore, the decrease was found again in the first length group of postlarvae, which weighted 0.011 mg. Larvae from the third length group were near complete yolk absorption and they were partly active feeders. Probably within the last length group of larvae and the first one of postlarvae there were some individuals that had not found enough food and the observed weight decrease might be the consequence of starvation. The length-weight relationship of these larvae makes any mathematical approximation impossible.

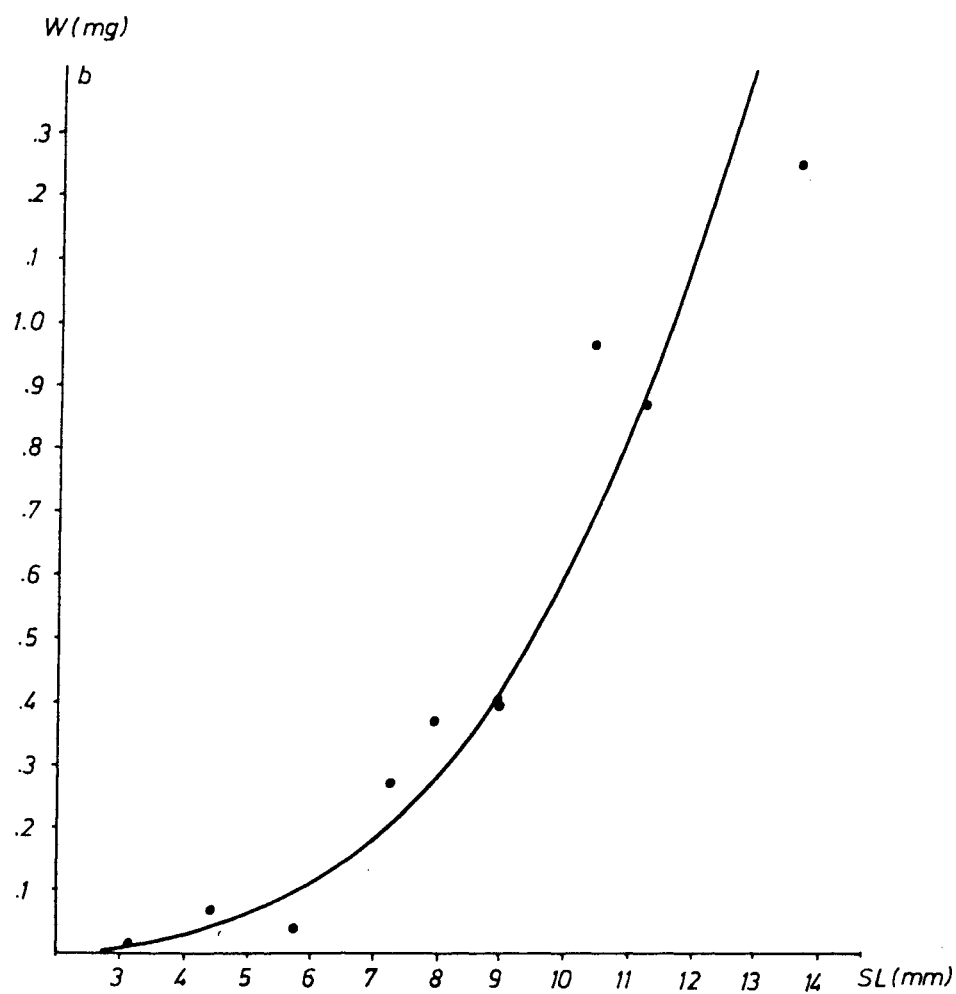
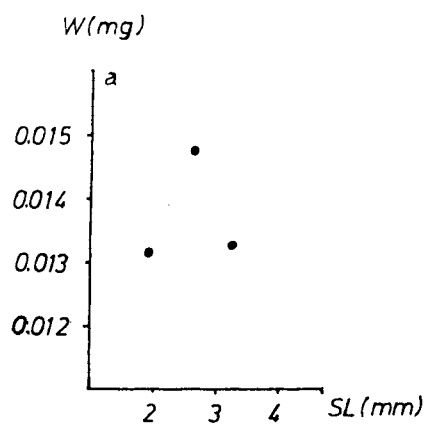


Fig. 1. Length-weight ratios in larvae (a) and postlarvae (b) of the anchovy.

On the contrary, the length-weight ratios in the postlarvae indicated clearly the exponential relationship (Fig. 1 b). This relationship is expressed by the equation:

$$W = 0.000285 SL^{3.319822} \quad (1),$$

where W is the dry weight in mg and SL the standard length in mm. The coefficient of correlation was $r = 0.966$, significant for $P < 0.001$.

The equations for the estimation of the growth in length of the anchovy postlarvae as a function of time were calculated earlier (R e g n e r, 1979). This allows the estimation of growth in weight using equation (1) by the expression:

$$W_t = 0.000285 (3.34 e^{ct})^{3.319822} \quad (2),$$

where W_t is the dry weight in mg at t days after the yolk absorption, while c is a function of temperature:

$$c = 0.004813 T - 0.018522 \quad (3).$$

As it was found that growth in length of anchovy postlarvae was sigmoidal (R e g n e r, 1980), equation (2) can be used for the weight estimation only up to 14 mm SL .

R e f e r e n c e s

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