Coastal Wetland Restoration in Massachusetts

Overview of the past, present, and future of coastal wetland restoration and the role of greenhouse gas management.

National Academy of Sciences webinar

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Key Elements of Holistic Restoration

- Focus on **ecological processes**
  - Movement of water, sediment, organic matter, nutrients/chemicals, light/heat, and biota
  - Not ‘form’ or single species focus

- Work on the **appropriate scale**
  - Watershed focus
  - Consider regional controls, and reach-level processes, conditions, and stressors
  - Temporal considerations

- **Coordination** and **synergy**
  - Focus existing efforts
  - Coordination, not co-location
Accomplishments

• Over 100 completed projects
• 2,000 acres of coastal wetland restored
• 40 dams removed
• 150 upstream river miles reconnected
• 60 active projects in planning design
• Hundreds of volunteer hours logged
Traditional Approach - Increase Tidal Exchange (coastal wetlands)

Before

After

Sesuit Creek - Dennis
Project Selection

- Tidal Restriction Atlases
- Conservation Assessment and Prioritization System (CAPS)
- Restoration Potential Model (RPM)

Source: UMass CAPS data

Source: Cape Cod Commission
Ecological Restoration: a Mitigation & Adaptation Strategy

- Flood attenuation and mitigation
- Storm surge protection
- Water quality improvement
- Enable salt marshes to migrate
- GHG sequestration and emission reduction

Healthier marshes are more resilient

Courtesy NWF and Doug Stewart
Saltmarsh Restoration

by the numbers

• 90 projects since 1998
• Average size: 7.2 ha (18 acres)
  – Largest: 52 ha (130 acres)
• Costs: ~$50k - $2 million
  – Federal, State, Local
Project Cost Drivers

• Tidal restoration
  – Bridges & culverts
  – Tide gates

• Fill removal
  – Trucking
  – Tipping

• Other costs can be considerable:
  – Design/Engineering
  – Permitting
Why Continued Growth in Restoration?

- Climate change - focus on resilient communities/ecosystems
- Repetitive loss due to extreme weather
- Regional economics - shifts in land use
- Regulations that support smart infrastructure
- Aging infrastructure...strong nexus with public safety
- Politically palatable, non-regulatory, economically stimulating and positive
Policy Needs Science!

- In order for GHG management to drive restoration decisions, the GHG benefits must be:
  - Predictable,
  - Sustainable,
  - Scale-able, and
  - Transferable.

Source: Jim Tang, MBL
THANK YOU!

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