



Dispersal of an introduced larval cohort in a coastal lagoon

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ABSTRACT: Patterns of larval dispersal influence the structure of marine biological communities, but many aspects of larval dispersal remain poorly understood. For example, much of our present understanding of larval dispersal is based on models that integrate aspects of physical oceanography and larval biology, but the predictions of those models are generally not tested because we lack the methodology for real-time larval tracking. In the present study, we used both modeled and measured data to track an introduced larval cohort essentially from fertilization to presumed settlement. Larvae of the hard clam *Mercenaria* were released into a labeled water parcel in the Banana River Lagoon, Florida, within 8.5 h of nursery production and then were tracked for the duration of their estimated 8-d pelagic life span. Comparisons of modeled versus measured larval distribution indicate that the fate of the larvae as predicted by a tracer model and by the concentration of coincidentally released sulfur hexafluoride (SF_6) did not agree with the fate of the larvae as predicted by the path of subsurface drifters and by a particle trajectory model. Thus, modeled predictions of larval dispersal must be interpreted with care. Additionally, one component of larval dispersal that was observed in the study but that was not accounted for in the model was the spread of larvae along the path of advection. That trail of larvae may have important consequences for patterns of recruitment and resultant community structure, but it is not considered in most treatments of larval dispersal.

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