The Value of Stream Smart Road Crossings
For more information, go to StreamSmartMaine.org
Road Map of the Day

- The Value of Stream Smart Crossings
- Legal Requirements
- Stream Table – How a stream works
- How to Create Stream Smart Crossings
- Costs & Benefits & Paying for Stream Smart Crossings
- Q&A / Discussion
Stream Smart Crossings…

Maintain fish & wildlife habitat

while protecting roads & public safety
This is what we’re trying to avoid…

Catastrophic failures:

- Bad for fish & wildlife
- Bad for budgets
- Bad for public safety
Free-flowing stream benefits

- 270,500 anglers in Maine
- 80,000 non-resident licenses sold each year
- One of the most popular outdoor sports in the country (2nd only to running!)
- World Class fisheries
- 583 Heritage BKT waters (ponds that have not been stocked or with self-sustaining populations not stocked in 25 years)

- $97 million in wages & salaries
- $192.5 million in retail sales
- $21 million in tax revenues
- 3,314 jobs
Maine is the last best place for wild Eastern Brook Trout
Maine is literally the last place for **Atlantic Salmon** in the U.S.
Fish need to move...
Brook Trout

Landlocked Atlantic Salmon

Songo Pond

Sebago Lake

> 75 miles!

62 miles!
It’s not just fish

Photo: NH Public TV
It’s what the stream does

Regulates the flow of water

Maintains water temperature

Moves organisms and material
Small streams have higher densities of wild brook trout and Atlantic salmon, and critical spawning and nursery habitat for many species.
The Problem: most stream crossings are Barriers!
The problem is widespread...

- > 7,000 severe barriers on state, town & private roads
- + 8,000 potential or partial barriers
- On average each blocks 1 mile
- > 15,000 miles of blocked streams
How do culverts block fish passage?

- Flow too fast
- Water too shallow
- Perched / Free Fall
- Combination
Other Physical Barriers

Inlet Blocked

Thermal Dam
High water temperatures stress trout and salmon
Other Culvert Issues

Multiple Culverts

Slip-lining, Invert-lining & Smoothbore Plastic Pipes
Shrinking salt marshes

Sea level rise magnifies impact on tidal streams

COMING SOON!

COASTWISE

The CoastWise Approach for Tidal Road Crossings
Climate Change = More risk to road infrastructure

Bigger storms will become more frequent

Extreme storms

74%↑ Frequency

23%↑ Size
What failure looks like…

[Image of a flooded road with a waterfall at the end, indicating failure]

[Link to extended video of Freeport Road Collapse: http://www.youtube.com/watch?v=p_uqPR4Ir5o]
Failure: Bad for budgets…

The Undersized Culvert is Still There!

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imported gravel and base material ($21 / ton)</td>
<td>$8,400</td>
</tr>
<tr>
<td>2 employees/trucks (80 hrs @ $45)</td>
<td>$3,600</td>
</tr>
<tr>
<td>1 employee/backhoe (60 hrs @ $75 / hr)</td>
<td>$4,500</td>
</tr>
<tr>
<td>Road Work- Grader/excavator (40 hrs @ $100 /hr)</td>
<td>$4,000</td>
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<tr>
<td></td>
<td>$20,500</td>
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</tbody>
</table>
Failures... also bad for habitat
Luckily, there are solutions: Stream Smart crossings maintain fish & wildlife habitat while protecting roads & public safety.
What failure looks like…

Machias River
December 2010

What Stream Smart looks like…
Vermont - Hurricane Irene

- >1,000 culverts & bridges damaged or destroyed
- $733 million in damages
Vermont - Hurricane Irene

- No culverts on Green Mountain National Forest were lost
- Resized culverts before Irene

Photo: Dan McKinley, GMNF
Stream Smart Solutions

MaineDOT Road

BEFORE

HURRICANE IRENE

AFTER
Stream Smart Solutions

BEFORE

Town Road

AFTER
Private Forest Road

BEFORE

AFTER

Stream Smart Solutions
What makes a solution Stream Smart?

- Enables passage of fish and other organisms when they need to move
- Passes sediment & woody debris
- Maintains natural channel flow characteristics
Stream Smart Crossings...

Maintain fish & wildlife habitat while protecting roads & public safety.

Allow the stream to act like a stream, passing fish & wildlife & higher flows that come with larger, more frequent storms.