

# MAINE stream crossings

*new designs to restore stream continuity*

Stream continuity is critical to all creatures that depend on streams, including invertebrates, fish, amphibians, reptiles, and mammals. The design and condition of stream crossings determine whether a stream behaves naturally and whether wildlife can migrate freely. Through the effects of dams and poorly designed stream crossings, we have fragmented streams and hindered wildlife dispersal throughout our watersheds. In many cases, even crossings that were once effective are now barriers because of erosion or mechanical breakdown.

Safe and stable stream crossings can accommodate wildlife and protect stream health while reducing expensive erosion and structural damage. By adhering to the standards in the *Maine Department of Transportation Fish Passage Policy and Design Guide*, town officials, highway departments, and private landowners can help protect and restore stream continuity in Maine.



BRIDGE



OPEN-ARCH

## KEY FEATURES OF WELL-DESIGNED CROSSINGS

*(fish friendly)*



- Large sizes suitable to handling flood flows and debris
- Bridges and open-arch designs considered optimum under most conditions
- Crossings are wide and high relative to their length
- Greater than 1.2x stream width maintains dry banks for wildlife passage
- Water depth and velocity match conditions upstream and downstream
- Natural substrates create good conditions for stream wildlife
- Long life span with significant cost savings over time

### EFFECTIVE CROSSINGS INCLUDE...

- Bridges and open-bottom arches
- Culverts that span and are sunk into the streambed

## STREAM CROSSING PROBLEMS



**UNDERSIZED CROSSINGS** restrict natural stream flow, causing several problems, including scouring and erosion, high flow velocity, clogging, and ponding. Crossings should be large enough to retain natural substrates and to pass fish, wildlife, floods, and debris.



**SHALLOW CROSSINGS** have water depths too low for many organisms to move through them and may lack appropriate bed material. Crossings should have an open bottom or should be sunk into the streambed to allow for natural substrate and water depths.



**PERCHED CROSSINGS** are above the level of the stream bottom at the downstream end. Perching can result from either improper installation or from years of downstream bed erosion. Crossings should be open-bottomed or sunk in the bed to prevent perching.

### SLIPLINING is NOT the answer!

Sliplining, inserting a smooth plastic liner to an older culvert, may save money in the short run, but it nearly always decreases fish passage. Liners raise crossing elevations and increase flow velocities, removing crossing bed material and increasing downstream scour.

For more information on stream crossing surveys in Maine, visit the Maine Forest Service online at:

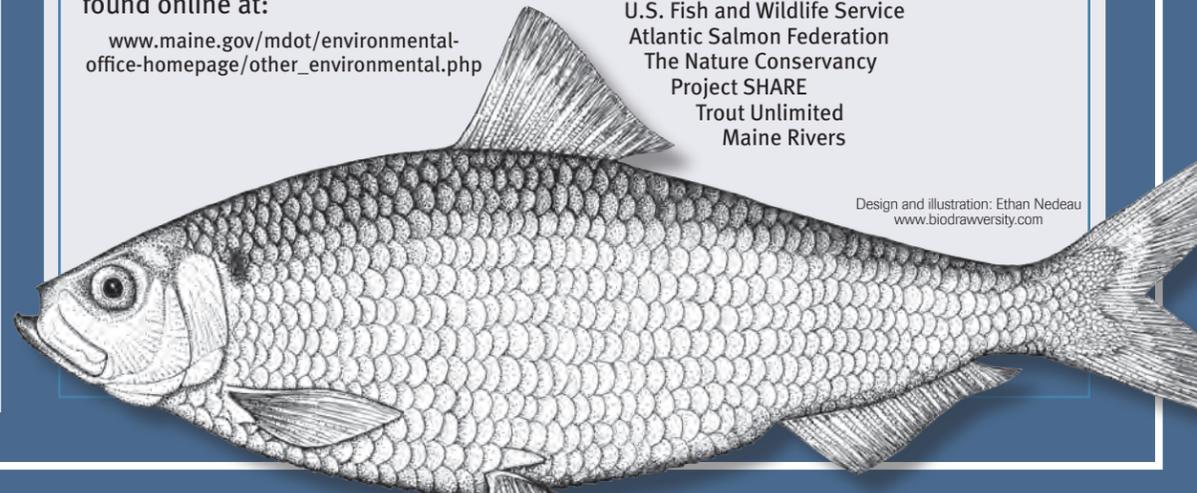
[www.maine.gov/doc/mfs/fpm/water/stream\\_crossing.html](http://www.maine.gov/doc/mfs/fpm/water/stream_crossing.html)

The *Maine Department of Transportation Fish Passage Policy and Design Guide* can be found online at:

[www.maine.gov/mdot/environmental-office-homepage/other\\_environmental.php](http://www.maine.gov/mdot/environmental-office-homepage/other_environmental.php)

Maine's stream barrier removal efforts are supported by a broad coalition of state and federal agencies and nongovernment organizations:

- Maine Forest Service
- Maine Department of Marine Resources
- Maine Department of Transportation
- Maine Department of Inland Fisheries and Wildlife
- Maine Department of Environmental Protection
- National Oceanic and Atmospheric Administration
- University of Southern Maine Aquatic Systems Group
- Penobscot Valley Council of Governments
- National Resource Conservation Service
- U.S. Fish and Wildlife Service
- Atlantic Salmon Federation
- The Nature Conservancy
- Project SHARE
- Trout Unlimited
- Maine Rivers



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