Report to the Joint Standing Committee on Environment and Natural Resources
126th Legislature, First Session

Maine's Aquatic Resource Strategy: A Work in Progress

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Michael Kuhns,
Director, Bureau of Land and Water Quality
Contact: Phone: (207) 287-2827

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 State House Station | Augusta, Maine 04330-0017
www.maine.gov/dep

Executive Summary

P.L. 2011. ch. 205 § 4, instructs the Department of Environmental Protection, the Department of Inland Fisheries and Wildlife, the Department of Marine Resources, and the Department of Transportation along with other interested stakeholders to work collaboratively to develop a statewide aquatic conservation and restoration strategy plan that aims to maintain and restore the ecological health of aquatic ecosystems. The language directs that a draft plan be submitted to the Joint Standing Committee on Environment and Natural Resources, and may include suggested legislation.

In response to this directive the Aquatic Resource Management Strategy (ARMS) forum was created. The concept for ARMS was modeled after the US Forest Service's 1994 Aquatic Conservation Strategy and 2008 Aquatic Restoration Strategy for federal lands under the Bureau of Land Management in Oregon and Washington. Potential interested parties and stakeholders were identified and invited to participate. Those invited represented a diverse group of interests including state agencies, municipalities, tribal interests, federal agencies, private businesses and nongovernmental advocacy organizations.

Meetings during this process included those with the group as a whole, as well as subcommittee meetings. The subcommittees are as follows:

- Technical Design/Construction Standards;
- Partnerships and Funding; and
- Assessment

Through this process, the following was accomplished:

- The development of a draft pocket guide that contains best management practices and guidance for those installing new and replacement crossings where culverts are 6 feet or less in diameter;
- The beginning stages of a master reference manual that incorporates the best of existing best management practices documents and Stream Smart crossing principles;
- The identification of existing opportunities for partnerships and/or project funding sources as well as potential new initiatives that would better enable local actions that benefit statewide aquatic resource priorities; and
- The identification of further refinements, and objectives for, the Maine Stream Habitat Viewer, which is an on-line tool for data sharing, and planning and assessing stream restoration projects that was developed by the Maine Stream Connectivity Work Group.

The group hopes to continue holding meetings to make further progress on the objectives established through this process. The production of meaningful tools to improve ecological and physical functions at stream crossings is imminent. In the near future the topic of Maine's regulatory approach to providing fish passage at culverts will be taken up.

I. Issue Summary

Streams are an important part of the natural landscape that is interwoven with Maine's social and economic identity. In addition to supporting populations of fish and other aquatic and riparian-dependent organisms, streams in their natural state have maximum resilience to increasingly frequent extreme precipitation events. Over the last decade, the relatively young field of road ecology has contributed to the realization that many historically installed stream crossings have negatively affected the access that inland and anadromous fish and other stream dependent organisms have to habitat and water quality, as well as compromised stream functions related to flood attenuation. As a result of this growing body of knowledge, it is necessary to re-evaluate how stream crossings are maintained and constructed for maximum benefit to not only the ecology of the stream, but also to public safety and for protection of roads and infrastructure.

If stream ecology and hydrology were the only considerations in crossing design and construction, the way forward would be clear. Unfortunately, reconstructing every crossing to re-establish natural stream flows and aquatic organism passage comes at a significant cost to towns, private landowners, commercial entities, and taxpayers. After several years of contentious legislative and policy discussions initiated to strengthen the regulatory oversight on stream crossings, the 125th legislature passed LD 1387 (Appendix A), which in part directed a steering committee comprised of state agencies to establish a single, unified strategy that incorporates new science and technical knowledge, and addresses a variety of issues identified during more than a decade of field implementations.

The Aquatic Resource Management Strategy (ARMS) is a forum through which policies and practices are identified and/or developed to meet the larger goal of maintaining and restoring the ecological health of aquatic ecosystems. The concept for ARMS was drawn from the US Forest Service's 1994 Aquatic Conservation Strategy and 2008 Aquatic Restoration Strategy for federal lands under the Bureau of Land Management in Oregon and Washington. This approach led to improved, proactive management of aquatic resources at watershed and landscape scales. As in the model process, Maine's ARMS has four components: broad scale passive restoration via standards and guidance; active restoration strategically focused based on watershed analysis; partnerships; and education and outreach.

Maine's ARMS process has been a collaborative and iterative process, including the following elements to date.

1. Identify potential interested parties and/or stakeholders. The list of invited participants is included as Attachment B. The stakeholder group has been inclusive of any and all parties who have an interest in the subject matter; points of view and organizational missions vary considerably.

2. Establish desired conditions. Stakeholders concurred that a desired end condition would encompass proactive and holistic management of Maine's aquatic resources for maximum ecological function and resiliency, considering the constraints of existing conditions and fiscal realities.

3. Define scope of discussions. Given that ARMS is a conceptually new approach to an issue with much history, the first several stakeholder meetings necessarily focused on process and intent. Stakeholders reached consensus that the most urgent focus was in fact road crossings, articulating the potential range of the issues will prove useful for ongoing discussions around aquatic resource management.

4. Establish objectives. Following the model of the USFS/BLM ARMS process, the stakeholders opted to form three subcommittees: Partnerships and Funding; Technical Design/Construction Practices; and Assessment. These subcommittees focused on the next three elements; their progress is described further in Attachment C. Membership on each subgroup was self-assigned.

5. Establish a unified data repository.

6. Refine existing and/or propose additional best management practices.

7. Propose funding alternatives for passive and active restoration.

II. Ongoing Effort and Future Outcomes

The stakeholders have committed to continuing the ARMS. In the short term, there is continued commitment to improving ecological and physical functions at stream crossings. Tangible and meaningful products from the work of the subgroups are imminent. The group as a whole has identified next steps, and individuals and resources key to realizing those steps, which include:

a. Expand the ARMS Steering Committee to include representation reflective of general membership;

b. Make use of any overlap identified with the Stream Connectivity Work Group;

c. Review exemptions and standards to inform state and federal regulatory decision making;

d. Identify gaps and overlap with other pertinent issues (e.g., climate change and flood management);

e. Establish performance measures by which the ARMS process will be deemed successful;

f. Using scientific data, establish active restoration priorities;

g. MEMA funding opportunities related to disaster mitigation should be evaluated to better enable local upsizing of these vulnerable crossings;

h. Evaluate ARMS within the context of the pending Atlantic Salmon Recovery Plan (expected to become public sometime in 2013) to gauge contributions to recovery of ESA-listed fish, particularly anadromous Atlantic salmon;

i. Coordinate state-wide conservation and restoration priorities with MaineDOT's 3-year work plan, anticipated in January 2013; and

j. Identify opportunities to enhance existing state conservation planning documents and conservation programs such as the State Wildlife Action Plan (currently being updated) to more effectively address aquatic habitats.

III. Conclusion

In the near term, the ARMS stakeholders will take up discussion of Maine's regulatory approach to providing fish passage at culverts. Consensus is likely to be difficult given the diverse interests represented by the stakeholders. However, the hope of the steering committee is that the combination of facilitation, a level of trust established amongst participants to date, and a general commitment to resolution will be conducive to a meaningful conversation around regulation. This discussion will include consideration of potential costs identified during past processes. No additional funding or authorization is requested to continue the ARMS process.

Appendix A: Enabling Legislation

Public Law, Chapter 205, LD 1387, 125th Maine State Legislature

An Act To Restore Exemptions in the Natural Resources Protection Act

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §480-Q, sub-§2, as amended by PL 2009, c. 460, §1, is further amended to read:

2. Maintenance and repair. Maintenance and repair of a structure, other than a crossing, in, on, over or adjacent to a protected natural resource ~~and maintenance and repair of a private crossing of a river, stream or brook~~ if:

A. Erosion control measures are taken to prevent sedimentation of the water;

~~B. Crossings do not block passage for fish or other aquatic organisms in water courses. Culverts and installation techniques utilized must achieve natural stream flow. This paragraph applies only to water courses containing fish;~~

C. There is no additional intrusion into the protected natural resource; and

D. The dimensions of the repaired structure do not exceed the dimensions of the structure as it existed 24 months prior to the repair, or if the structure has been officially included in or is considered by the Maine Historical Preservation Commission eligible for listing in the National Register of Historic Places, the dimensions of the repaired structure do not exceed the dimensions of the historic structure.

This subsection does not apply to: the repair of more than 50% of a structure located in a coastal sand dune system; the repair of more than 50% of a dam, unless that repair has been approved by a representative of the United States Natural Resources Conservation Service; or the repair of more than 50% of any other structure, unless the municipality in which the proposed activity is located requires a permit for the activity through an ordinance adopted pursuant to the mandatory shoreland zoning laws and the application for a permit is approved by the municipality;

Sec. 2. 38 MRSA §480-Q, sub-§2-A, as amended by PL 2009, c. 460, §2, is repealed.

Sec. 3. 38 MRSA §480-Q, sub-§2-D is enacted to read:

2-D. Existing crossings. A permit is not required for the repair and maintenance of an existing crossing or for the replacement of an existing crossing, including ancillary crossing installation activities such as excavation and filling, in any protected natural resource area, as long as:

A. Erosion control measures are taken to prevent sedimentation of the water;

B. The crossing does not block passage for fish in the protected natural resource area; and

C. For replacement crossings of a river, stream or brook:

(1) The replacement crossing is designed, installed and maintained to match the natural stream grade to avoid drops or perching; and

(2) As site conditions allow, crossing structures that are not open bottomed are embedded in the stream bottom a minimum of one foot or at least 25% of the culvert or other structure's diameter, whichever is greater, except that a crossing structure does not have to be embedded more than 2 feet.

For purposes of this subsection, "repair and maintenance" includes but is not limited to the riprapping of side slopes or culvert ends; removing debris and blockages within the crossing structure and at its inlet and outlet; and installing or replacing culvert ends if less than 50% of the crossing structure is being replaced.

Sec. 4. Statewide aquatic restoration plan for stream crossings. The Department of Environmental Protection, the Department of Inland Fisheries and Wildlife, the Department of Marine Resources and the Department of Transportation, in conjunction with the Executive Department, State Planning Office and other interested stakeholders, shall work collaboratively to develop a statewide aquatic conservation and restoration strategy plan, referred to in this section as "the plan," designed to maintain and restore the ecological health of the State's aquatic ecosystems and focusing on maintaining and restoring dynamic ecological processes responsible for creating and sustaining habitats over broad landscapes as opposed to individual projects or small watersheds. The plan must improve upon best management practices for public and private roads by including consideration of the Department of Transportation's Waterway and Wildlife Crossing Policy and Design Guide, the Maine Interagency Stream Connectivity Work Group's 2010 final report, Maine's Atlantic salmon recovery plan and any other technical, policy and financial information that may help the process. The plan must include, but not be limited to, using scientific data from stakeholders, establishing active restoration priorities, refining existing and proposing additional best management practices, reviewing statutory exemptions and regulatory standards to inform regulatory decision making, establishing performance measures, proposing funding alternatives for passive and active restoration, identifying gaps and overlaps with other pertinent issues such as climate change and flood management and providing for education and outreach. The Department of Environmental Protection, in cooperation with the Department of Inland Fisheries and Wildlife, the Department of Marine Resources and the Department of Transportation, shall present the final draft of the plan, which may include suggested legislation, to the joint standing committee of the Legislature having jurisdiction over natural resources matters no later than January 31, 2013. The committee may report out a bill to the First Regular Session of the 126th Legislature.

Appendix B: ARMS Invited Stakeholders
(*regular participants)

Tribal

Aroostook Band of Micmacs
Houlton Band of Maliseet Indians
Penobscot Nation

Municipalities

Town of Freeport
Town of Pownal
Town of Sanford*
Town of Yarmouth*

State Agencies

Maine Department of Environmental Protection (DEP)*
Maine Department of Inland Fisheries & Wildlife (IF&W)*
Maine Department of Marine Resources (DMR)*
Maine Department of Transportation (MaineDOT)*
Maine Department of Agriculture, Conservation & Forestry
- -Municipal Planning Assistance Program (MPAP)*
- -Natural Areas Program (NAP)*
- -Maine Geological Survey (MGS)
- -Maine Forest Service (MFS)*
- -Maine Coastal Program (MCP)

Federal Agencies

U.S. Army Corps of Engineers (USACE)*
Natural Resource Conservation Service (NRCS)*
U.S. Fish & Wildlife Service (USFWS)*
National Oceanic & Atmospheric Administration (NOAA)
- - National Marine Fisheries Service (NMFS)*
- -Wells National Estuarine Research Reserve (Wells-NERR)*

Federal Highway Administration (FHWA)*
Cumberland County Soil & Water Conservation District (CCSWCD)
U.S. Geological Survey (USGS)*

Non-government/Advocacy Organizations

Atlantic Salmon Federation (ASF)*
Conservation Law Foundation (CLF)
Maine Association of Realtors (MAR)*
Maine Forest Products Council (MFPC)
Maine Rivers (MR)*
Natural Resource Council of Maine (NRCM)
Penobscot River Restoration Trust (PRRT)*
Sustainable Forestry Initiative (SFI)*
Casco Bay Estuary Project (CBEP)
Kennebec Estuary Land Trust (KELT)*
Maine Audubon (MA)*
Maine Municipal Association (MMA)*
Manomet Center for Conservation Sciences
The Nature Conservancy (TNC)*
Project SHARE (SHARE) *
Trout Unlimited (TU)*

Private/Commercial

Associated General Contractors (AGC)*
Field Geology Services*
GZA representing Maine Turnpike Authority
Plum Creek
Sewall*
Sargent-Corp.*

Appendix C: Subcommittee Reports

Technical Design/Construction Standards Subcommittee

One of three subgroups, the Technical Design/Construction Standards subgroup was tasked with developing a reference document of best management practices to guide those installing new or replacement stream crossings. The subgroup met four times over the summer of 2012.

Members:

Keith Kanoti, MFS
Dan Baumert, NRCS
Jeff Reardon, TU
Pat Sirois, SFI
Charles Hebson, MaineDOT
Matt Marks, AGC
Wende Mahaney, USFWS
Steve Koenig, SHARE
Chip Laite, Sargent Corp
Sarah Spencer, Sewall
Jed Wright, USFWS
Barbara Berry, MAR
Erik Street, Town of Yarmouth
Marianne Hubert, DEP
Bob Van Riper, IF&W
Francis Brautigam, IF&W
Mike Mullen, DEP
Rob Dudley, USGS
Charles Anderson, Sanford DPW
Slade Moore, DOC-MCP

Summary:

The replacement of culvert crossings was identified as a particularly difficult and potentially expensive situation. While the group agrees with the principles of Stream Smart for all new and replacement crossings, which encourages crossing structures of a diameter no smaller than the width of the stream, upsizing culverts is not always practicable given the presence of infrastructure, such as utility pipes, or the existing road grade. The subgroup was interested in producing a document that would help guide people in incorporating the principles of Stream Smart for new and replacement crossings. The group understands that some of these activities cannot meet all of the principles; the guide should provide some direction for people to obtain assistance from state or federal agencies in those cases.

During discussions, the group agreed that a master reference manual was needed that incorporated the best of existing BMP documents and Stream Smart crossing principles. This manual would have to provide direction for installation of new crossings, replacement culverts and maintenance activities at existing crossings that are less than full replacement. Municipalities rarely construct new roads and stream crossings, however maintenance, repair and replacement of existing crossings is fairly common. It became clear that the majority of culverts replaced by municipal public works were six feet or less in diameter. The group eventually decided that a pocket guide should be developed that targets new and replacement crossings where culverts are 6 feet or less. In particular, it should be something easily carried around, a handy resource, and understandable by public works employees in particular. Clearly, training of public works employees will be crucial to the success of the pocket guide.

As of December, a draft pocket guide has been developed and is undergoing final editing. The draft has been available to all the ARMS members but is principally being developed by the subgroup; several of its members have developed original guidance, illustrations and worksheets that will be

unique to the pocket guide. Once the subgroup is satisfied with the draft, the entire ARMS workgroup will have another opportunity for comment. It is planned to have the guide ready for printing in March 2013 and training set up, primarily through MaineDOT's Road Center, so that the guide can serve as a resource for stream crossing activities during the 2013 construction season.

The larger reference manual will cover all crossing situations, regardless of size. The larger reference manual is being drafted, but the immediate focus has been on the pocket guide. It is anticipated that this manual can be finished in July 2013.

Partnerships & Funding Subcommittee

This subcommittee was tasked with collating information on existing opportunities for partnerships and/or project funding sources as well as brainstorming on new initiatives that would better enable local actions that benefit statewide aquatic resource priorities. The Partnerships & Funding subcommittee met on 3 occasions during the summer of 2012

Members:

Charles Baeder, PRRT
Landis Hudson, MR
Slade Moore, DOC-MCP
Matt Marks, AGC
Barbara Charry, MA
Tom Abello, TNC
Judy Gates, MaineDOT
Alicia Heyburn, KELT
Greg Connors, MMA
Carrie Kinne, KELT
Kate Dempsey, TNC
Steve Walker, MDIFW

Summary:

Existing programs that could be enhanced to better promote shared priorities of ARMS

- *MaineDOT Local Roads Center.* The Maine Local Roads Center provides training, technical assistance, and information to those municipal staff who are responsible for constructing, maintaining, and managing local roads and bridges in Maine. Training specific to culvert design and installation techniques that benefit aquatic systems, potential funding sources, and opportunities for technical assistance is currently under development.
- *Maine Emergency Management Agency.* MEMA was identified as a potential partner in assisting municipalities in the identification of aquatic barriers that are likely vulnerable to storm damage and susceptible to wash-out during storm events.
- *Maine Natural Resource Conservation Program (MNRCP).* This voluntary program allows applicants required to provide compensation for wetland losses through a permitting process to make a payment directly to MNRCP as an alternative to traditional on-site mitigation. There is opportunity to enhance program benefits by including stream impacts and designating a funding mechanism for stream habitat conservation and restoration projects.
- *MDEP Supplemental Environmental Projects (SEP).* A SEP is an environmentally beneficial activity that a person charged with an environmental violation voluntarily agrees to perform as part of an enforcement resolution, but that the violator is not otherwise obligated or likely to perform. Restoration of identified aquatic barriers should be included as eligible Environmental Enhancement Projects under the SEP policy.
- *MaineDOT Municipal Partnership Initiative (MPI).* This relatively new program has strong potential to assist municipalities in addressing priority aquatic barriers. A commitment to future funding and ideally enhanced funding for this program is critical to continue its success.
- *Maine Stream Smart.* This education and outreach program initiated by Maine Audubon is invaluable in terms of its ability to reach diverse local audiences with biological and technical expertise. This program should be supported and the availability of training workshops expanded by increasing the number of qualified instructors statewide.

- *Maine Growth Management Act (GMA).* Although local comprehensive plan requirements include an analysis of local transportation, water quality and natural resource issues, very little guidance exists that would help a municipality assess the impact of stream barriers in a meaningful way. Requirements for local comprehensive plans could be more specific and point towns to data regarding local barriers and identify which barriers are local priorities for remediation.
- ***Beginning with Habitat (BwH).*** Efforts are already underway to utilize BwH maps and local outreach efforts to better inform localities of opportunities to address local aquatic barriers and prioritize aquatic resources for strategic conservation purposes. This program and its work with towns and land trusts throughout the state has been successful in providing citizens with the information necessary to make informed local natural resource decisions.

Assessment Subcommittee

This subcommittee began as the Prioritization Subcommittee, with a specific deliverable to establish a method for prioritizing stream barriers. The Assessment Subgroup met in June, and reviewed two existing assessment and prioritization tools.

Members:

Barbara Berry, MAR
Jake Aman, Wells NERR
Marianne Hubert, DEP
Jeff Norment, NRCS
Josh Royte*, TNC
Gail Wippelhauser*, DMR
Jed Wright*, USFWS
Barbara Charry, MA
Merry Gallagher*, IF&W
Tara Trinko Lake*, NOAA-NMFS
Jeff Reardon, TU
Sarah Spencer, Sewall
Erin Witham, KELT

(Asterisk indicates participation in the Maine Stream Connectivity Work Group (referenced below).)

Summary:

The Assessment Subcommittee supports adoption of the Maine Stream Habitat Viewer, an on-line tool for data sharing and planning and assessing stream restoration projects. The tool was developed by the Maine Stream Connectivity Work Group. Five people in the ARMS Prioritization Subcommittee (denoted by asterisks above) participate in the Maine Stream Connectivity Work Group, and have contributed to development of the tool. The tool includes the following data layers: location and status of surveyed culverts; historic and current distribution of anadromous alewife, Atlantic salmon, and rainbow smelt, distribution of wild brook trout; priority wild brook trout ponds, location of rare species and natural communities; and agency contact information. The barrier data layer currently displays information solely for culverts located on public land and right of ways.

The Assessment Subcommittee does not believe a single, simplistic prioritization scheme is possible or useful, hence the change in name of the subcommittee. Every sub-watershed will have worthy projects, and users such as state agencies and municipalities will have different perspectives and needs for prioritizing projects.

The Maine Stream Habitat Viewer is being developed now and is expected to be available to the public in January 2013. The Subcommittee is still discussing how to discriminate areas in the data layers that do not have a particular resource from areas that simply have not been surveyed.

During the November ARMS meeting, the Subcommittee identified several issues to be addressed or considered in the future:

1. Funding for ongoing updates of data layers;
2. Funding and a strategy for presenting Maine Stream Habitat Viewer and its use to municipalities; and
3. Funding for the development of geographic strategic plans.