

# HABITAT RESTORATION HIGHLIGHTS

## Focus on Nova Scotia



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



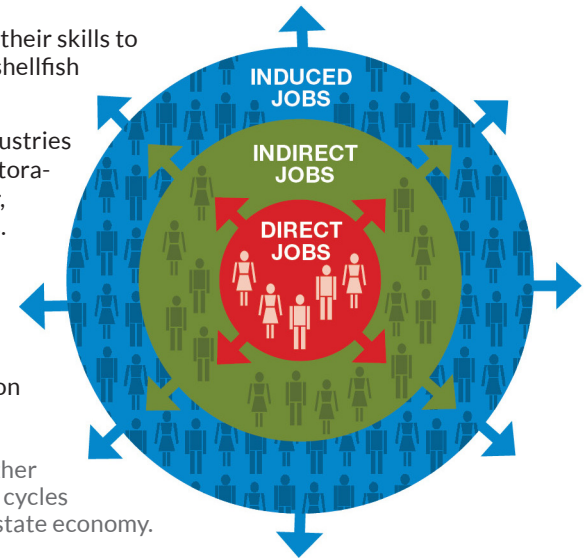
Stade Moore

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.

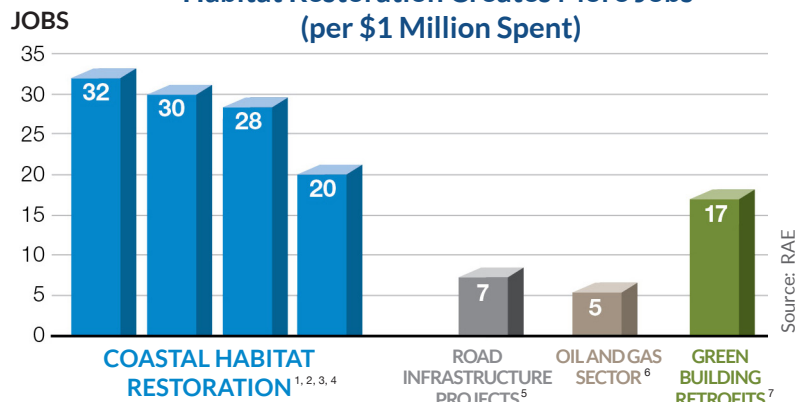
**INDIRECT JOBS:** Jobs in industries that supply materials for restoration projects, such as lumber, concrete, and nursery plants.

**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)



<sup>1</sup> NOAA Restoration Center; ARRA Economic Impact Summary Report (In preparation)  
<sup>2</sup> [http://www.doi.gov/news/pressreleases/2010\\_02\\_23\\_release.cfm](http://www.doi.gov/news/pressreleases/2010_02_23_release.cfm)  
<sup>3</sup> [http://www.americanprogress.org/issues/2011/02/pdf/beyond\\_recovery.pdf](http://www.americanprogress.org/issues/2011/02/pdf/beyond_recovery.pdf)  
<sup>4</sup> <http://wilderness.org/files/Green-Jobs-Fact-Sheet.pdf>  
<sup>5</sup> [http://www.bikeleague.org/resources/reports/pdfs/baltimore\\_Dec20.pdf](http://www.bikeleague.org/resources/reports/pdfs/baltimore_Dec20.pdf)  
<sup>6</sup> [http://www.americanprogress.org/issues/2011/02/pdf/beyond\\_recovery.pdf](http://www.americanprogress.org/issues/2011/02/pdf/beyond_recovery.pdf)  
<sup>7</sup> [http://adpartners.org/tables/Job\\_Creation\\_for\\_Investment\\_-\\_Garrett-Peltier.pdf](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

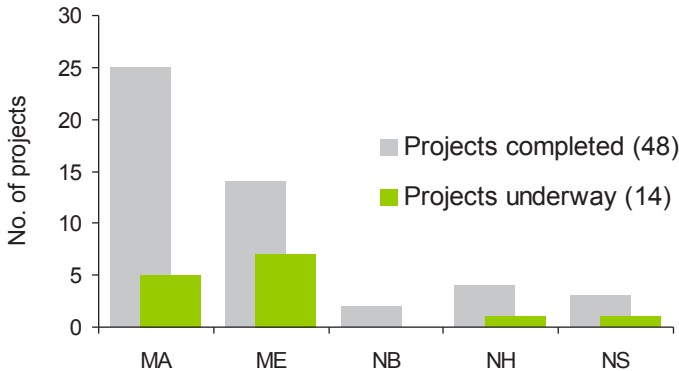
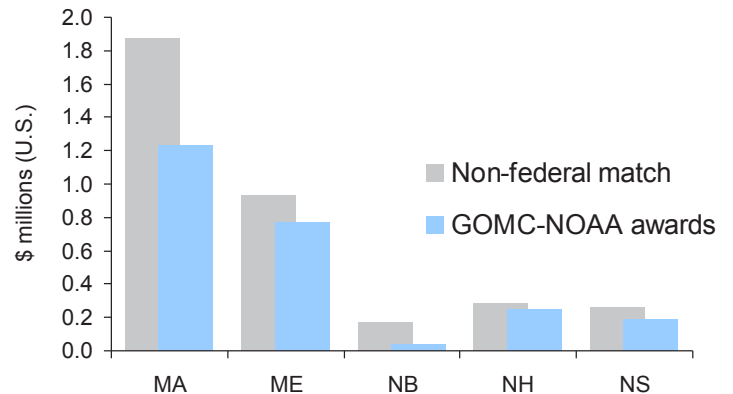


Fig. 2: Project Awards and Matching Funds



## 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
<b>Total</b>	<b>63.3</b>	<b>15.9</b>	<b>145.0</b>	<b>19.5</b>	<b>1561.9</b>	<b>219.0</b>

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
<b>Total</b>	<b>8.1</b>	<b>10.7</b>	<b>0.0</b>	<b>0.3</b>	<b>335.0</b>	<b>22.0</b>	<b>1.7</b>	<b>6.6</b>	<b>0.9</b>	<b>0.2</b>	<b>44.4</b>	<b>15.9</b>	<b>125.9</b>	<b>19.5</b>

## NOVA SCOTIA FOCUS

Four GOMC-NOAA Partnership grants were managed by Partnership Project Teams focused on Nova Scotia during the 2007-2011 Action Plan cycle (Figure 3). Three of the grants each focused on the feasibility-planning, design, and construction phases of a single barrier removal: Clementsport Dam. One grant contributed to the French Basin Salt Marsh Restoration Plan. Projected Nova Scotia awards and matching contributions for projects completed and underway during the 2007-2011 cycle are \$194,454 and \$263,985, respectively.

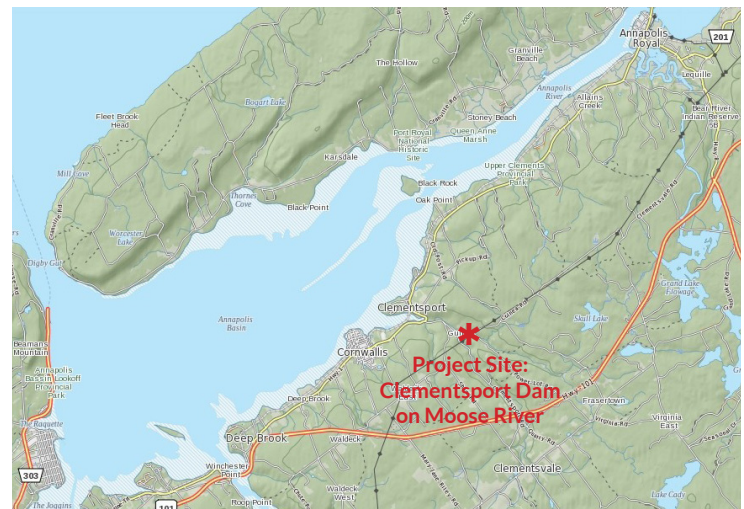
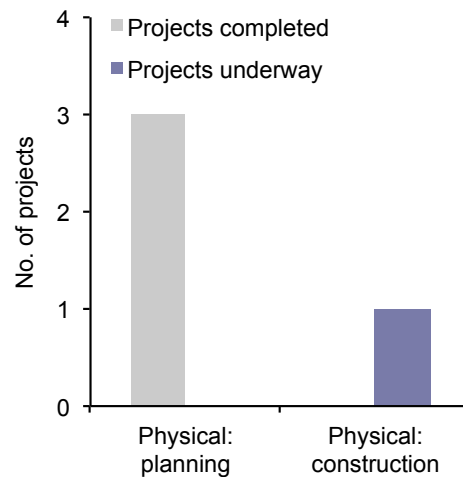
### Project Highlight: Clementsport Dam Planning and Removal Clementsport, Nova Scotia

The Clementsport dam was built about 70 years ago to impound waters of the 42-square-kilometer Moose River watershed, thereby creating a drinking water supply for the community of Cornwallis and blocking upstream fish passage to most of the river's 11 km mainstem length. In the mid-1960s, the dam's use as a water supply concluded, and the impoundment functioned primarily as a public swimming area over the years.

The dam was a log cribwork and stone structure that was 2.5 meters high and 16 meters wide with a sawn lumber spillway and plywood face. With no maintenance conducted since the 1990s, high river flows dislodged large portions of the spillway and approximately one-quarter of the dam face became undermined. As a result, the entire impoundment drained. A subsequent engineering review concluded that the dam was unsafe and at risk of failure.

With no known owner of the dam and at the urging of the local community, the Clean Annapolis River Project (CARP) initiated a three-phase project to explore and plan removal of the structure using GOMC-NOAA Partnership grant award of \$61,572 (match value: \$61,572; total project cost: \$163,311) and technical assistance. Successful completion of the planning phase paved the way for subsequent removal of the dam, which was facilitated by a second GOMC-NOAA restoration grant of \$72,560 (match value: \$85,080, total project cost: \$170,480).

Fig. 3: Nova Scotia Projects 2007-2011



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Removal of the Clementsport dam (left) enabled brook trout (right), Atlantic salmon, and other fish to migrate upstream.

The dam was removed in September 2011, re-opening 7.8 mainstem river kilometers to migrating Atlantic salmon and other species and restoring native riverine habitats and processes. Monitoring of the site over the next several years will document the nature and extent of fish passage improvements. In addition to the GOMC-NOAA Partnership's contributions, this multi-year project was made possible through a diverse partnership that included:

- Fisheries and Oceans Canada
- Atlantic Salmon Federation
- NSLC Adopt-a-Stream Program
- Municipality of Annapolis County
- Nova Scotia Salmon Association
- Nova Scotia Department of Environment
- Nova Scotia Department of Transportation and Infrastructure Renewal
- Atlantic Salmon Conservation Foundation
- Royal Canadian Legion (Clementsport Branch)
- U.S. National Oceanic and Atmospheric Administration



Local experts using a fyke net to monitor the number of fish moving upstream.