CAPE COASTAL CONFERENCE

Linking Science with Local Solutions and Decision-Making

Cape Cod Wetlands: Challenges and Opportunities

Presented By Jeremy M. Bell
MA Division of Ecological Restoration

Agenda

- Overview of DER
- Wetlands and ‘ecosystem services’
- Cape Cod’s wetlands assessments
- Threats and opportunities
- Questions and discussion

Department of Fish and Game

Mary Griffin, Commissioner

Division of Ecological Restoration (DER)

- Physical Restoration
  - Freshwater and Coastal Projects
- Flow Restoration
  - RIFLS, Dam Management, Comprehensive Water Planning
- Technical Assistance
  - (Riverways Program) - Adopt-A-Stream, Scenic Rivers, Water Quality, etc.

"To restore and protect the health and integrity of the Commonwealth's rivers, wetlands and watersheds for the benefit of people, fish and wildlife."

Ecosystem Services of Wetlands

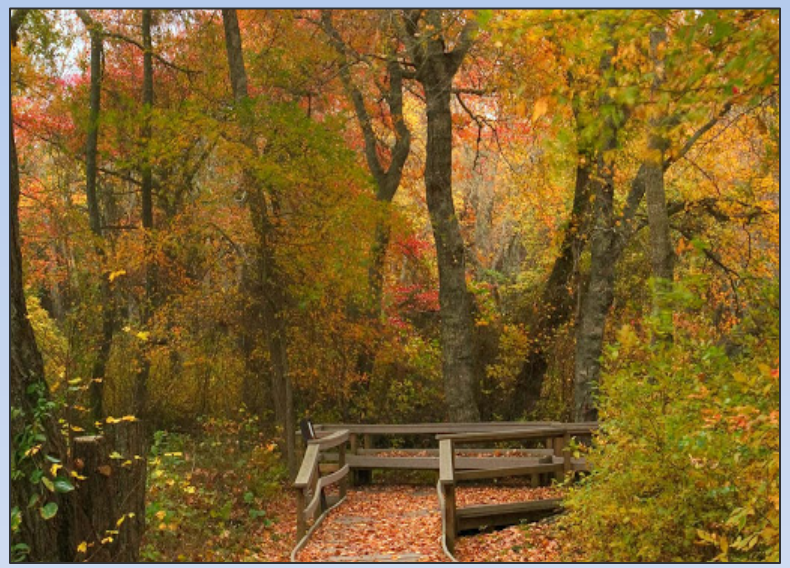
- Fish and wildlife productivity
- Pollution reduction
- Storm damage buffering
- Carbon sequestration
- Water supply
- Flood storage

Photo credit: Chris Miller

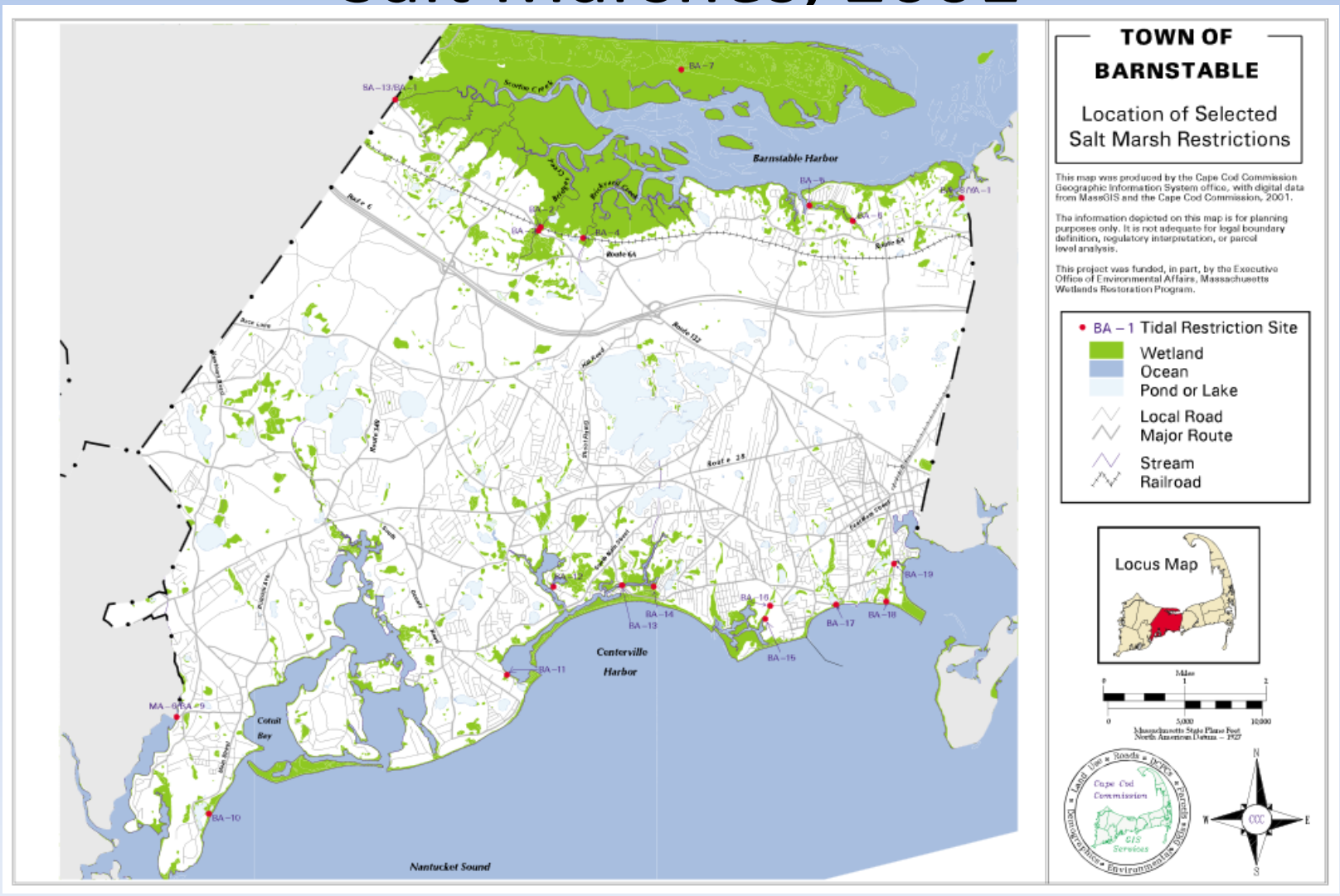
Source: Nature's Services, 1997, G. Daily, Ed.

Cape Cod's wetlands

Photo courtesy whatalking.com

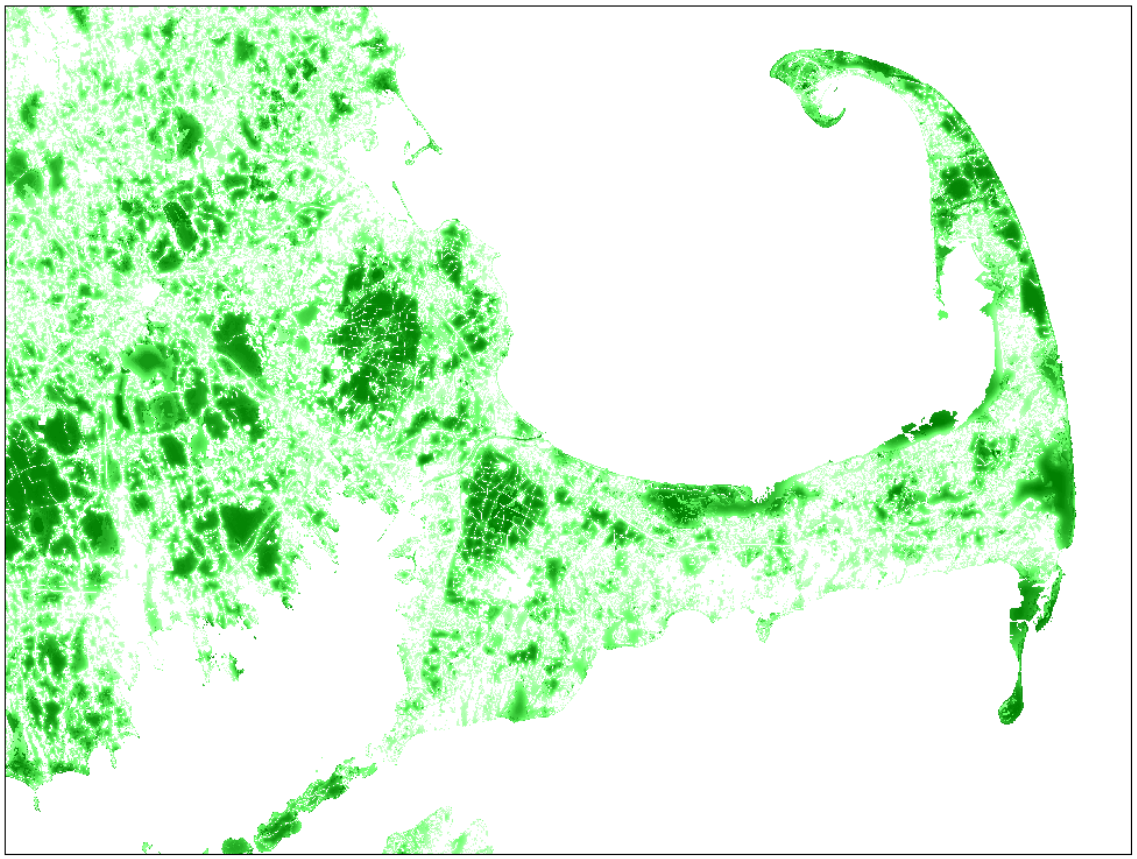


Cape Cod Atlas of Tidally Restricted Salt Marshes, 2001



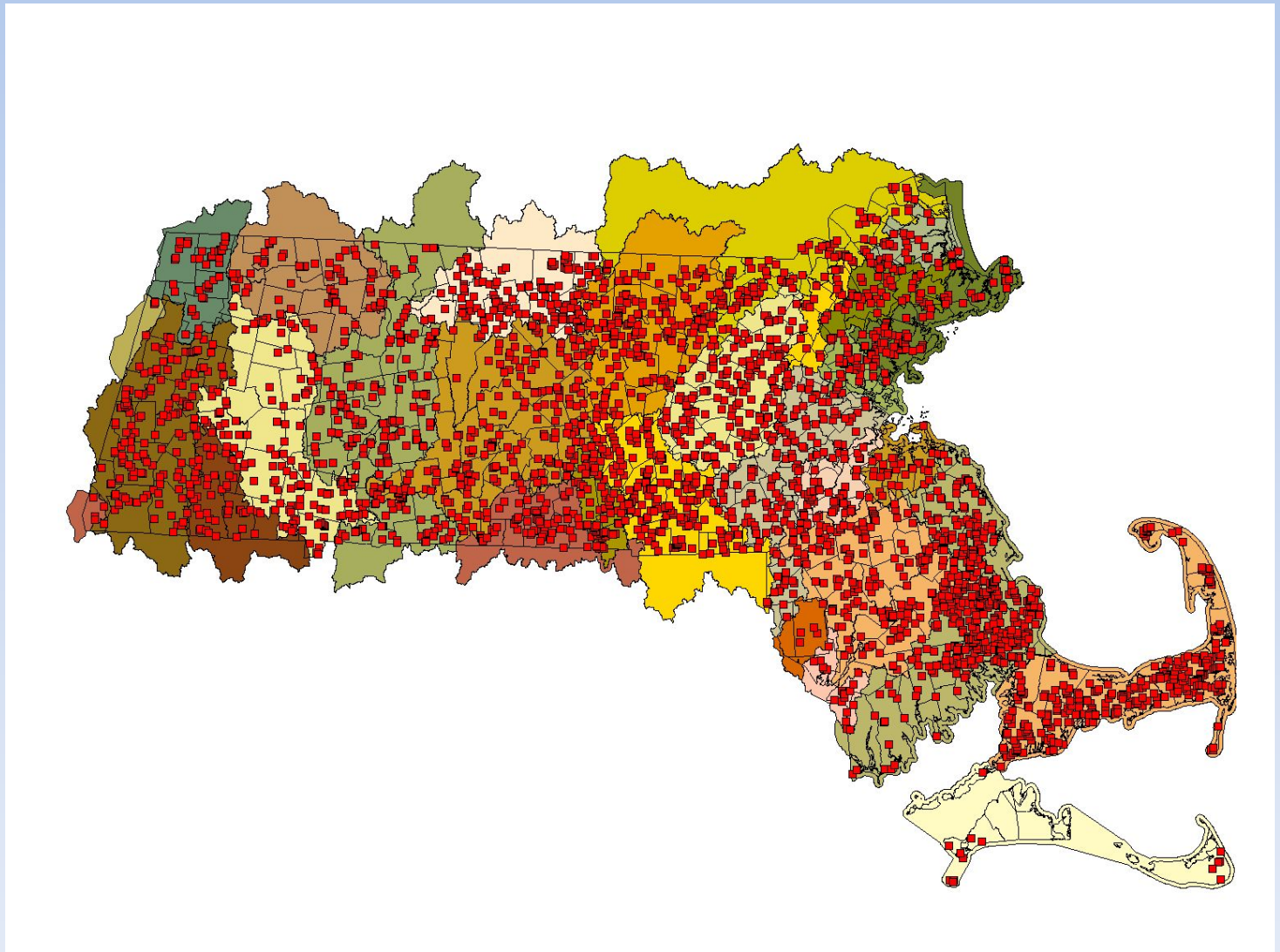
Source: Cape Cod Commission

Conservation Assessment and Prioritization System (CAPS)



Source: UMass CAPS data, available at umasscaps.org

Restoration Performance Model

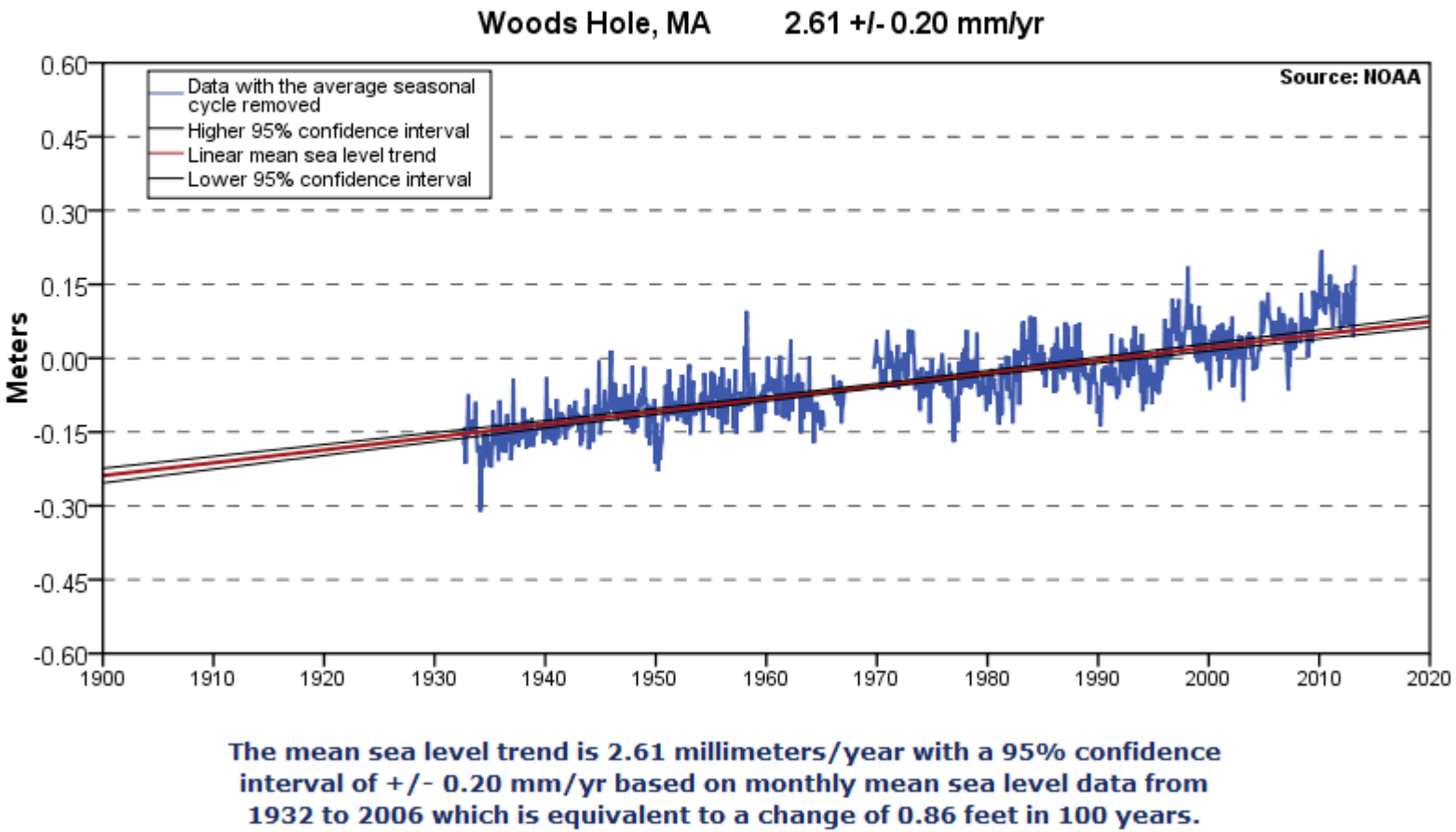


Source: DER Restoration Potential Model Version 3

Challenges

- Sea level rise
- Pollution inputs
- Flow restrictions

Mean Sea Level Trend
8447930 Woods Hole, Massachusetts



The mean sea level trend is 2.61 millimeters/year with a 95% confidence interval of +/- 0.20 mm/yr based on monthly mean sea level data from 1932 to 2006 which is equivalent to a change of 0.86 feet in 100 years.

Source: NOAA

http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8447930

Nitrogen and Salt Marshes

- Deegan et al. - Marine Biological Laboratory
- Experimental fertilization of salt marsh
- Nitrogen processing in marsh decreased as nitrogen inputs increased
- Root: shoot ratio lowers, peat begins to break down, marsh calving

Source: Coastal eutrophication as a driver of salt marsh loss, Deegan et al., Nature 490, 388–392 (18 October 2012)

Photo Credit: Christopher Neill

http://www.mbl.edu/blog/why-are-our-salt-marshes-falling-apart/

Why Are Our Salt Marshes Falling Apart? By Diana Kenney

Opportunities

- Conserve open space - allow for marsh migration, protect wetland buffers
- Improve tidal crossings
- Restore habitat
- Remove obsolete dams
- Reduce nutrient pollution – source reduction
- Bring economic benefits to Cape Cod

Economic Benefits of Restoration

- In MA, $1 million invested in restoration results in $1.5-1.75 million of 'output'[1]
- Average 'job demand' is 12.5 workers annually per project[1]
- Commercial fishery in Massachusetts was nearly $400,000,000 in 2009[2]
  - Pollock, winter flounder, striped bass, summer flounder, bluefish, tautog, also shellfish
- Tourism – recreational fishing, hunting, birdwatching, beach going, etc.

Source: [1]-Industrial Economics Inc., 2011; [2]- data compiled by the Cape Cod Conservation District, 2011

Questions?

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