

Jun 21st, 4:30 PM - 4:45 PM

Innovations III: The Maine Model: Flexible Restoration Partnerships

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Gulf of Maine Coastal Program

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The Maine Model – Flexible Restoration Partnerships



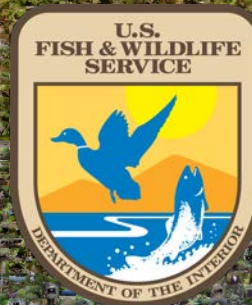
Alex Abbott

GIS Analyst & Fish Passage Specialist

Under Contract to:

Gulf of Maine Coastal Program

U.S. Fish and Wildlife Service



Produced with **AndreaMosaic**

Sea-Run Species Affected by Barriers



Wildlife Affected by Barriers



People Affected by Barriers



**Maine DOT
Private Landowners
Maine Municipal Assoc.
Towns of
Waterford Mt. Chase
Lincolnton Whitefield
Brownfield Newburgh
Phillips Brownville
Bridgton Freeport
New Gloucester ETC.**

Crossing Failures Make Partners

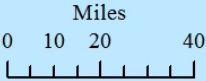
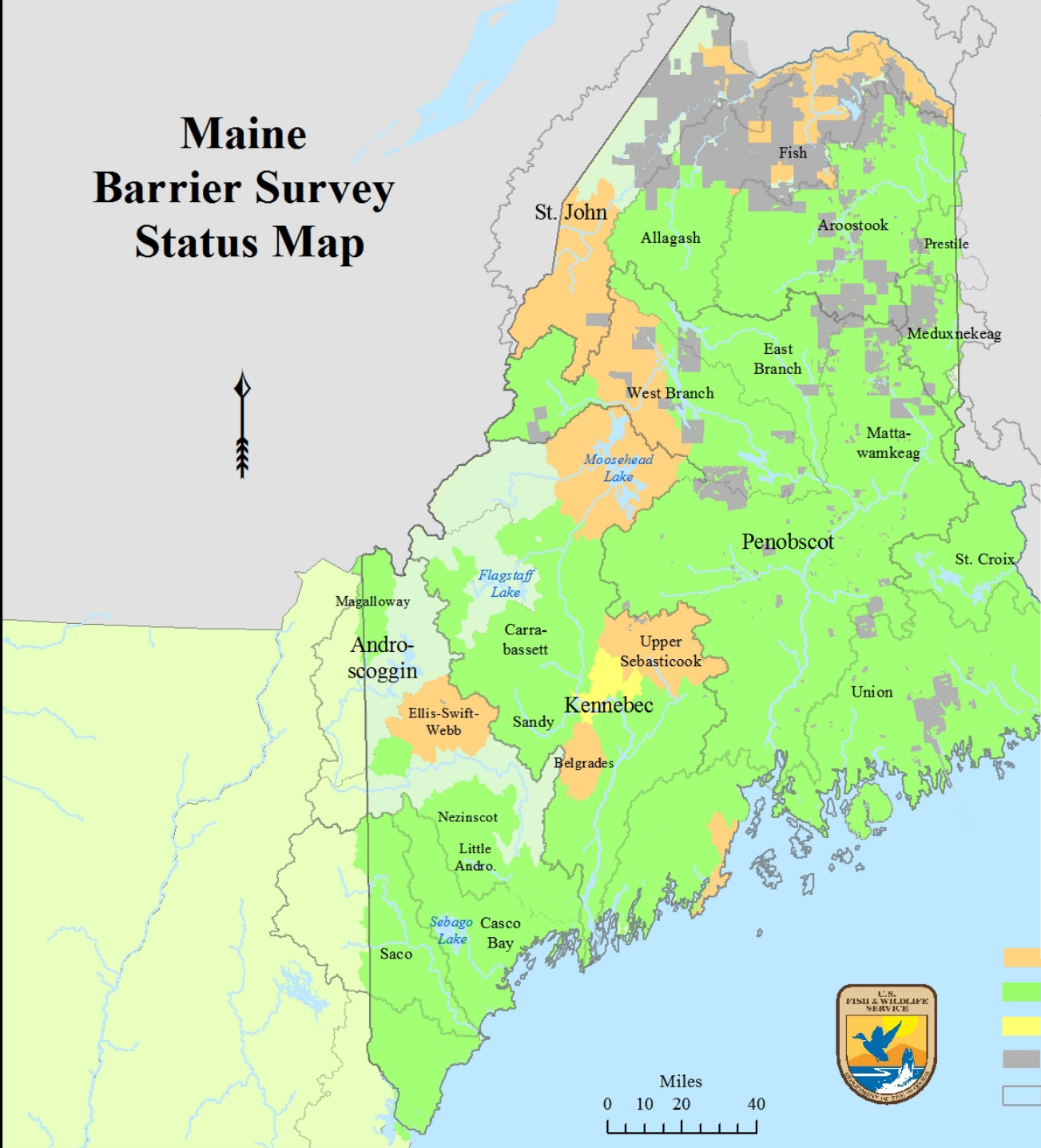
Assessment



Maine Forest Service
National Fish and Wildlife Foundation
Trout Unlimited
Atlantic Salmon Federation
Passamaquoddy Tribe
Androscoggin & Oxford County SWCD
Private Landowners

- 2016 Proposed Surveys
- Completed Surveys
- Partial Surveys
- Excluded Lands
- Major Watersheds

Maine Barrier Survey Status Map



Map created by A. Abbott 6-13-2016

Maine's Stream Connectivity Work Group



Penobscot Nation

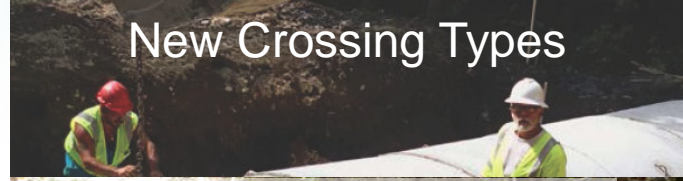


Maine Stream Connectivity Work Group 2012-2013 Report

Maine Coastal Program
Department of Agriculture,
Conservation and Forestry



Project Collaboration

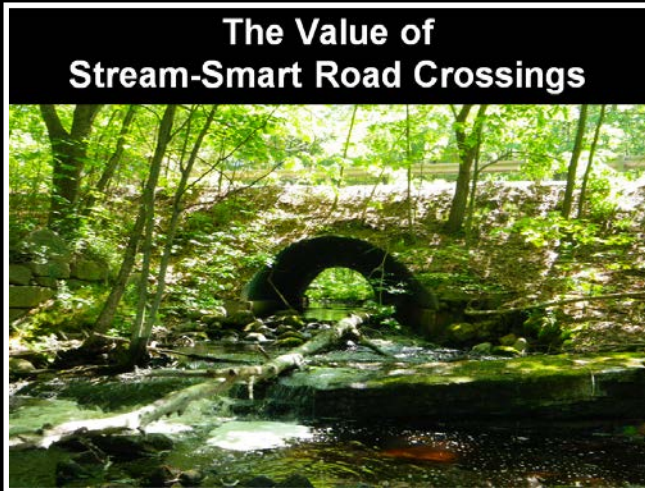


New Crossing Types



NRCS
USFWS
USFS
AMC

Outreach: Stream-Smart Crossing Trainings



The Value of Stream-Smart Road Crossings

Phase I:
Introductory Concepts

Phase II:
Stream Survey Techniques



SiteID	P r i m a r y						S e c o n d a r y								
	Blocked Alewife Pond Acres	Blocked Salmon Habitat Units	Salmon Critical Habitat	Sea Run Smelt Habitat	Brook Trout Habitat	Tidal Marsh	Non-Native Fish	Rare Aquatic Habitats	BWH Focus Area	BWH Connectors	Aquifer	Acid Buffer Capacity	I/NWH	Maintenance Issues	Replacer
3720		8.4	•				◁		•			•			
3721			•				◁		•			•			
3742	65.1	21.7	•				◁		•			▲			
3817		10.5	•				◁		•			▲			
3744			•				◁		•			•			
3760			•				◁		•			▲			
3761			•				◁		•			•			

Primary Habitats

Secondary
Habitat Values

Phase III:
Outreach Training
Data by Town

Outreach: Maine Stream Habitat Viewer

State of Maine
Stream Habitat Viewer

Welcome Layers **Adv Search** Identify

Enter Town or Site ID of Crossing

Crossings & Barriers

- Crossings
 - Barrier
 - Potential Barrier
 - No Barrier
 - Unknown
- Dams
- Natural Barriers
- Impassable Waterfalls

Priority Habitats

- Atlantic Salmon
- Alewife
- Sea-Run Rainbow Smelt
- Wild Eastern Brook Trout
 - Heritage Ponds
 - Pond and Stream Habitat
 - Subwatershed Rankings
- Tidal Marshes

Other Habitats

- Non-Native Fish
- Tidal Waterfowl and Wading Bird Habitat
- Inland Waterfowl and Wading Bird Habitat
- Beginning with Habitat Focus Areas
- Wetlands

Other Layers

Hover:

Check this box to enable your mouse to hover over crossing locations and a small window with limited information will appear. Click on the feature to identify full information.

Access to habitat data

Access to crossing & dam data

Support for the public and professionals

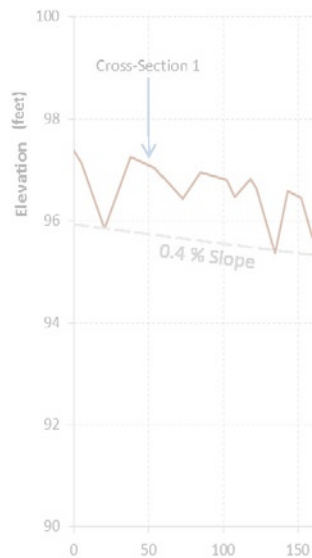
Esri, HERE, DeLorme, USGS, NGA, EPA, US

Training

Topographic Data - Prop



Longitudinal Profile - Existing



Stream Simulation Design Workshop for Road-Stream Crossings

This 4.5 day workshop will present the USDA Forest Service's Stream Simulation method, an ecosystem-based approach for designing and constructing a channel through the road-stream crossing structure that reestablishes physical and ecological continuity along the stream. Stream Simulation Design matches the road-stream crossing to the dimensions and characteristics of the natural channel to provide unimpeded fish and other aquatic organism passage, restore natural channel characteristics and fluvial processes, and maximize the long-term stability of the structure.

This workshop will teach participants the Stream Simulation methodology of collecting and interpreting channel data at road-stream crossing sites, applying and integrating these data to develop engineering-based stream simulation design channels and road-stream crossing structures. Workshop participants will work in interdisciplinary teams throughout the course to assess road-stream crossing scenarios at different stages of the stream simulation design process from site assessment to construction. Field exercises at multiple sites will complement and reinforce concepts presented in the classroom as participants identify, assess, and discuss various ecological, geomorphic/hydrologic, and engineering issues.

Limited to 60 participants. Preference will be given to individuals directly involved in design and installation of road-stream crossing projects.



Date: July 11-15, 2016

Location: Bates College
Lewiston, ME

Tuition: \$150

Lodging and meals: \$50/day

Registration Deadline: May 1

Workshop Sponsors:

U.S. Fish and Wildlife Service, U.S. Forest Service, Project SHARE, Maine Department of Environmental Protection, National Fish and Wildlife Foundation

Target Audience:

Forestry managers, municipal public works staff, civil engineers, geotechnical engineers, hydrologists, geomorphologists, ecologists, biologists, and geologists.

CEU credits will be available.

Contact for Additional Information:

Serena Doose, USFWS, 207-781-8364,
serena_doose@fws.gov

Analysis

Proposed Conditions
Five Kezars Road
Crossing Replacement
Warren Brook
Waterford, Maine
SiteID # 8903

- Culvert
- Benchmark
- Utility Pole
- Utility Line
- Stabilized Bank

four interval = 1 foot

References:

¹ Lombard, P. & Hodgkins, G., 2015. Post Flow Regression Equations for Small, Ungraded Streams in Maine: Comparing Map Based to Field Based Variables. Water Resources Investigation Report 2015-0049. US Geological Survey, Augusta, Maine.

$$Q_1 = 0.5 \times A^{1.07}$$

² Craig, S. & Koenig, S., 2010. Regional Stream Relationship Curves from Restoration Sites: Mean Beneficial Width to Catchment Area within Northern Coastal Maine Watersheds.

$$W_{BF} = 8.7147 \times A^{0.25}$$

imates for the proposed arch design, and indicates

Inlet Control (feet)	Outlet Control (feet)	Flow Type	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)
6.45	6.52	2-M0	0.26	0.34	3.03
6.78	6.79	2-M0	0.41	0.52	3.74
1.02	1.04	2-M0	0.54	0.58	4.30
1.17	1.23	2-M0	0.63	0.41	4.59
1.38	1.46	2-M0	0.75	0.45	4.98
1.52	1.61	2-M0	0.82	0.48	5.18
1.79	1.79	2-M0	0.91	0.51	5.51
2.04	2.18	2-M0	1.10	0.58	6.11
4.53	4.45	2-M0	2.03	0.82	8.87

rea and wetland area. It is best to account for potentially

Collaboration in Action: Municipal Partners



Orrington – Fields Pond
Sedgeunkedunk Stream



Orrington, Maine



Kleinschmidt

Collaboration in Action: Public & Private Partners



Lincolnville – Coleman Pond



The Nature Conservancy 
Protecting nature. Preserving life.®



Collaboration in Action: Private Partners



East Branch Penobscot
Tributaries

Collaboration in Action: Funding

- Maine Water Bond - \$5 million to improve crossings administered by the Maine DEP
- NOAA Species in the Spotlight funding for salmon
- The Nature Conservancy
- Atlantic Salmon Federation
- Natural Resources Conservation Service
- U.S. Fish and Wildlife Service

Help is available, especially for priority habitats

Collaboration in Action: Faster Federal Permitting

**US Army Corps of Engineers
US Fish & Wildlife Service
FEMA
The Nature Conservancy**

Mount Chase – Population = 247



Many Thanks to the members of Maine's Stream Connectivity Work Group

For their commitment to improving aquatic
organism passage across the state.

