MATERNAL EFFECTS AND SETTLEMENT PERFORMANCE OF THE GREEN CRAB CARCINUS MAENAS

Field: Marine Ecology

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My present job:

Abstract:

The present thesis analysed important stages in the life history of a model benthic marine invertebrate with complex life cycle: the embryonic development, larval settlement and early benthic performance of the green crab Carcinus maenas. The first part surveyed maternal effects as a source of variability in offspring quality. The second part focused in the early benthic life of C. maenas. The part of the study addressing maternal effects revealed that maternal provisioning and incubation environment were not influenced by maternal size, but the study of several temporal scales evidenced the influence of maternal effects in the offspring quality. The second part showed that after experiencing a planktonic life, competent larvae displayed different post-settlement performance, clearly reflecting the pelagic conditions that they have experienced during their larval life. Overall, metamorphosis is not a new beginning for C. maenas. The early post-metamorphosis performance of this brachyuran crab can be strongly conditioned by trait-mediated effects that are carried over from its embryonic and/or pelagic larval life to its benthic juvenile and/or adult stages.

How my research is having impact:

- Aquaculture nutrition: the high-resolution lipidomic analysis of Carcinus maenas embryos showed that embryogenesis is a dynamic process, suggesting a specialization of lipid functions along the embryonic development.
- Fisheries management: brachyuran crabs are commercial species with important incomes in fish industry. The knowledge of maternal effects and settlement performance can improve the management of these species.
- Invasion control: C. maenas is an invasive species in several regions, a better understanding of its success (e.g., an extended knowledge of maternal effects, post-metamorphosis processes, carry-over effects) can help to control C. maenas populations in these sites.