

HABITAT RESTORATION

Case Studies in Casco Bay

Outer Green Island: A Tern Habitat Restoration Partnership

Outer Green Island is a 5.45 acre island in Casco Bay, owned and managed by Maine Department of Inland Fisheries and Wildlife. The island provided nesting habitat for terns in the early 1900s, but unnaturally high populations of aggressive gulls pushed the terns out.

Seabird biologists from Maine Department of Inland Fisheries and Wildlife, Maine Coast Heritage Trust, National Audubon Society, and U.S. Fish and Wildlife Service (Gulf of Maine Program) recognized that the island, located far from the mainland and far from land-based predators (mink, raccoons and owls) had great potential for restoring native terns. The Gulf of Maine Seabird Working Group, an international coalition working to protect and restore seabirds to historic nesting sites, approved the plan in August 2001.

Partners worked together to fund the project, hire an on-site steward for the nesting season and provide supplies to support the field camp. In late April 2002, before migratory terns arrived, biologists set off loud "firework" noises on the island to discourage black-backed gull and herring gull nesting. Lured by recorded tern calls and 100 life-size decoys, the first terns were spotted on Outer Green Island in early May. By June, nine nesting pairs of common terns had settled on the island.

On July 5, 2002, for the first time in 88 years, a common tern chick hatched on Outer Green Island. Biologists are hopeful that, in future years, the endangered roseate tern may also begin nesting on Outer Green Island.



Sprague River Marsh: A Wetland Restoration Partnership

In the upper section of the Sprague River Marsh in Phippsburg, Maine, a tidal constriction, man-made ditches, and cattails (indicative of freshwater runoff) have aggressively invaded a large stand of *Scirpus* (a rare native saltmarsh plant), threatening the salt ecosystem. The Nature Conservancy (Maine Chapter), Bates College, and the Small Point Association are the primary landowners.

Partners from Natural Resources Conservation Service, U.S. Fish and Wildlife Service (Gulf of Maine Program and Partners for Fish and Wildlife Program), the Nature Conservancy (Maine Chapter), and Bates College have collaborated to develop and fund restoration and follow-up monitoring. Preliminary engineering work confirmed the need to remove 100 cubic yards of rock from under a bridge to eliminate the tidal constriction and the need to prevent excessive drainage.

The partners coordinated with the Small Point Association to explain the purpose of the project to landowners. Also, educational programs conducted on the marsh explained the restoration work to local school children. In June 2001, the rocks were removed and the three ditches plugged, permitting more salt water to flow into the upper marsh.

Ditch plugging is a relatively new saltmarsh restoration technique with promise for creating permanent high water habitat on marshes, but for which longer-term ecological results are still pending. Restoration biologists expect that over time, the higher salinities will cause the cattails to die back, permitting the rare, native *Scirpus* to thrive. In addition, pool habitat has been created on the marsh surface in order to attract a suite of native species of aquatic plants, invertebrates, fish, shorebirds, wading birds, and waterfowl that depend on permanent water on the high marsh.



Casco Bay Estuary Project

These are a few of the projects implemented by some of the partners of the Casco Bay Estuary Project. To learn more about the Casco Bay Estuary Project Habitat Restoration Program and to explore partnership opportunities, contact: Casco Bay Estuary Project • 207/780-4820 • E-mail : cbep@usm.maine.edu • www.cascobay.usm.maine.edu

CASE STUDIES CONTINUED

Long Creek and Red Brook: A Watershed Assessment

Long Creek and Red Brook are two low-gradient, sand-silt bottomed, freshwater streams that flow through South Portland, Scarborough, Westbrook, and a small portion of Portland into Clark's Pond, the Fore River, and eventually Casco Bay. The watersheds contain a variety of land uses, including retail and other commercial development, a golf course, industrial facilities, a landfill, residential areas, and forested and wetland areas. Under a grant from the U.S. Environmental Protection Agency, the Maine Department of Environmental Protection designed and conducted a study to assess the impact of urban development on the biological, chemical, and physical integrity of these two streams.

Assessments included:

- land-use analyses;
- biological community (algae, macroinvertebrates, fish) sampling;
- baseflow and stormflow water chemistry, temperature, and hydrology monitoring;
- in-stream and riparian habitat characterization; and
- fluvial geomorphology analyses (e.g., channel stability rating, channel shape).

The study found that downstream of intense urban development, stream habitat and biological communities were degraded. The study also detected substantial alterations in the hydrology, channel stability, and pollutant loads of these streams. This degradation was attributed to the transformation of forested wetlands to land uses with a high percentage of impervious surface such as parking lots, roads, rooftops, and driveways.

Other landscape alterations found to impact these streams included degradation of riparian forests and stream channelization which resulted in the loss of shading (i.e., increased thermal loads) and inputs of organic matter (e.g., large woody debris), and habitat simplification.

The results of this study will be used to educate community residents and decision-makers about the impact of human activities on Maine streams, and will also support watershed restoration planning and implementation.



Royal River: Anadromous Fish Stream Restoration

The Royal River is a quiet meandering river about 40 miles long. It rises out of Sabbath Day Lake in New Gloucester, Maine, winds its way through rural wooded areas and fertile farmlands, and eventually empties into the tidal waters of Casco Bay in Yarmouth, Maine.

The Friends of the Royal River, in partnership with the U.S. Fish and Wildlife Service (USFWS) and the Maine Department of Marine Resources (DMR), adopted two fish ladders on the Royal River in Yarmouth in 1996. These fish ladders are critical to the upstream and downstream passage of anadromous fish such as alewives, shad, smelt, blueback herring, sea-run brown trout, and possibly Atlantic salmon. Annually, these fish migrate up the river from the ocean to spawn and in following years migrate down to the bay and ocean to develop into adults.

Installed in the mid to late 1970s by DMR, these ladders fell into a state of disrepair by the early 1990s. In 1996, the Friends started maintaining these ladders by replacing broken baffles, removing debris, and closing and opening the gates on an annual basis. Some material has been supplied by Hancock Lumber, Yarmouth, Maine, and some through a grant from USFWS. Baffles are constructed by both volunteers and DMR staff.

Through these efforts, it is hoped that these fish ladders remain as effective as possible to allow fish passage up and down the river.

