

FIRST CONTRIBUTION TO THE KNOWLEDGE OF *MAJA CRISPATA* (RISSO, 1827A) ECO-BIOLOGY ALONG THE TUNISIAN COASTS

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Abstract

This work is a first contribution to the knowledge of the biology of the spider crab *Maja crispata* along the Tunisian coasts. The main results of this study showed that the Tunisian population of *M. crispata* is generally male-biased with some spatial variations of the sex-ratio. The comparative analysis of size structures of 6 studied subpopulations highlighted also some spatial variations, with a unimodal size distribution and a clear prevalence of individuals belonging to the size class 35-40 mm. The description of the intermoult-stage structure showed a preponderance of stage C-intermoult individuals (of hard carapace) followed by stage B-individuals. While the intermoult stage D was recorded in five out of six sites with very low proportions, stage A was encountered in only one site (Zarrat).

Keywords: Population Dynamics, Crustacea, Decapoda, Tunisian Plateau

In spite of its ecological interest, there is still a knowledge-gap about Tunisian *Maja crispata* (Risso, 1827) populations. Studies about this crab species are almost absent and little is yet known about its biology and ecology in Tunisia. The present study was carried out within this context, with the main objective is to describe the sex ratio, the size structure and intermoult-stage structure of Tunisian *M. crispata* populations. A total of 180 individuals of *M. crispata* were randomly collected from 6 sites (with a rate of 30 specimens from each site) belonging to the Gulf of Gabes (4 sites: Zarrat, Tebelbou, Ghannouche and Kerkennah) and Gulf of Tunis (2 sites: Carthage Birsa and Carthage Salammbô) between March and June 2015. In the laboratory, sampled individuals of *M. crispata* were classified into males and females and their maximal width of the carapace (CW, mm) was measured using aluminum Vernier calipers (accuracy of 0.01 mm). Intermoult stages (A, B, C and D) of the sampled spider crabs were determined macroscopically according to the methodology of carapace hardness described by [1]. The total sample (180 individuals) consisted of 113 males and 67 females. Both total samples of Gulf of Gabes and Gulf of Tunis showed that males were generally more abundant than females ($\chi^2 = 33.926$; $df = 5$; $p \leq 0.001$). Global sex-ratio was found to be 0.59 and the spatial variations of sex-ratio are presented in figure 1A. The lowest sex-ratio values were noted in Kerkennah (0.30) and Carthage Salammbô (0.50). In contrast, the highest records were found in Zarrat (4.00), Ghannouche (2.75) and Carthage Birsa (1.14) (Figure 1A).

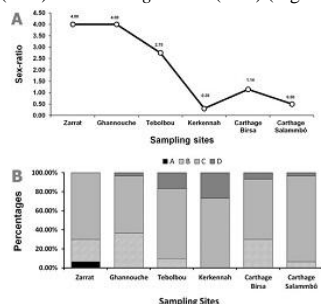


Fig. 1. Spatial variations of the sex-ratio (A) and intermoult-stage structures (B) of the six studied subpopulations of the spider crab *Maja crispata*.

The comparative analysis of intermoult-stage structures of the Tunisian *M. crispata* subpopulations revealed that the majority of spider crabs collected from both Gulfs of Gabes and Tunis are of hard carapace and belong to the intermoult stage C. Only two stage A-individuals were found in the total sample (in Zarrat). Individuals of stage B were encountered in all sites except Carthage Birsa. As for stage D-individuals, they were found in all sites except Zarrat with very low proportions (Figure 1B). With respect to

length frequency distribution, we found that the total sample of *M. crispata* is mainly presented by crabs belonging to the size (carapace width) classes 35-40 mm (39 specimens), 30-35 mm (32 specimens) and 40-45 mm (31 specimens). The size classes presenting the lowest frequencies were found to be 15-20 mm (2 specimens) and 60-65 mm (4 specimens) (Figure 2). Similarly to the global sample, the size frequency distributions of separate samples were found to be unimodal showing, in most cases (Ghannouche, Tebelbou, Kerkennah and Carthage Birsa), the prevalence of one of the three dominating size classes (30-35 mm or 35-40 mm or 40-45 mm). In the case of Zarrat and Carthage Salammbô, prevalence was found with the size classes of 45-50 mm and 25-30 mm respectively. In all cases, smallest (15-20 mm) and largest (60-65 mm) spider crabs were very scarce (Figure 2).

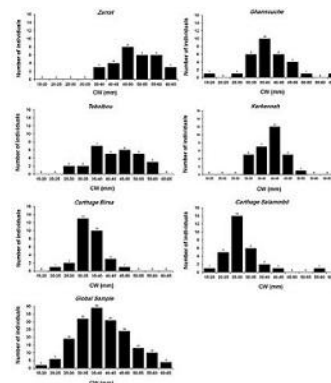


Fig. 2. Size (carapace width, CW) structures of the spider crab *Maja crispata* in each of the six sampling sites ($n = 30$ each) and in the global sample ($n = 180$).

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References

1 - Sampedro M.P., González-Gurriarán, E. and Freire J., 2003. Moults cycle and growth of *Maja squinado* (Decapoda: Majidae) in coastal habitats of Galicia, Northwest Spain. *J. Mar. Biol. Assoc. U. K.*, 83: 995-1005.