Coastal Wetland Restoration Through Improved Tidal Exchange in Maine

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THE COLLEGE OF
GEOSCIENCES
TEXAS A&M UNIVERSITY
Gulf of Mexico to Gulf of Maine
NOAA Fellowship Project

CoastWise: Developing science-based, climate-resilient practices for community-based replacement of tidal road crossings that support coastal wetland restoration
Tidal Restrictions in Maine
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Can affect:
- Plant community
- Fish and wildlife populations
Tidal Restrictions in Maine

Can affect:
- Plant community
- Fish and wildlife populations
- Storm surge and coastal flooding protection
- Pollutant filtering capabilities
- Rate of carbon sequestration
- Recreation and educational uses
Restoration of Tidal Exchange
Maine Tidal Wetland Distribution
The “CoastWise” Concept

- Identify and/or develop tidal road crossing practices that can help restore tidal wetland functions.
  - Lower maintenance costs
  - Long-lasting structures
  - Reduced public safety risk
  - Increased resilience to sea level rise

- Create an outreach program that publicizes the tidal crossing standards.
CoastWise Goal: A program analogous to Maine Audubon’s successful Stream Smart Workshop

4 Stream Smart RULES OF THUMB

1. SPAN THE STREAM
   Crossing should at least span the entire width of the natural stream.

2. SET THE ELEVATION RIGHT
   Crossing should match natural stream elevation.

3. SLOPE MATCHES THE STREAM
   Crossing should match slope of the natural stream.

4. SUBSTRATE IN THE CROSSING
   Crossing stream bed should be made up of natural stream bed materials.

THE GOLDEN RULE
Let the stream act like a stream.
Make the road invisible to the stream.

StreamSmartMaine.org (207) 781-2330
The “CoastWise” Concept

• Voluntary
• Climate resilient design
• Informed by many ecological and feasibility factors
• Standardized but adaptive
• Useful to a wide audience
  • Road owners
  • Contractors
  • Municipalities
  • Other professionals
Creating a Tidal Crossing Database for Maine

Goal: A well-organized, comprehensive, and updatable tidal crossing map database to identify potential targets for restoration
Return the Tides (RTT) Project

- Established in 1999 by Conservation Law Foundation in the Casco Bay watershed

- The effort to inventory, survey, and analyze potential tidal restrictions to identify salt marshes in need of restoration throughout Maine
Maine Tidal Crossing Database

- Return the Tides datasets (3)
- USFWS Crossing Surveys
- Marsh Migration Polygons
- Sea Level Rise Scenarios
- GIS Intersects of Roads and Flowlines
- Maine DOT Crossing Data
Weskeag Marsh, Knox County
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6 feet sea level rise
Measuring Sediment Accretion
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