Macroparasites of the mussel
Mytilus galloprovincialis (Mollusca, Bivalvia)
from Barra beach at Aveiro Estuary
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Introduction

In Portugal, Mytilus galloprovincialis exists in different areas along the coast and it's an autochthonous species. M. galloprovincialis presents a high growth rate under varied environmental conditions and has a high tolerance to many physiologic factors. This mussel can be found across many habitats.

Parasitism consists in a symbiotic association between two organisms: the parasite and the host. M. galloprovincialis can be affected by many parasites and suffer wide-ranging consequences such as reduction of feeding capability, branchial disorganization, weak juveniles, and invasion of reproductive tissue.

Uratostoma cyprinae, a Turbellarian parasite, is usually located in the gills of the host and may reduce the feeding capability of its host and cause branchial disorganization.

The genus Mytilicola, Copepoda parasites, presents two species, Mytilicola orientalis and Mytilicola intestinalis, both are usually found in the digestive tube of the host.

Aim

Our aim with this study is to identify and quantify the macroparasites found in the mussel M. galloprovincialis, from Barra beach, near the Aveiro estuary (Portugal).

Methodology

In September 2020, specimens of the mussel M. galloprovincialis were collected, manually and randomly, at Barra beach, Aveiro. They were then transported to the Laboratory of Animal Pathology, at Faculty of Sciences, in Porto University, in a cooler chest, where they were washed with 35% salt water and submersed for 48 hours to allow the depuration process to happen. After the depuration, the mussels were divided, bagged in freezer bags, and stored in a freezer until the moment of analysis.

A dissection protocol was developed: when analysing a mussel, the total weight (in grams (g)), length and width (both in centimetres (cm)) of the shell were measured. Then the parasitological analysis was performed using the stereoscope, after the analysis was complete the visceral weight (in grams (g)) of the mussel was measured.

All the parasites found were identified up to the lowest possible taxonomic level by comparing them with existing literature (illustrated descriptions and scientific articles), and stored in glass flasks, with 70% ethanol. The parasites were counted to allow the calculation and analysis (using Excel) of the mean intensity ± standard deviation (SD) (minimum-maximum) and prevalence (in %) of parasites per mussel analysed (Bush et al. 1997).

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Results and Discussion

In the table below, we can see the values obtained for the body parameters analysed in M. galloprovincialis: length (cm), width (cm), visceral and total weight (g).

Table 1 – Average ± SD (range) values of length, width, visceral and total weight of the analysed mussels.

<table>
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<th>parameter</th>
<th>Mean ± SD (minimum - maximum)</th>
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<tr>
<td>Length (cm)</td>
<td>5.5 ± 0.9 (3.8-9.1)</td>
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<tr>
<td>Width (cm)</td>
<td>3.0 ± 0.6 (1.9-4.9)</td>
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<tr>
<td>Visceral weight (g)</td>
<td>9.4 ± 5.8 (2.8-37.7)</td>
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<td>Total weight (g)</td>
<td>19.1 ± 10.5 (5.0-65.9)</td>
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We determined the infection levels of the parasites found on the analysed mussels. The recorded prevalence and mean intensity ± SD (minimum-maximum) values were 55.7% and 4.9 ± 7.0 (1-38) worms/host for U. cyprinae, respectively, in the 70 mussels analysed. The occurrence of Mytilicola sp. was occasional; we only found one single host parasitized by M. intestinalis and another parasitized by Mytilicola sp.

Fig. 1 – (A) M. galloprovincialis opened before being dissected. (B) The turbellarian U. cyprinae found on M. galloprovincialis (16x magnification)

In a previous study (Francisco, Hermida, & Santos, 2010) four species of parasites were identified, in addition to U. cyprinae and Mytilicola sp, and the prevalence values recorded, for U. cyprinae and Mytilicola sp., were 39% and 3.5%, respectively. Currently, the occurrence of Mytilicola sp. is residual and insignificant. This demonstrates that, in recent years, the variety of parasites in this mussel species has decreased while the prevalence of the turbellarian has increased.

References
