Egg-Case of the Dogfish *Scyliorhinus canicula* (L., 1758) from the Sicilian Channel (Mediterranean Sea). II.- Morphometric relationships

Sergio RAGONESE and Patrizia JEREB

I.T.P.P., C.N.R., Via L. Vaccara 61, 91026 Mazara del Vallo (Italia)

Looking at the geographical variation in the egg-cases dimensions of different populations of *Scyliorhinus canicula*, a positive relationship between egg-case size and total length of specimens has been pointed out (Capapé, 1977). Within a wider research program on the smallspotted catshark of the Sicilian Channel (see the companion paper, Ragonese & Jereb, 1990), relationships between median length (ML ; 0.1 mm), maximum width (MW ; 0.1 mm) and virtual surface (SF = ML*MW ; mm²) of the egg-cases and total length (TL ; 0.5 cm ; fig.1) gonadic weight (GW ; 0.1 gr) and somatic weight (SW ; 0.1 gr) of specimens were studied. Length index (LI = ML/TL %), surface index (SI=SF/TL %) and gonadic index (GI=GW/SW %) were also analysed. A set of 156 egg-cases (one for each specimen) constituded the data-base.

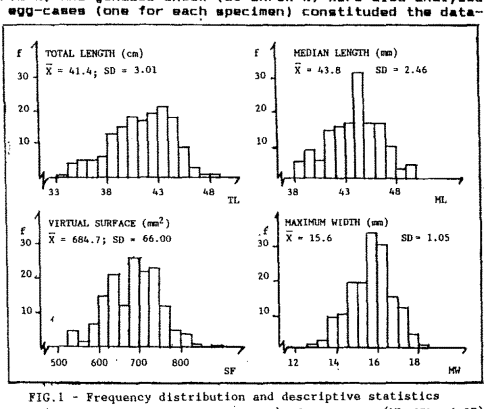

FIG.1 - Frequency distribution and descriptive statistics (X mean; SD = standard deviation) of egg-cases (ML, MW and SF) and specimens (TL) dimensions; f = absolute frequencies.

Median length and maximum width ranges observed (ML : 3.8 - 4.9 cm ; MW : 1.3 - 1.8 cm) correspond to those reported for the tunisian waters (Capapé, 1977), are lower but still comparable to those from the Adriatic Sea (Jardas, 1979) and the french Mediterranean (Mellinger et al., 1984), but, as expected, are different from those reported for the Atlantic (Mellinger et al., 1984). Total length, median length, maximum width and virtual surface frequency distributions are reported in fig.1 . With only one exception (TL ; p=0.023), all frequency distributions (variables reported in tab.1) were significantly comparable to the normal one (Kolmogorov-Smirnov one sample test using standard normal distribution; Lilliefors, 1967), even thought that of the maximum width in a marginal way (p=0.058).

	ML	MW	SF	TL	GW	SW	LI	SI
MW	.234	-						
SF	.739!	.827!	-					
TL	.399	.526	.591	-				
GW	.324	.572	.587	.530	-			
SW	.385	.574	.617	.922	.626	-		
LI	.352!	-.370	*.051!	-.714!	-.307	-.641	-	
SI	.531!	.525!	.673!	*.196!	.216	-.094	.594!	-
GI	*.005	*.177	*.134	*.192	.665!	*.138!	*.181	.326

TAB.1- Correlation matrix: ! = Autocorrelated variables (e.g. SF = ML·MW); * = H_o: $\rho_{12} = 0$ not rejected at $\alpha = 0.01$ (2 sided).

Qualitative analysis of the scatter-plots generally indicated a wide-spread distribution of points, suggesting the use of no particular regression model than the linear one. Pearson correlation matrix (tab. 1) shows that egg-case dimensions (ML, MW and SF) are, all together, more correlated to the somatic weight (SW) and highly significantly independent (p<0.01) of the gonado-somatic index (GI). Considering also the autocorrelation problem when using indexes, the individual parameter more correlated to size variations (total length and somatic weight) seems to be the maximum width, as pointed out for the french Mediterranean by Mellinger (1983); nevertheless, the virtual surface, as derived by the two variables median length and maximum width, constitutes a more useful variable. Anyway, only a small portion (less than 40-50 %) of the observed variability is explained by these correlation coefficients. Thus, other physiological and/or environmental factors beyond those strictly related to geographical different areas, seem to affect the kind of relationship existing between egg-case dimensions and size of the specimen.

REFERENCES

CAPAPE', C., 1977. Bull.Off.natn.Pêch. Tunisie 1(1):83-101.
JARDAS,I.,1979. Izv-Rep.Inst.Oceanogr.Ribar.Split Vol.IV(2-3):104 pp.
LILLIEFORS,H.W., 1967. J.Am.Stat.Ass. 64:399-402.
MELLINGER,J., WRIBEZ,F. & ALLUCHON-GERARD,M.-J., 1984. Cah.Biol.Mar. 25:305-317.
RAGONESE,S. & JEREB,P.,1990. C.I.E.S.M., XXXII Congress, Perpignan, October 1990.