

HABITAT RESTORATION HIGHLIGHTS

Focus on Maine



Gulf of Maine
Council on the
Marine Environment



Habitat Restoration

Patterns of land and water use in the Gulf of Maine region over hundreds of years have changed the structure and functioning of watersheds and nearshore systems, many of which now experience impaired tidal and stream flow, blocked fish passage, and colonization by invasive species. The practice of habitat restoration seeks to return impaired salt marshes, streams, and shellfish flats to diverse, productive natural systems that are the foundation of our coastal economy.

Economic Implications

Habitat restoration not only addresses impaired ecological conditions that influence the well-being of people, but also provides local economic benefits. Restoration of our coasts and estuaries involves planning, engineering, and on-the-ground construction work relying on skills and machinery from the local workforce. As a result, money spent on physical habitat restoration stays in the local economy. By way of example, over 80 cents of each dollar spent on watershed restoration projects in Oregon stayed in the county where the project was located, and over 90 cents of every dollar spent stayed in the state.

Gulf-wide Impacts of the GOMC-NOAA Habitat Restoration Program

Supported by NOAA and matching funds from across the Gulf, the GOMC-NOAA Habitat Restoration Partnership provides grants and technical assistance supporting community-based restoration. The Partnership is implemented with assistance from GOMC Habitat Restoration Subcommittee members representing each of the Gulf's jurisdictions. Most projects focus on feasibility/design, construction, and/or monitoring phases of projects seeking to remove barriers to tidal flow and/or fish passage.

For more information: <http://restoration.gulfofmaine.org>

The mission of the Gulf of Maine Council on the Marine Environment is to maintain and enhance environmental quality in the Gulf of Maine to allow for sustainable resource use by existing and future generations.

How Restoration Creates Jobs



Stade Moore and John Sowles



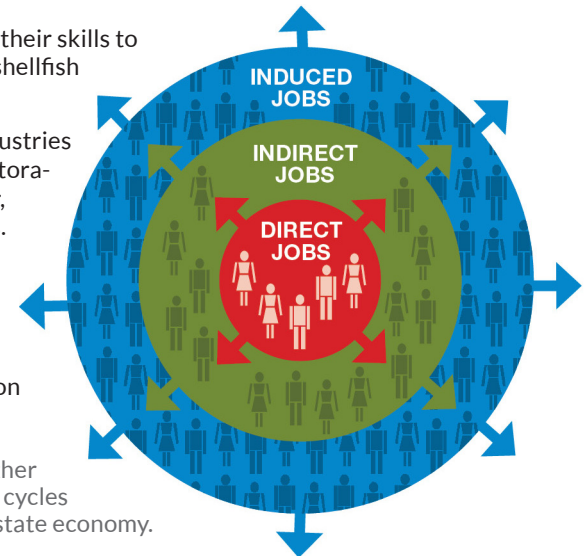
Stade Moore

Restoration improves coastal habitats (left), which have great value for fisheries and many other industries. Restoration projects also help local economies by creating jobs (right). Three different types of jobs are created:

DIRECT JOBS: People using their skills to restore damaged wetlands, shellfish beds, and fish passages.

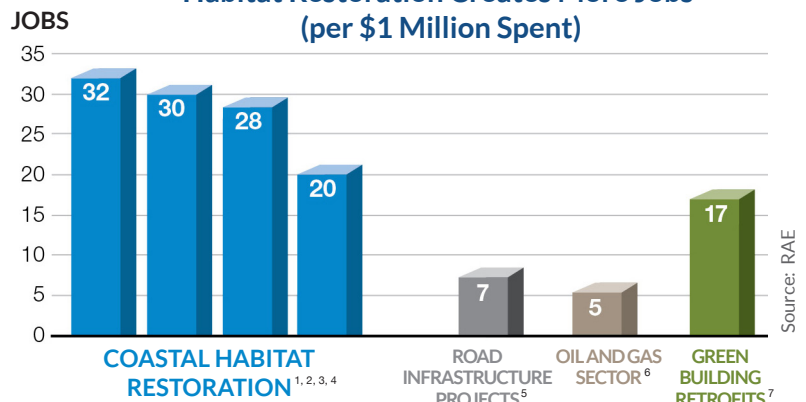
INDIRECT JOBS: Jobs in industries that supply materials for restoration projects, such as lumber, concrete, and nursery plants.

INDUCED JOBS: Jobs in businesses that provide local goods and services, such as clothing and food, to people working on restoration projects.



This is multiplied by other economic activity as it cycles through the local and state economy.

Habitat Restoration Creates More Jobs (per \$1 Million Spent)



¹ NOAA Restoration Center; ARRA Economic Impact Summary Report (In preparation)
² http://www.doi.gov/news/pressreleases/2010_02_23_release.cfm
³ http://www.americanprogress.org/issues/2011/02/pdf/beyond_recovery.pdf
⁴ <http://wilderness.org/files/Green-Jobs-Fact-Sheet.pdf>
⁵ http://www.bikeleague.org/resources/reports/pdfs/baltimore_Dec20.pdf
⁶ http://www.americanprogress.org/issues/2011/02/pdf/beyond_recovery.pdf
⁷ http://adpartners.org/tables/Job_Creation_for_Investment_-_Garrett-Peltier.pdf

During the 2007-2011 GOMC Action Plan cycle the Partnership contracted forty-nine new projects (annual range: 8-12 projects) and managed a total of 62 projects (13 originated during the previous cycle), of which 48 were completed and 14 are underway (Figure 1). Grant awards made to projects managed during this period totaled \$2.5 million, with \$3.8 million in matching non-federal support (Figure 2). Annual total funds awarded each year ranged from \$306-510K.

Fig. 1: Projects Completed and Underway

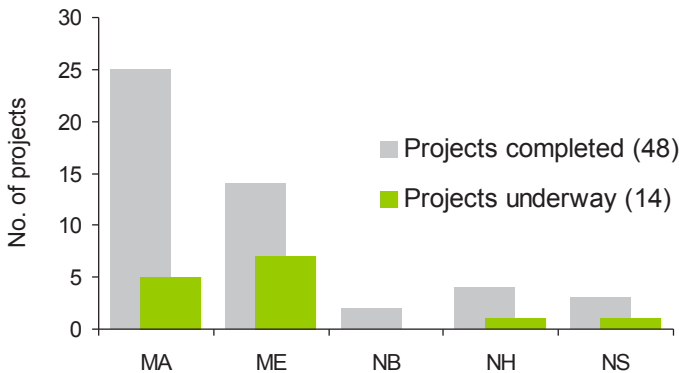
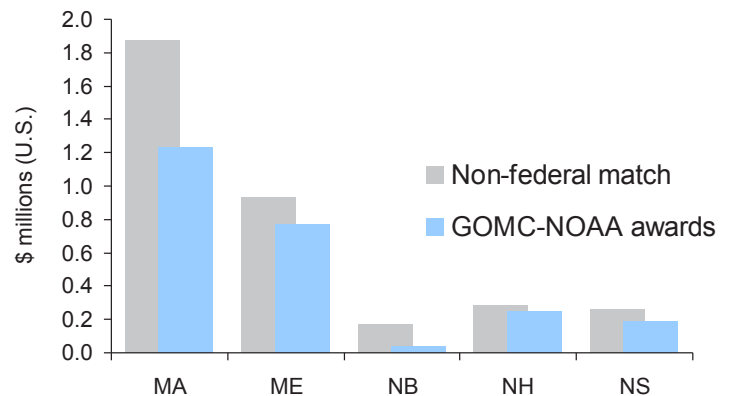


Fig. 2: Project Awards and Matching Funds



Habitats Restored

Projects completed during the 2007-2011 Action Plan cycle restored 335 salt marsh acres and approximately 126 miles of barrier-free streams, in addition to improving other subtidal, intertidal, and channel-riparian habitats (Table 1). The projects opened an estimated 145 miles of streams to fish passage and made 1,562 acres of lakes re-accessible to spawning alewife (Table 2).

Notes: Potential tributary miles listed are potential minimums, when road barrier surveys have not been conducted and because most projects before 2010 did not calculate network length including tributary streams. The length of upstream tributary opened to fish passage is often less than reported due to road-stream crossings that are barriers to fish movements. The tables do not show numbers for non-construction grants that advanced projects toward subsequent implementation.

Table 2: Fish passage improvements through GOMC-NOAA project contributions from 2007 through 2011, by project status (completed or active as of December 2011).

State / Province	Stream miles (minimum)		Stream miles (potential)		Alewife spawning acres	
	Completed	Active	Completed	Active	Completed	Active
MA	2.0	0.2	2.0	0.2	20.9	0.0
ME	47.3	4.5	129.0	4.5	1541.0	219.0
NB	0.0	0.0	0.0	0.0	0.0	0.0
NH	14.0	7.0	14.0	7.0	0.0	0.0
NS	0.0	4.2	0.0	7.8	0.0	0.0
Total	63.3	15.9	145.0	19.5	1561.9	219.0

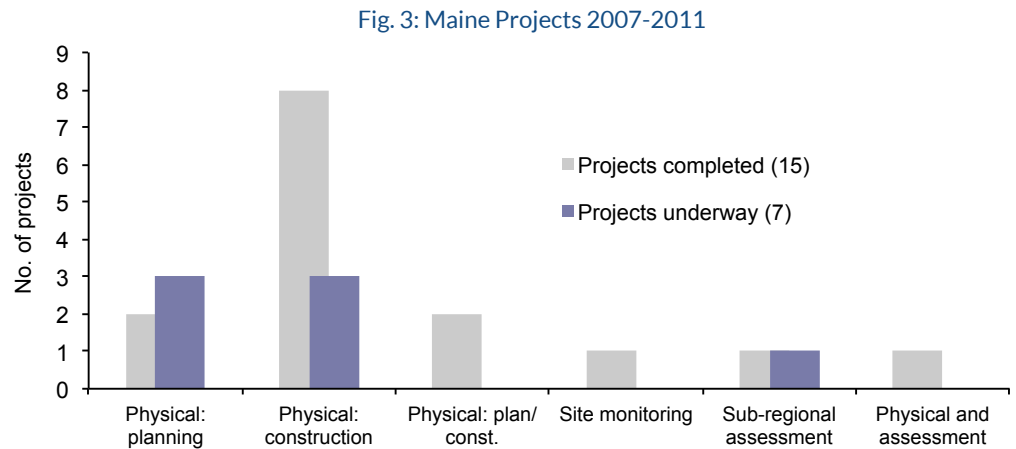
Table 1: Acres and miles of habitats restored or enhanced through GOMC-NOAA project contributions from 2007 through 2011, by project status (completed or active as of December 2011).

State / Province	Subtidal acres (non-stream)		Intertidal acres (non-marsh)		Intertidal acres (salt marsh)		Channel-riparian acres		Channel-riparian miles		Barrier-free stream miles (minimum)		Barrier-free stream miles (potential)	
	Completed	Active	Completed	Active	Completed	Active	Completed	Active	Completed	Active	Completed	Active	Completed	Active
MA	8.0	10.7	0.0	0.3	135.0	5.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2
ME	0.1	0.0	0.0	0.0	200.0	17.0	1.0	4.0	0.0	0.2	30.4	4.5	111.9	4.5
NB	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0
NH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	14.0	7.0	14.0	7.0
NS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.0	4.2	0.0	7.8
Total	8.1	10.7	0.0	0.3	335.0	22.0	1.7	6.6	0.9	0.2	44.4	15.9	125.9	19.5

MAINE FOCUS

Twenty-two Maine restoration projects were managed by Partnership Project Teams during the 2007-2011 Action Plan cycle (Figure 3). Most (19) projects focused on barrier removal planning or construction benefitting salt marshes, streams, and the species that depend on these systems.

Other projects conducted sub-regional assessments important to describing the prevalence of road-stream barriers in Maine and site-specific monitoring. Projected Maine awards and value of matching contributions for projects completed and underway during the 2007-2011 cycle are \$766,944 and \$925,514, respectively.



Project Highlight: Stream Barrier Inventories

Stream restoration in Maine has often focused on dam removal or installation of fish passage structures where dam removals are not feasible. Recently, two GOMC-NOAA Partnership grant awards totaling \$103,000 (match value: \$112,034) helped fund nearly 2,000 road crossing surveys from 2008-2010. These surveys demonstrated that at least 40 percent of Maine's culvert crossings can act as barriers to resident stream organisms, long-distance migrants like Atlantic salmon, and the processes that create and maintain habitat (Figure 4). This new knowledge on the amount of stream habitat blocked by culverts (Figure 5) is informing restoration strategies under development in Maine. Led by the Maine Forest Service and Kennebec County Soil and Water Conservation District, other contributors were: Kennebec Estuary Land Trust, Maine Bureau of Public Lands, Maine Department of Marine Resources, Sheepscot River Watershed Council and U.S. Fish and Wildlife Service.

Many culverts under road crossings act as barriers that prevent fish such as alewife (right) and salmon from swimming upstream to their historical spawning areas. The GOMC-NOAA Partnership provided funding for road-crossing surveys that produced important data to guide habitat restoration efforts in Maine.



Fig. 4: Barriers to Fish Passage

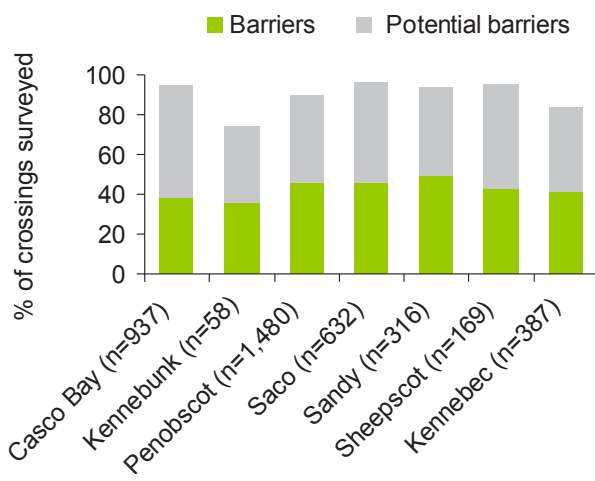
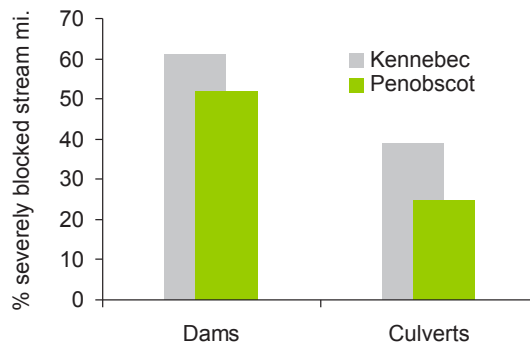


Fig. 5: Stream Habitat Blocked to Fish Passage



Project Highlight: Montsweag Dam Removal Midcoast Maine

A tributary of the Sheepscoot River system, Montsweag Brook drains a 10.5-square-mile watershed in midcoast Maine. Located just upstream of its receiving estuary, Lower Montsweag Brook Dam was constructed in 1968 to provide a source of fresh water for the Maine Yankee Atomic Power Company. No longer serving its intended purpose and representing a total barrier to fish passage, water-quality monitoring indicated that the impounded waters upstream of the 30-foot tall dam were compromised by extremely low dissolved oxygen and high temperatures.

In 2010, a diverse project team led by the Chewonki Foundation set to work planning the dam removal, which ultimately re-established free-flowing conditions on three miles of stream, opening fish passage for species including eastern brook trout and rainbow smelt. Because of the proximity of the site to the Chewonki campus, the project area is serving as the focal point for educational and monitoring activities aimed at stewardship and restoration.

Total cost of the project was \$662,358. Along with a \$74,651 award (match value = \$100,375) and technical assistance from the GOMC-NOAA Partnership, project support was provided by: American Rivers, Maine Natural Resources Conservation Program, NOAA Restoration Center, and USDA Natural Resources Conservation Service.



Montsweag Brook after habitat restoration funded by the GOMC-NOAA Partnership.