CONTRIBUTION TO THE BIOLOGY OF BASS DICENTRARCHUS LABRAX L. (PISCES, SERRANIDAE) IN THE EGYPTIAN MEDITERRANEAN WATERS

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ABSTRACT

Age determination and annual growth of both length and weight of bass Dicentrarchus labrax L. were made from the examination and measurments of scales.The relation between fish-length and scale-radius was found to be linear and the equation representing this relation is derived.Annulus formation on bass scales takes place in between January,27 and February,22 each year.Males bass do not grow as fast as females and they tend to be shorter-lived.Maximum values of length and weight attained by bass during their first seven years of life were calculated using the VonBertalanffy's equation.

ILLUSTRATIONS

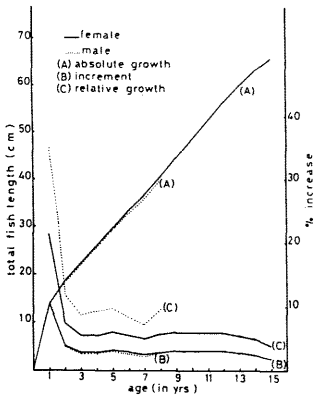

Fig (1)- Growth in length with age of bass D.labrax.

(lengths in cm)

$Lt = 73.5458\ (1-e^{-0.07623(t+1.739)})$...♂

$Lt = 91.9516\ (1-e^{-0.0572(t+1.8738)})$...♀

$Lt = 88.4782\ (1-e^{-0.0597(t+1.8680)})$..♂+♀

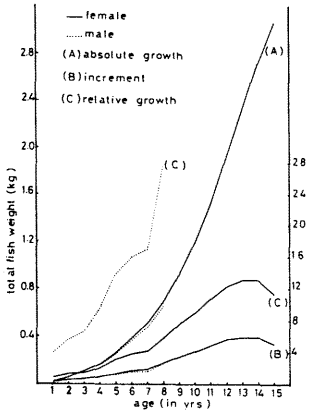

Fig (2)- Growth in weight with age of bass D.labrax.

(weights in g)

$W_t = 4461.6\ (1-e^{-0.7623(t+1.739)})^{3.0804}$ ♂

$W_t = 8471.66\ (1-e^{-0.0572(t+1.8738)})^{3.0353}$ ♀

$W_t = 7499.23\ (1-e^{-0.0597(t+1.8680)})^{3.0346}$ ♂+♀

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V

AN ATTEMPT OF GROWTH PARAMETER COMPUTATION FOR SOME COMMERCIAL SPECIES OF THE TYRRHENIAN SEA

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Growth parameters expressed in the Von Bertalanffy (1938) form are of great importance for stock assessment model computation. Because of the lack of these data for many tyrrhenian commercial species, it would be useful to complete the available information. Length/frequency distributions represent the data base for this work. For the Ligurian Sea data have been obtained from Bilio (1969) for Merluccius merluccius; from Froglia (1984) for Mullus barbatus, Spicara flexuosa and Boops boops; from Fanciulli and Orsi (1979) for Phycis blennioides. For the Higher Tyrrhenian Sea, from Froglia (1984) for Diplodus annularis. For the Central Tyrrhenian Sea, from Ardizzone (1982) for Mullus barbatus and from Froglia (1984) for Trigla lucerna and Soles vulgaris. Asymptote length (L.inf.), K and T_o have been estimated treating data by smoothing techniques (i.e. running average), by computing the mean length of each age-class by decomposition of the length frequencies into their gaussian components (Bhattacharya, 1967) and finally by methods of forced Gulland an Holt (1959) plot or Walford (1946) plot as reported in Pauly (1983) and Ricker (1975). Two estimations of T_o on annual basis are reported: the former (TO) have been obtained by the empirical relationship given by Pauly (1983); the latter (TO*) by the equation given by Ricker (1975). Results are shown in table 1. When possible, male (M) and female (F) have been analyzed separately. Total length (TL) or standard legth (SL) are given in cm. It must be noted that figures corresponding to TO* might represent a better estimate than TO. In fact TO* has been derived from the regression of Y=(L.inf.-Lt.) against X=t (where t=age and Lt.=length at age t) (Ricker, 1975) for each species. For the resolution in the gaussian components of each data set by Bhattacharya method, the correlation coefficients of the straight lines identifying each component were included between 0.73 and 0.99 (with more than 92% included between 0.85 and 0.99). The methods employed have given good results also when frequency distributions were obtained from relatively small samples; of course this is true when the age composition of the population is well represented in the sample. For example, table 2 shows a comparison between age/length key of Merluccius merluccius, obtained by Aldebert (Oliver,1983) through otoliths reading, and mean length series obtained from our computation. In general the results obtained by the method employed are comparable with others from more laborious methods whose confidential limits are often of the same width (i.e. otolith and scales reading).

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TABLE: 1

LIGURIAN SEA SPECIES			L.INF	K	TO	TO*
M. MERLUCCIUS	TL	MF	48.98	0.2095	-0.373	-0.463
M. BARBATUS	TL	MF	21.05	1.0880	-0.085	
S. FLEXUOSA	TL	MF	20.00	0.4405	-0.221	
B. BOOPS	TL	MF	28.42	0.3793	-0.234	0.344
P. BLENNIOIDES	SL	M	28.42	0.7972	-0.108	0.041
	SL	F	42.10	0.8951	-0.086	
HIGHER TYRRHENIAN SPECIES						
D. ANNULARIS	TL	MF	21.05	0.3865	-0.249	-0.128
CENTRAL TYRRHENIAN SPECIES						
M. BARBATUS	TL	MF	20.00	0.5682	-0.170	
T. LUCERNA	TL	MF	25.26	0.2321	-0.403	-1.084
S. VULGARIS	TL	MF	35.79	0.4064	-0.205	-0.706

TABLE: 2

AGE (YEARS)		I	II	III	IV	V
ALDEBERT (OLIVER, 1983)	LENGTH	12.00	19.80	26.30	31.80	36.50
OUR COMPUTATION	LENGTH	12.7	19.30	25.72	29.00	33.34
	S.D.	1.67	2.82	2.36	1.96	3.96