Application of oceanographic modeling to the recovery of Northern Abalone in Pacific Rim National Park Reserve of Canada

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The abundance of northern abalone (Haliotis kamtschatkana) has declined by more than 80% along the British Columbia coast since the early 1980s. The recolonization of prime, vacant abalone habitat will depend, in part, upon distance from "seed" populations of spawning adults, and the direction and magnitude of local oceanic currents and tides. We present results from an Interdepartmental Recovery Fund funded project examining the utility of oceanographic simulation models and particle transport experiments in understanding potential retention and dispersal of abalone larvae. An oceanographic model has been developed for the Broken Group Islands, Pacific Rim National Park Reserve, on the west coast of Vancouver Island. The 3-d model combines information on water density properties, tides, and coastal wind data to predict surface and subsurface water currents. Model simulations were compared to field studies of ocean currents, and model results agreed well with observations. Model abalone larva were seeded into 20-30 depth layers at select sites within the Broken Group Islands, in an attempt to understand areas of larval retention and dispersal. The results of this study will aid in the recovery of northern abalone by providing a methodology for identifying critical areas for larval dispersion and retention.