Using a System Level Approach to Bay Scallop Enhancement and Management

Marnita M. Chintala[1], David W. Grunden[2], Anne Kuhn[1], and Karin A. Tammi[3]
[1]U.S. Environmental Protection Agency, ORD/NHEERL, Atlantic Ecology Division, Narragansett, RI 02882
[2]Town of Oak Bluffs, Oak Bluffs, MA 02557
[2]Roger Williams University, Bristol, RI 02809

Within the last twenty years total harvests of bay scallops (*Argopecten irradians*) have dwindled in the southern New England Region. Management of scallop populations has been underway on Martha's Vineyard Island to provide the public with a fishery, and has included a combination of direct seeding, spat bags, and spawner sanctuaries to maintain and enhance populations. The success of these efforts depends on a number of factors, including habitat quality and quantity, larval supply, adult scallop location, water quality, and watershed influences. Results from dive surveys in Lagoon Pond, MA indicated a correlation between scallop abundance and total vegetated cover (macroalgae and eelgrass combined), depth, and sediment type. Eelgrass alone, however, was a poor predictor of scallop abundance. More scallops were found in shallow areas (1-5 m depth) along the pond edge, with deeper, unvegetated, muddy sites devoid of scallops. Scallop abundance tended to be higher near sites of active restoration (spawning cages put in areas of past recruitment success), but this may reflect the hydrodynamic patterns of the system. Watershed analyses included characterization of the riparian zone and hydrography surrounding Lagoon Pond to evaluate the relationship between riparian buffer condition and scallop habitat suitability. These results illustrate the need to consider larger scale and longer term processes when planning restoration efforts for bay scallops. By linking habitat attributes with system-level driving forces, such as hydrodynamics and land use, we may improve the chances for success of future restoration and management efforts.