



NOAA Community-based Restoration Program



Quivett Creek Salt Marsh Restoration Dennis, Massachusetts

Quivett Creek, located on Cape Cod in eastern Massachusetts, is a coastal stream that acts as a boundary between the Towns of Dennis and Brewster. A 265-acre salt marsh surrounds Quivett Creek and the stream is an important migratory route for anadromous fish, namely the alewife (*Alosa pseudoharengus*).

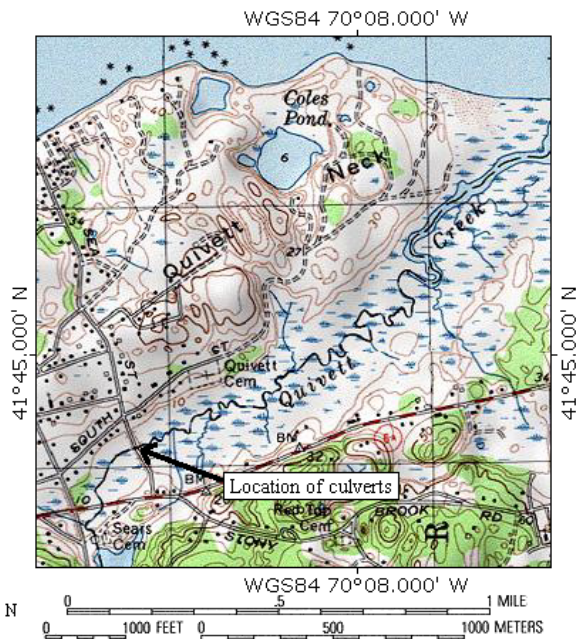
Sea Street, an abandoned road, bisects the upper part of Quivett Creek and separates the upper 11 acres of salt marsh from the main marsh system. Two culverts were placed underneath the road to allow the creek water to flow to the upgradient marsh. However, they are insufficient in size to allow for sufficient tidal exchange to occur. As a result, salinities in the upper marsh are artificially lowered facilitating the spread of the invasive common reed (*Phragmites australis*) which outcompetes the native salt water hay (*Spartina patens*) and big cordgrass (*Spartina cynosuroides*). In addition, the culvert is believed to be a behavioral barrier for migratory fish. Scientists believe that fish avoid dark, confined spaces and monitoring at this site reveals groups of alewives congregating on the downstream side of the culverts. In addition, the small culverts may create higher water velocities that may also hinder alewives in their upstream migration.



Quivett Creek Salt Marsh

With assistance from NOAA Community-based Restoration Program, the Town of Dennis is taking the lead along with support from other project partners to restore tidal flow to the upper Quivett Creek salt marsh as well as eliminate impediments to fish migrations by replacing the two small culverts with a larger culvert. Slots for flashboards will also be included to provide flooding protection during high tides. The Town of Dennis is committed to monitor and maintaining the new culvert. Total costs for this project are estimated to be \$135,000 with completion targeted for Fall 2003.

The benefits to the Quivett Creek salt marsh from the culvert replacement are numerous. Increased tidal flow will raise salinity levels in the upstream marsh and help combat the spread of *Phragmites* as well as encourage the growth of native salt marsh vegetation. This in turn will provide greater habitat and nursery area for fish as well as greater forage area for birds. The larger culvert should also eliminate the behavioral barrier for migratory alewives as well as improve freshwater drainage. Fish expected to directly benefit from this project include alewives, mummichogs (*Fundulus heteroclitus*), American eels (*Anguilla rostrata*), white perch (*Morone americana*), Atlantic silversides (*Menidia menidia*), and sticklebacks





One of the existing culverts at Quivett Creek



A fish ladder aids alewives in their upstream migration on Quivett Creek

(*Apeltes quadracus*, *Gastrosteous aculeatous*, *Pungitius pungitius*). These fish in turn should provide greater forage for popular sportfishing fish including tautog (*Tautoga onitis*), scup (*Stenotomus chrysops*), bluefish (*Pomatomus saltatrix*), sand eel (*Ammodytes hexapterus*), winter flounder (*Pleuronectes americanus*) and striped bass (*Morone saxatilis*). Efforts from this project will help to create environmental education opportunities for students as well as the broader community.

The restoration of the Quivett Creek salt marsh is part of a larger effort in the Cape Cod watershed to restore tidally restricted salt marshes. This project was featured in the report "The Cape Cod Atlas of Tidally Restricted Salt Marshes – Final Draft" (November 2001), which was produced by the Cape Cod Commission and the Massachusetts Wetlands Restoration Program.

In addition to the NOAA Community-based Restoration Program and the Town of Dennis many other organizations and agencies have been supportive of the tidal restoration at Quivett Creek including the Town of Brewster, Massachusetts Wetlands Restoration Program, Corporate Wetlands Restoration Partnership (Louis Berger Group), US Fish and Wildlife Service, National Fish and Wildlife Foundation, Coastal America Project, and the FishAmerica Foundation.

The NOAA Community-based Restoration Program seeks to involve communities in the restoration of marine and estuarine habitat. Partnerships with Federal agencies, states and local governments, non-governmental and non-profit organizations, businesses, industry and schools have assisted over 700 projects nationally including 49 within the Gulf of Maine to restore coastal habitat. The NOAA Community-based Restoration Program and its partners provide funding and expertise to projects that promote coastal stewardship and a conservation ethic. Through partnerships, the Community-based Restoration Program has been able to leverage \$3-\$5 for every Federal dollar invested.

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