AGE AND GROWTH OF *PHYCIS PHYCIS* (LINNAEUS, 1766) IN THE GULF OF TUNIS

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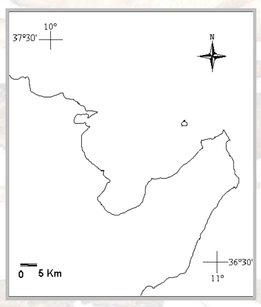
INTRODUCTION

✓The knowledge of the demographic structures of the exploited populations, of which the interpretation for calcified structures constitutes the principal means, is one of the source data for inventory control halieutics. Indeed, the data on the age and the growth of fish are essential for comprehension of the features of life history from the species and the populations (longevity, age of recruitment, age of sexual maturity, mortality) and being studied of the demographic structure from populations and of their dynamics (for example in the models of estimate based on a structuring in age) (Laurec and Le Guen, 1981).
✓The aim of this study is to estimate the weight-length relationship and determine growth of *Phycis phycis* (Linnaeus, 1766) in the Gulf of Tunis.

MATERIALS AND METHODS

✓A total of 272 individuals were collected monthly between May 2007 and June 2010 from the contributions of commercial fishing in the Gulf of Tunis. In the laboratory, total length (TL in cm) and total weight (TW in grams) were measured for each specimen.

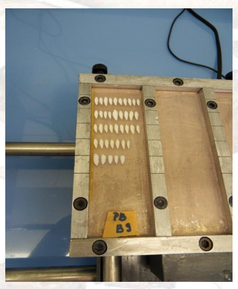


Sampling area in the Gulf of Tunis (Tunisia).

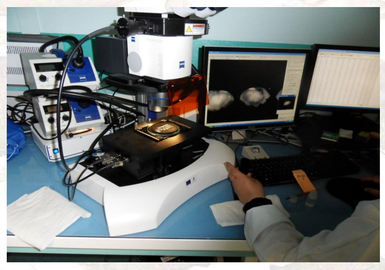
Phycis phycis

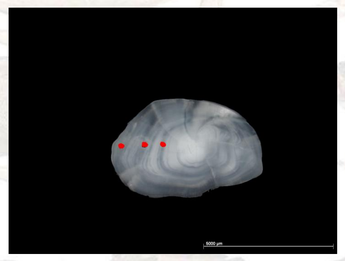
(Forkbeard)

Whole otolith



The right otoliths were immersed in black polyester resin and cut in thin slices with a high speed cutting automatic Slicer brilliant 250® of Esil.

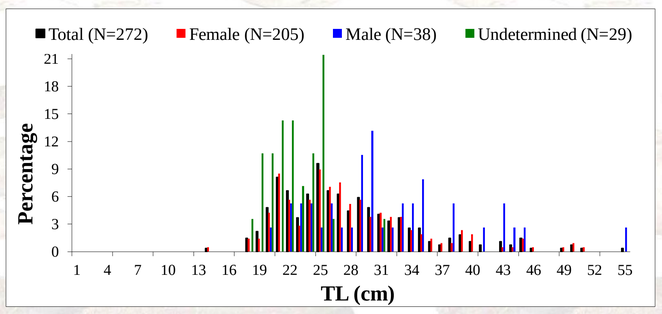




Whole sections were viewed under a binocular magnifying glass connected to a numeric camera coupled to a computer equipped with software with image processing **TNPC**.

RESULTS

Structure of sampling



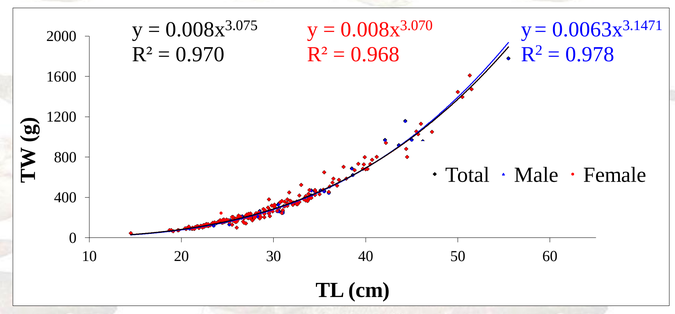
Length-frequency distribution of females and males of *P.phycis.*

P. phycis individuals who served in this study are divided into 29 undetermined, 38 males and 205 females of total length, respectively, ranging from19.5 to 32.2 cm, from 22.5 to 55.5 cm and from 19.8 to 51.5 cm.

Weight-length relationships

Sexe	a	b	Se (b)	n	r^2	test t	Growth type
Males	0.0063	3.147	0.077	38	0.978	1.894	I
Females	0.0083	3.070	0.039	205	0.968	1.813	I
Total	0.0082	3.076	0.034	243	0.971	2.214	A+

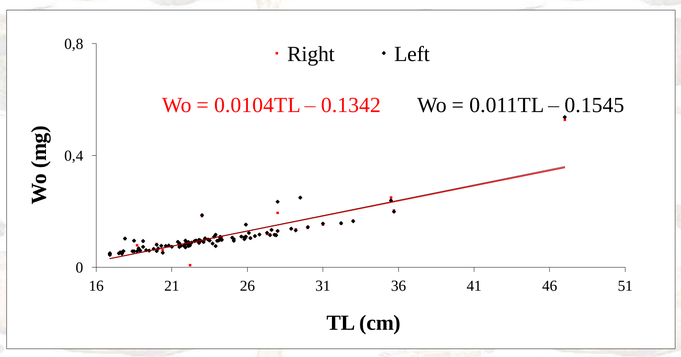
Parameters of the length-weight relationships for females, males and all individuals of *P.phycis* .
Se (b): standard error of b, n:sample size, r^2:coefficient of determination.



The length-weight relationships for females, males and all individuals of *P.phycis.*

✓The coefficients of determination "r^2" of the total relations length-weight are close to 1, reflecting a good correlation between the two variables.
✓The statistical analysis shows that the type of growth is isometric ($t < 1.96$; $p > 0.05$) for females and males, whereas it presents a positive allometry for all individuals.

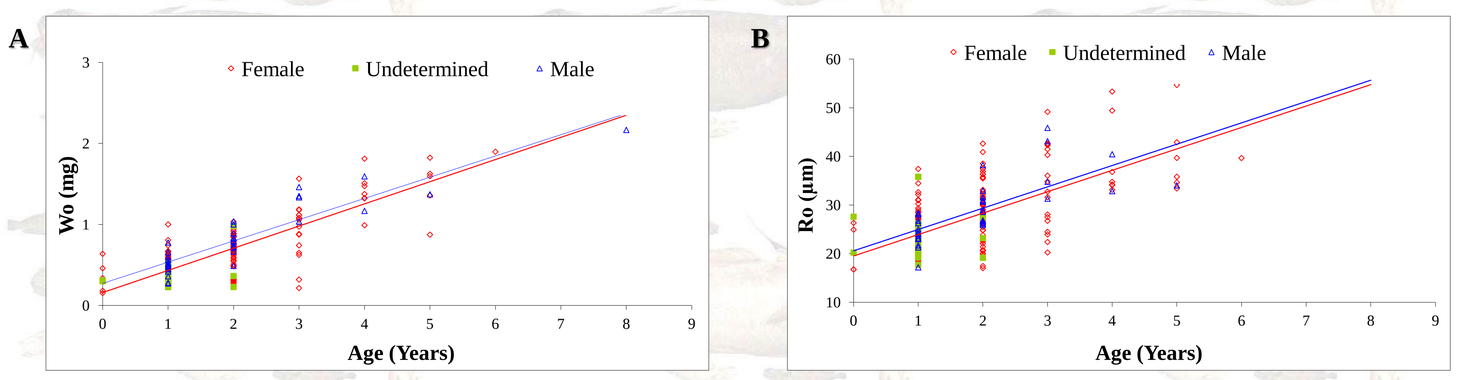
Symmetry between the right and left otolith



Linear regression between TL/Wo of *P.phycis.*

The relation between the total length (TL) of fish and the weight of the otolith (Wo) did not show a significant difference between the right and left otolith (ANCOVA, p>0.05).

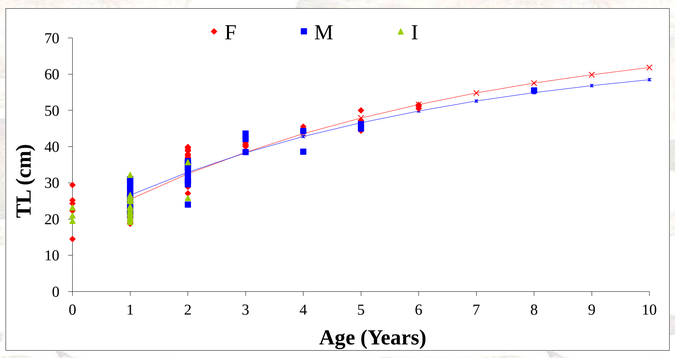
Relationships Age-Wo and Age-Ro



Relationships between weight Wo **(A)** and radius Ro **(B)** otolith to age for *P.phycis.*

✓The relationships between otolith radius and otolith weight with age, showed that there are no significant differences between males, females and all individuals (ANCOVA, p>0.05).
✓The differences were statistically significant between slopes and intercepts for males and females (ANCOVA, p>0.05).

Age and growth



The Von Bertalanffy curve estimated for the males (M) and females (F) of *P.phycis.*

✓The growth parameters were estimated for:
- females ($TL = 73.43 (1 - e^{-0.158 (t+1.709)})$).
- males ($TL = 67.51 (1 - e^{-0.168 (t+1.993)})$).
- combined sexes ($TL = 65.73 (1 - e^{-0.135 (t+2.025)})$).

Sexe	k	L∞	W∞	to	N	Φ
Males	0.168	67.517	3603.197	-1.993	38	2.883
Females	0.158	73.436	4446.076	-1.709	205	2.929

Parameters of the growth model of Von Bertalanffy and the index of performance from growth(Φ) of *P.phycis.*

✓The females, reaching L∞ = 73.43 cm, grew faster than the males, which did not exceed 68 cm.
✓The females have the higher predicted asymptotic weight (W∞= 4446.08g) compared to the males (W∞= 3603.20g).
✓The index of performance from growth (Φ) (cm/an) indicates an identical growth between males and females

REFERENCES

✓Laurec A., Le Guen J. C., 1981. Dynamique des populations marines exploitées. CNEXO, Rapp. scient. techn., 45, 117 p.