TIDAL CROSSING ASSESSMENT IN MAINE

NROC/GOMC/NALCC Tidal Crossings Assessments Workshop

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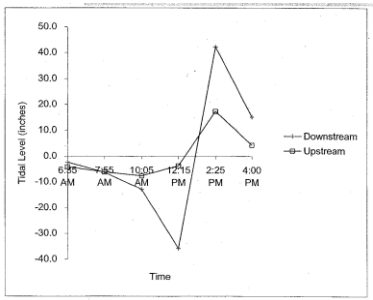
Assessments

Return The Tides (1999-2002)

- Initiative to inventory, survey, and analyze tidal restrictions to ID degraded salt marshes (Bonebakker *et al*, Conservation Law Foundation)
- 1999 - Pilot focused in Casco Bay found 102 sites with 12 "significant restrictions", includes dams
- Protocols for volunteer-based rapid assessment of site conditions and restoration potential
- Subsequently expanded statewide in 2000-2001
- Phase I – photo stations, structural characteristics, channel dimensions, fill, "restriction classification scheme" index scoring for upstream and downstream erosion/scour, channel vs. structural width, vegetation, and flood potential, sketches
- Phase II –at select sites: tidal hydrology, vegetation, community zonation, marsh surface elevation, peat integrity
- Update by USFWS/ACOE for DOT, for sites in Casco Bay
- Excel DB of 1,198 sites surveyed, but not all tidal
- Original data at CBEP



SOURCE: M. Craig

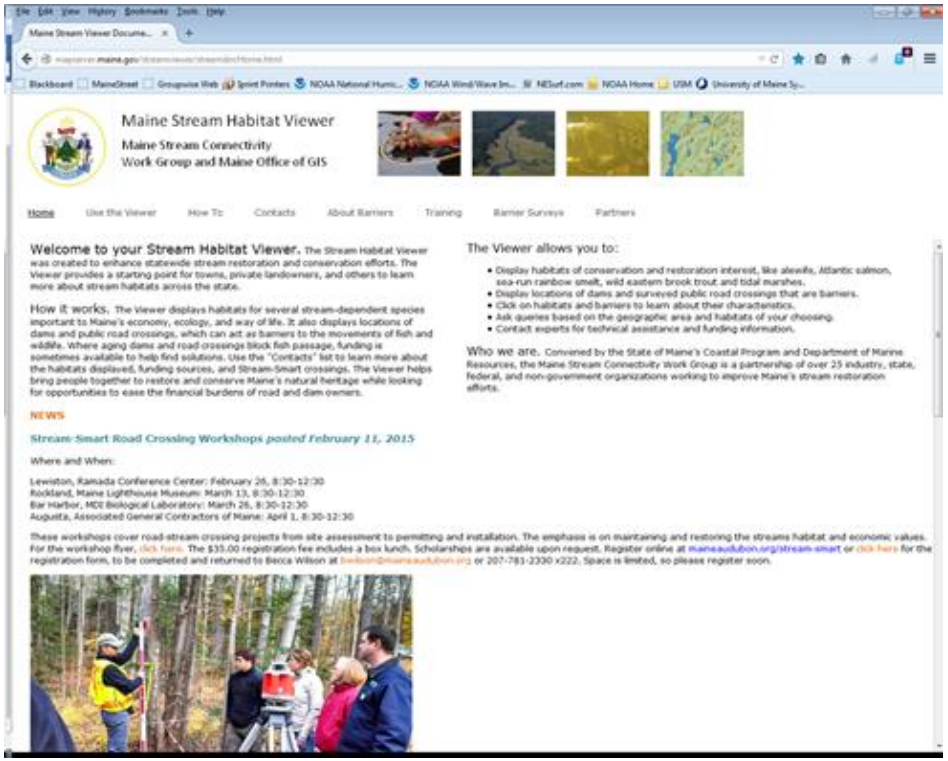
Statewide survey of road-stream crossings (2007 - present)

- Protocols: *Maine Road-Stream Crossing Survey Manual* (Abbott 2008, Rev. 2012)
- Identify barriers to improve stream connectivity and AOP
- Added tidal attribute in 2012
- Currently, data on 16,267 sites. Queries:
  - 162 sites currently listed tidal
  - 239 sites within >75 m of tidal marsh
  - 106 sites within >75 m of NWI estuarine or marine

SOURCE: A. Abbott

Maine Stream Habitat Viewer

- Online database of barrier data (public sites) and associated habitat and species data
- Informs how crossings likely interact with habitats for key species
- Not configured to answer questions regarding feasibility/scope of restoration
- Mapped contiguous tidal marsh polygons
- Provides useful information on potential tidal restrictions, but not all the information necessary to make efficient, screening level assessments without visiting individual sites

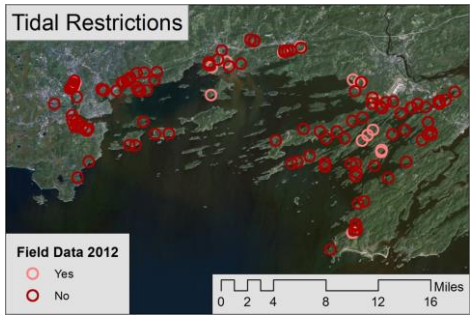


Maine Stream Habitat Viewer
http://mapserver.maine.gov/streamviewer/streamdocHome.html

SOURCE: S. Moore

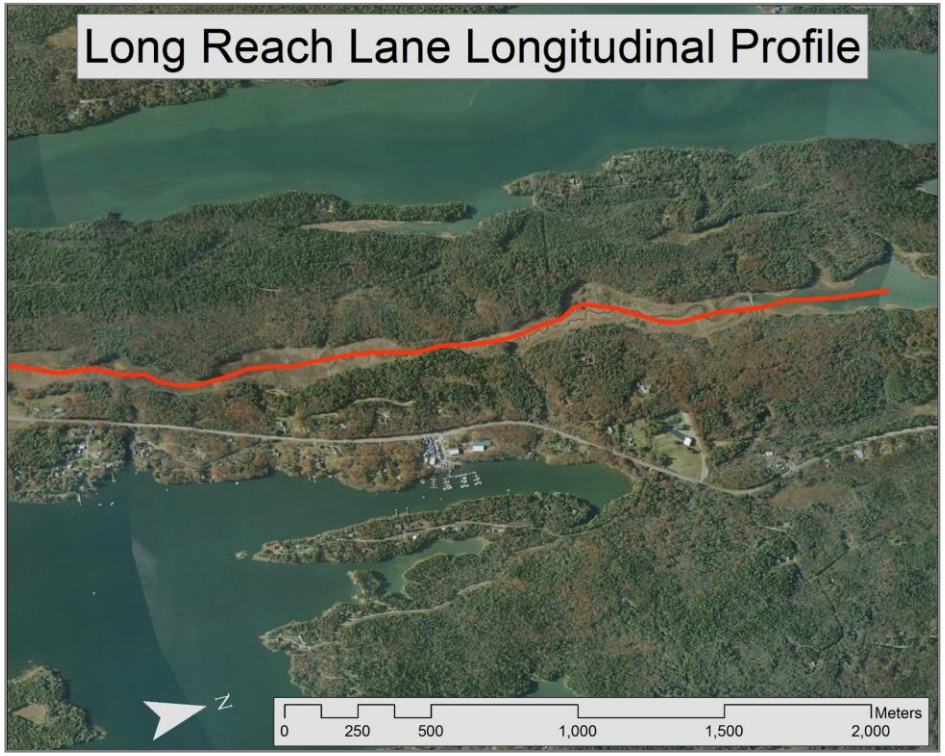
CBEP Rapid Assessment of Tidal Restrictions (2012 - present)

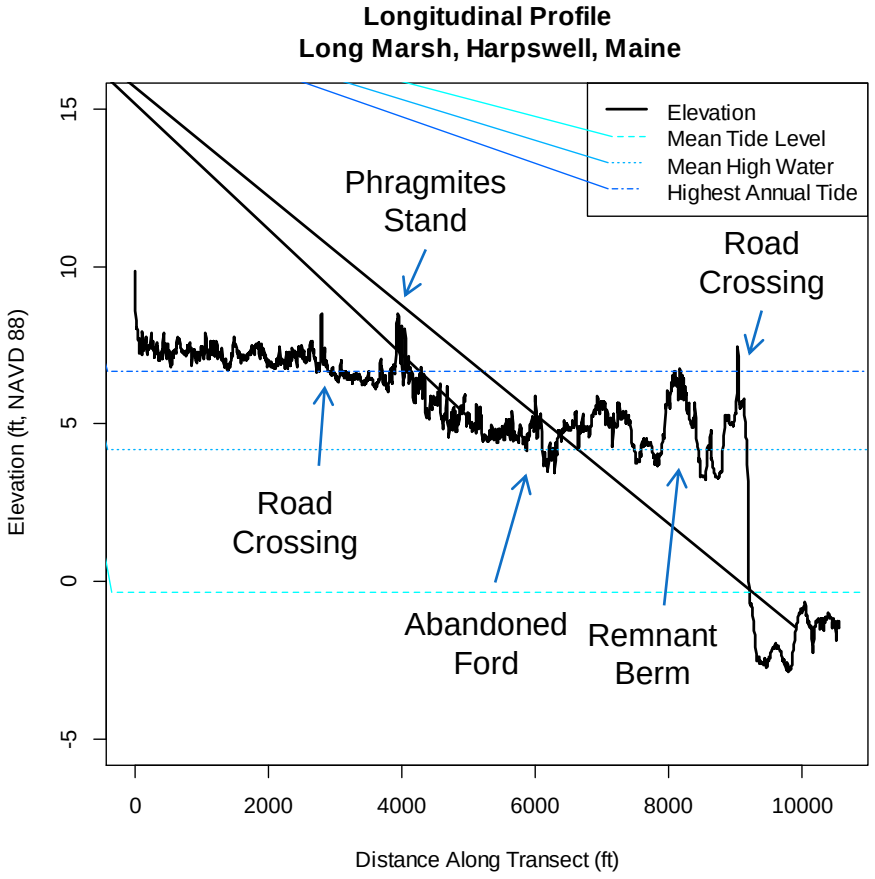
- Combined desktop analysis & field assessment
- Identified 132 possible tidal restrictions (public/private roads, railroads, dykes, dams). Included RTT sites, as well as previously unknown sites identified through aerials
- Field assessment: structural features & elevations, marsh surface elevations, scour, channel morphology, vegetation
- 2 person field crew spent ~ 1 day on site
- Methods problematic for tidal dams
- Tidal hydrology at a subset of sites (~15)
- Data incorporated into tidal restoration projects (proposals, pre-monitoring, engineering)



SOURCE: M. Craig

Longitudinal Elevation Profiles from LIDAR (CBEP, 2012)





SOURCE: *Geomorphology and the effects of sea level rise on tidal marshes in Casco Bay.* C. Bohlen et al., CBEP 2012

A few observations

- Overall, Maine lacks a systematic, cost-effective, and rigorous approach for assessing tidal restrictions and prioritizing tidal restoration
- Most of the state lacks funding to apply the best assessment methods
- Maine lacks a reliable, consistent funding program to support restoration activities at sites warranting action.
- The State hosts no full staff positions to engage in tidal restoration projects full-time, nor a State "Restoration Program". Therefore, Maine lacks consistent leadership and action at the state level.
- Without education and supplemental funding, road owners are not often aware of the benefits associated with improved tidal crossings, not are they often apt to make the investment.

SOURCE: S. Moore

A few related efforts & resources

- Restoration project monitoring (CBEP, DOT & others)
- Maine Natural Areas Program (ongoing) – tidal marsh community/condition assessments
- *Assessment of LIDAR for Simulating Existing and Potential Future Marsh Conditions in Casco Bay* (Slovinsky & Dickson, Maine Geologic Survey)
- Maine Geologic Survey (Slovinsky, 2015) – GIS data
  - 2015 Highest Annual Tide line
  - Sea level rise and storm surge scenarios (1, 2, 3.3, 6 on top of HAT)
  - Potential Hurricane Inundation Mapping
- ETC.