Population Dynamics of the Pelagic Larval Shrimp in Osaka Bay

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Aiming at providing numerical tools useful to assess the impacts of coastal development pressures on marine life, a Lagrangian model for population dynamics of pelagic eggs and larvae of the greasyback shrimp, *Metapenaeus eusis*, in Osaka Bay was developed and improved based on laboratory experiments. The model was combined with a 3-D Eulerian numerical model that predicts physical and biological conditions of the habitat. A series of numerical experiments was done to investigate their transport processes from the spawning grounds, and the concentration process of full-grown larvae toward the mouth of Yodo River that flows into the inmost basin. Model results revealed, as a general tendency, that the larvae at earlier developmental stages through nauplius to zoea continue to drift like a passive tracer, and begin to concentrate at the river mouth area after the mysis stage, mainly evading low saline environment in the surface layer. This suggests that the full-grown larvae may be favored with chance to take advantage of the river-induced gravitational circulation that dominates the inmost estuarine basin. In addition, it was found that tidal condition around the spawning period also exerts a considerable influence upon the fate of pelagic larvae.