

# SEASONAL VARIATIONS OF BIOMETRIC RELATIONSHIPS OF DATE MUSSEL *LITHOPHAGA LITHOPHAGA* (LINNAEUS, 1758), FROM ALEXANDRIA COAST, EGYPT.

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## Abstract

*Lithophaga lithophaga* (Linnaeus, 1758) is an important mussel species. In Egypt, they are exploited commercially throughout the year for local as well as external market due to heavy demand. 571 individuals were collected in the size range 15.54-97.92 mm. The morphometric relationships between length-width and length-weight from Oct. 2012 to Sep. 2013 were estimated. The length frequency distributions of all samples were represented. This study was undertaken to assess seasonal variations in the quality of the meat mussel by estimating the condition index. This index also reflect the chemical composition and physiological states during gonad development and reproductive phases of the mussel.

**Keywords:** Bivalves, Levantine Basin, Biometrics

## Introduction

The date mussel (*Lithophaga lithophaga* Linnaeus, 1758) (Bivalvia: Mytilidae) is an endolithic bivalve which bores calcareous substrata by glandular secretion. (Morten & Scott, 1980). It is widespread in the infra littoral region, usually at shallow depth, of the Mediterranean of the Red Sea (Fischer et al; 1987). Previous study in the same area of study focused mainly of the effect of pollution and bioaccumulation of the population of *L. lithophaga*. The present study gives the first insights on the biometrics of *L. lithophaga* in the studied area.

## Material and methods

Samples of *Lithophaga lithophaga* were collected from Sidi Bishr, Miami, El Asafra, and El Montazah sites (Fig. 1) at (5-7 m) depth.

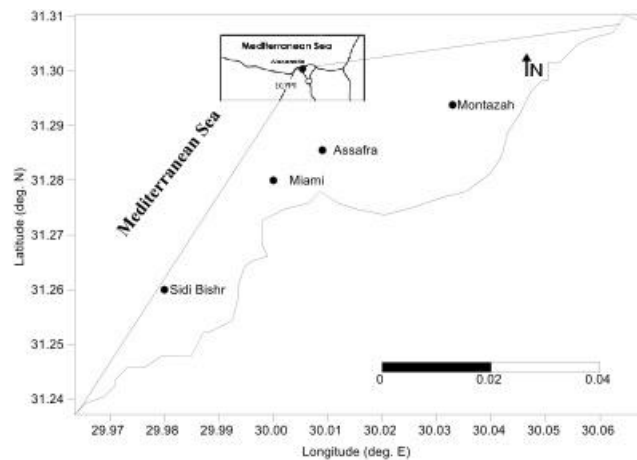


Fig. 1. Map showing sampling location of Alexandria coast

Live mussel samples were transferred to the laboratory. The samples were sexed and measurements of the shell length (maximum antero-posterior distance) were recorded accurately to 0.01 mm using a Vernier Caliper. Total weight of the mussel was determined to the nearest 0.01 g using an electronic balance. Length-weight relationships were fitting using power function  $y=bx^a$ . Condition index was calculated according to Devenport and Chen (1987).

## Results and discussion

### 1. Length-weight relationships

All relations indicate highly positive allometry, significant at 1% level. All the biometric variables are in Table 1.

Tab. 1. Seasonal variations of combined sex of *L. lithophaga* of the collected samples.

	Season	N	a	b	r	r <sup>2</sup>	All
♂	Autumn	78	0.0002	2.7107	0.9781	0.9569	+
	Winter	101	0.002	2.031	0.8456	0.715	+
	Spring	99	0.0002	2.6798	0.9714	0.9436	+
	Summer	90	0.0002	2.6636	0.9193	0.8452	+
♀	Autumn	40	0.0004	2.5321	0.9781	0.9597	+
	Winter	61	0.002	2.067	0.8792	0.773	+
	Spring	41	0.0001	2.8278	0.9704	0.9417	+
	Summer	60	0.0001	2.8369	0.9665	0.9342	+

N: number of individuals; a: constant; b: slope (general allometric factor); r: correlation coefficient; R<sup>2</sup>: coefficient of determination; All: allometry;

### 2. Size frequency structure

The shell length of the studied samples ranged from 15 mm to 85 mm with high frequency abundance of shell length from 45 mm to 55 mm of combined sexes. Similarly, in Croatia, Pehrada et al., (2015) recorded in his study that the population of *L. lithophaga* shell length ranged from 30.6 to 93.6 mm.

### 3. Condition Index.

The monthly distribution of the condition index (CI) shows that there is one peak in October and a second peak during June. Also, a gradual decrease of CI from November to March was observed. This may indicate a significant loss in tissue weight or reserves due to release of gonadal content (Sahin et al., 2006). This present study is important in planning studies assessing the resilience capability of natural populations of *L. lithophaga* after using illegal destructive harvesting methods.

## References

- 1 - Davenport, J. and Chen, X., 1987. A comparison of methods for the assessment of condition in the mussel (*Mytilus edulis* L.). J. Moll. Stud., 53, 293-297.
- 2 - Peharda, M., Puljas, S., Chauvaud, L., Schone, B.R., Ezgeta-Balie, D., Thebault, J., 2015. Growth and longevity of *Lithophaga lithophaga*: what can we learn from shell structure and stable isotope composition?. Mar. Biol., 162, 1531-1540.
- 3 - Sahin C., Düzgünes E. and I. Okumus, 2006. Seasonal variations in condition index and gonadal development of the introduced blood cockle *Anadara inaequalvis* (Bruguier, 1789) in the southeastern Black Sea coast. Turkish J. Aquat. Sci., 6, 155-163.