A finite element model to investigate the predator-prey interaction in the benthic habitat

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Abstract

Many marine organisms release into the ocean planktonic larvae which must reach specific sites in order to recruit to the next stage of their life-cycle. Benthic community structure is affected by pelagic environmental conditions, because these conditions determine the probability that larvae will successfully recruit to the adult habitat [1]. In particular for sessile species, the population dynamics are regulated mainly by these oceanographic conditions, by availability of suitable settlement sites and by the agents of mortality that act at each stage of their life history to restrict the number of individuals reaching reproductive maturity [2].

In this work, we use a two-dimensional stage-structured finite element model to investigate the relationship between the coastal oceanographic processes, which disperse prey (barnacle *Balanus glandula*) and predator (seastar *Pisaster ochraceus*) larvae, and the intensity of predator-prey interaction in the benthic habitat (as introduced in [1]). The finite element model incorporates both prey and predator larval transport and post-recruitment processes.

References

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