



## Pivers Island Beach Marsh/Oyster Restoration Project

History The sandy beach with upland shrub border experienced significant storm erosion in the late 90's. The beach was planted with *Spartina alterniflora* in May 2000, by NOAA and Duke volunteer staff. Oyster cultch was placed seaward of the marsh by NC DMF on three occasions; July 2000, July 2006, and August 2007.

Project costs & permits All labor, planning and monitoring was volunteered by NOAA and Duke staff. *Spartina* plants were obtained at no cost from nearby donor marshes. Recovery of the donor marsh was tracked and stem density from harvested areas had returned to initial conditions by May 2001. Oyster cultch was delivered at no cost by NC DMF. Fertilizer used in initial plantings was donated by NCCF. Permits were obtained from NC DENR.

Design considerations No grading or significant site alteration was done. Marsh plants were planted along tidal elevation of adjacent marsh plants, in a strip approx 5m wide the length of the beach. Bare root transplants were placed on 0.5 m centers, and fertilized with Osmocote. Cultch was placed below the lowest marsh elevation. Upland border of the marsh was planted with *S. patens*. A silt fence was originally placed at the upland border to prevent sand from the adjacent boat pen area from covering the plantings. This was removed after a year. Subsequent gravel additions to boat pen area have resulted in gravel on site. Site access for cultch placement is limited on southern edge by seawall. Decision was made to place oyster cultch at outer edge of mudflat rather than immediately adjacent to marsh in middle of site, to avoid soft sediments.

This project design was selected to avoid a seawall, and to test effectiveness of marsh/oyster instead of a granite sill.

Site has performed well, and erosion of lawn at upper edge has been eliminated. The elevation of the lawn is such that spring tides reach the lawn. Portions of the site near DUML have slower growth due to trampling-this area used as a canoe/kayak launch. The oyster cultch areas all now support living reef, and the original cultch area has significantly increased in height. The planted marsh area has progressed seaward in response to sediment accretion. After cultch has been deposited on an area of the mudflat, the marsh behind the cultch has responded with increased biomass and growth.

Follow up In addition to the '06 and '07 cultch additions, two small areas (c. 5 x 3 m) received *Spartina* plantings in Spring 2007. Trash removal is the primary maintenance consideration.

March 2001



March 2007



August 2007

