# BEYOND A PLAN
## CREATING A SUCCESSFUL TIDAL WETLAND RESTORATION PROGRAM

**Restoring Long Island Sound's Habitats**

1998

RESTORATION SITES
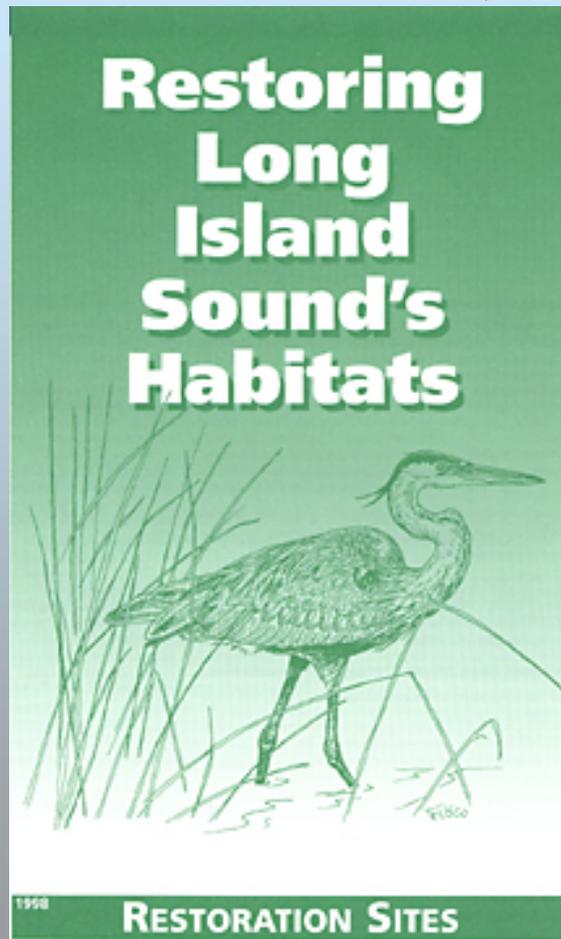
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TITLES

22—Agriculture, Domestic Animals

22a—Environmental Protection

23—Parks, Forests and Public Shade Trees

24—State Geological and Natural History Survey. Weather Control Board

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26—Fisheries and Game

**Salt Marsh Restoration in Connecticut: 20 Years of Science and Management**

R. Scott Warren, Paul E. Fell, Ron Rozsa, A. Hunter Brawley, Amanda C. Orsted, Eric T. Olson, Varun Swamy, William A. Niering

**State Programmatic General Permits**

- Connecticut
- Maine
- Massachusetts
- New Hampshire
- Rhode Island
- Vermont

# COASTAL AREA MANAGEMENT PROGRAM
## The 305 years



DEFINING THE ISSUE:

- determined that the Tidal Wetlands Act (TWA) of 1969 had arrested the loss of tidal wetlands from new activities
- there were many degraded and degrading tidal wetlands due to historic hydro-modifications (e.g. tide gates, culverts)
- the TWA had no provision for ecological restoration

Coastal Area Management Act (1980) established a state policy:

"encourages the restoration and rehabilitation of degraded tidal wetlands" CGS 22a- 92(b)(2)(E).

# SCIENCE BASED PROGRAM

In 1980, wetland restoration was in its infancy – we formulated a restoration approach based on the available science:

- Connecticut College studied 8 degraded marshes
- Hypothesized that restoring tidal flow and matching the hydrology to current marsh elevation should reset the marshes on a restoration trajectory to becoming self-maintaining ecosystems.
- Provided monitoring funds to evaluate restoration approaches.

Formed a long-term partnership with Connecticut College scientists (~30 years).

# SITE PLAN REVIEW COMMITTEE

**TEAM APPROACH TO RESTORATION DESIGN**

**Wetland Scientists**

**State Resource Managers** (Fisheries, Wildlife, Endangered Species, Coastal Management)

**Federal Resource Agency Staff** (NMFS, USFWS – Refuges and Coastal Program, NRCS)

**Permit Analysts** – identify and resolve permit issues early in design; regulators follow projects post construction (hopefully successes)
- State Permit Staff

- Federal Permit Staff (COE, NMFS, USFWS, EPA)

# PERMIT STREAMLINING

Streamlining possible for the following reasons:
- Early restoration successes
- Active participation by permit staff

COE – State Programmatic General Permit - since 1987 wetland restoration has been an eligible activity

CT DEP created (1990) a 'general permit' called a certificate of permission (45 to 90 day review) - Conservation Activities of DEP (e.g., wetland restoration) are an eligible activity
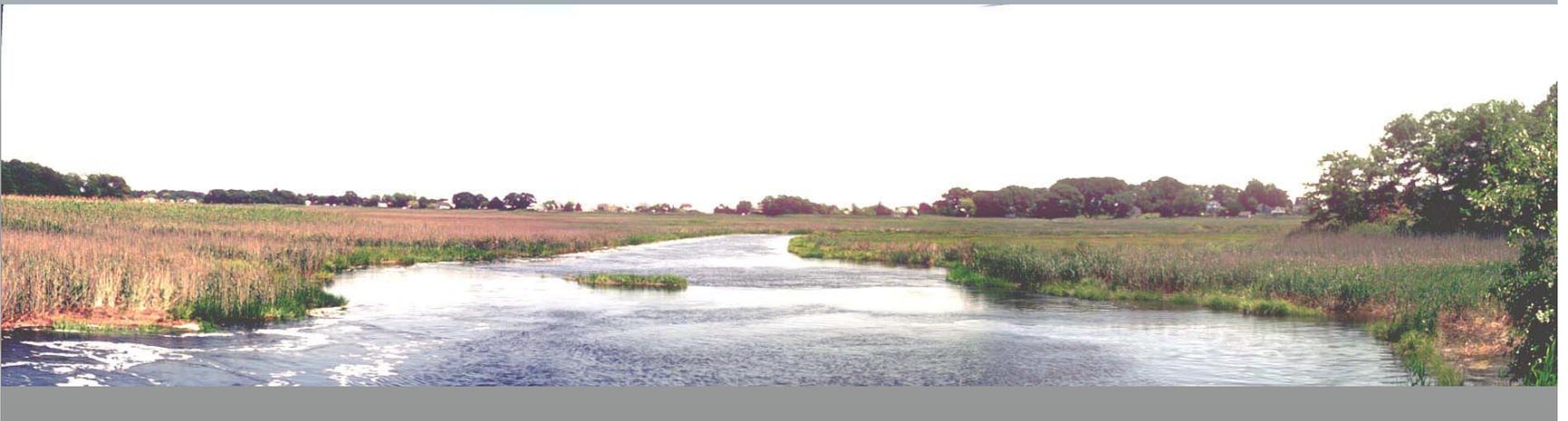
# 1985 HAMMOCK RIVER EXPERIMENT

- 200 acres of diked, drained and degraded marsh (for mosquito control)
- scientific data from Roman documented loss of functions and values from draining and **subsidence**
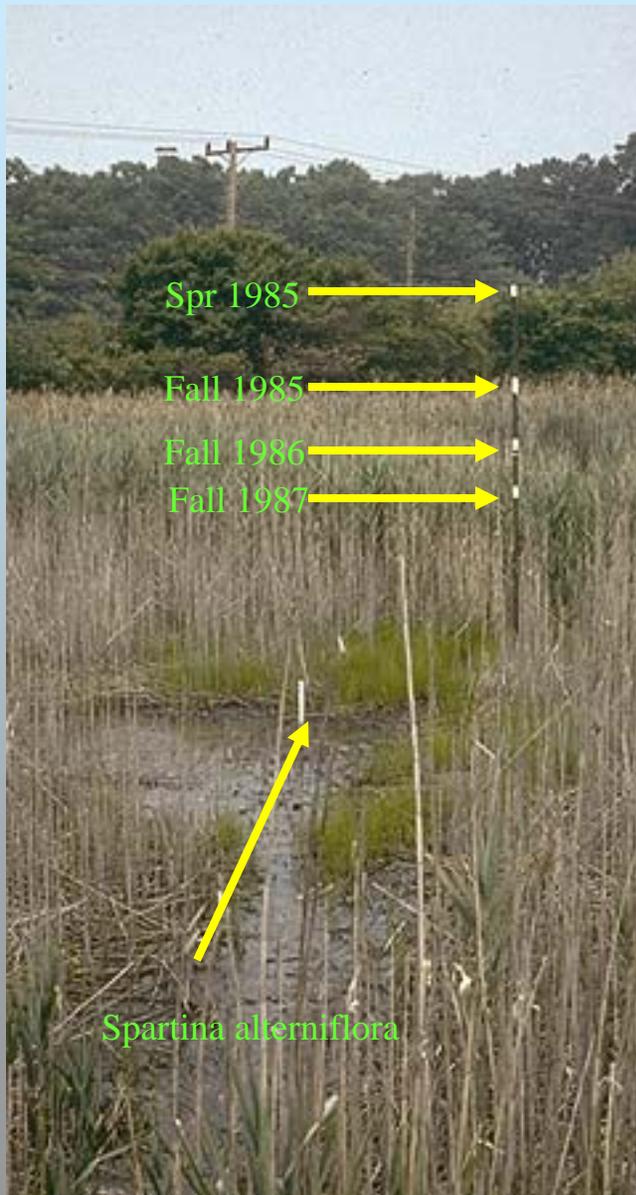- uncontrolled mosquito breeding despite the draining



Restoration Approach:
- Experimental approach – open 1 of 4 tides
- Evaluate the restoration response – open additional gates if warranted

# RESTORATION = MOSQUITO CONTROL



Spr 1985

Fall 1985

Fall 1986

Fall 1987

Spartina alterniflora

No Mosquitoes!!!

System is too wet!!!

1985 – 1993 Mosquito Controls restores tidal flow to many drained salt marshes at no additional cost to the taxpayer.

# 1994 RESTORATION PROGRAM

Transferred equipment and staff from Mosquito Control to DEP to form a dedicated wetland restoration team.

# THE RIGHT STUFF

# FUNDING

Restoration studies and projects were historically done on a case-by-case basis and by the legislature passing Special Acts

Tested an alternative in the early 1980's - create a **Coves & Embayments** (restoration) **Pilot Program** (up to 50% reimbursement to coastal municipalities); funding source was bond funds

Established the Coves and Embayment Program in 1986.

Legislature reinvented this program in 1989 by establishing the LIS Cleanup Account

- eliminated 50% match requirement of the '86 program which had favored the wealthier communities

# FUNDING (cont.)

Benefits of a dedicated state fund were realized in the 1990's with the advent of multiple federal agency programs for restoration which required matching funds.
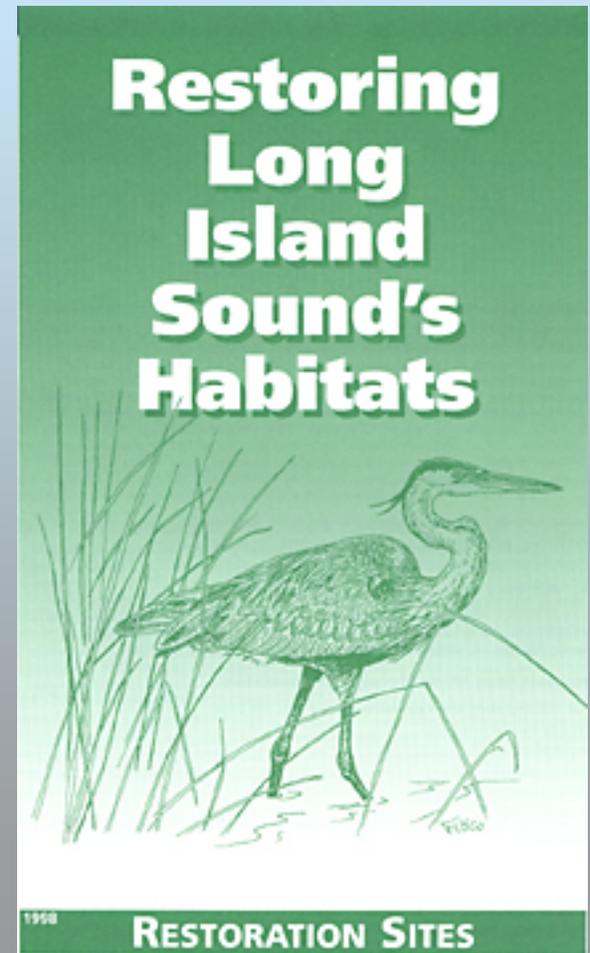
- ISTEA/TEA 21 – Only state in the nation to apply these funds to wetland restoration (80% federal!!!)
- USFWS Partners for Fish & Wildlife
- USFWS – National Coastal Wetlands Conservation Grant
- McKinney Wildlife Refuge – annual grants for restoration
- National Fish & Wildlife Foundation
- EPA 319 Non-point Source

- US ARMY COE – Section 22 Planning Study
- NOAA – Community Based Restoration
- NRCS – WHIP
- **NOAA – CZMA 306a**
- NGO's – Ducks Unlimited, CT Waterfowlers
- CT Corporate Wetland Restoration Partnership
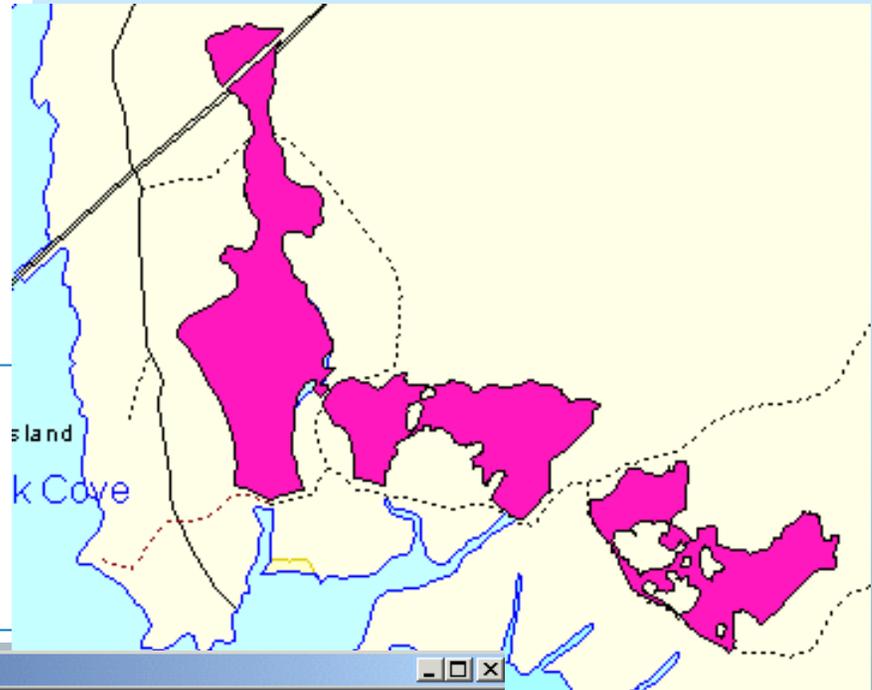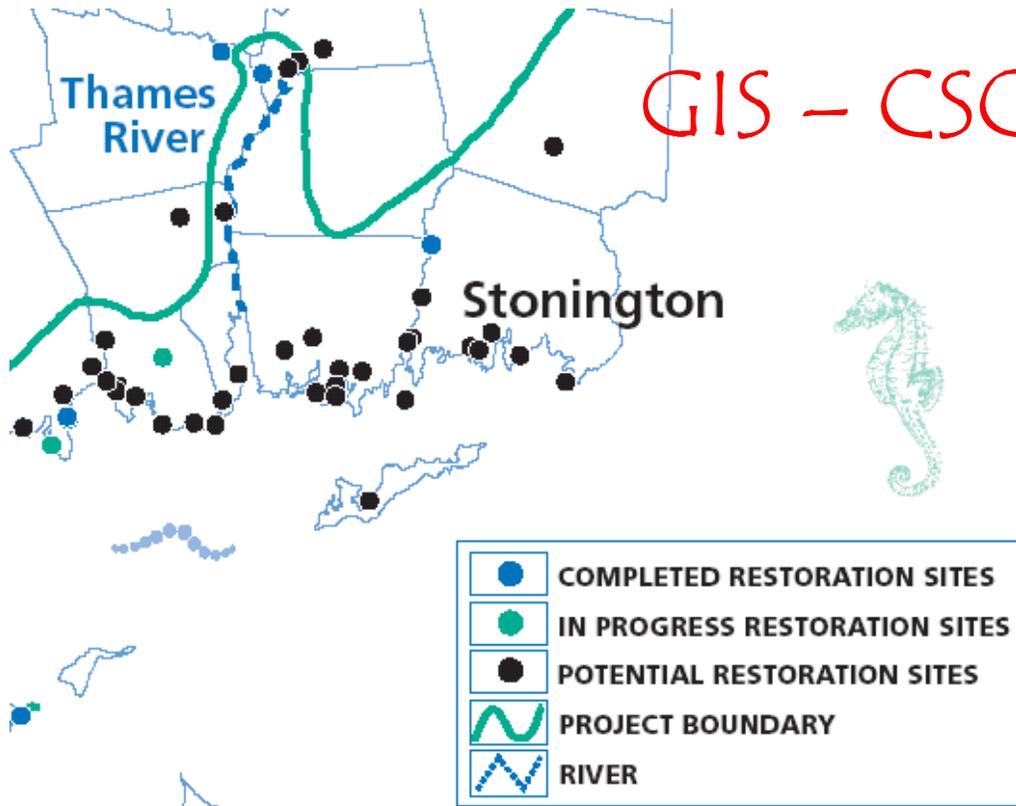- NOAA-RAE partnerships

# LONG ISLAND SOUND STUDY
## National Estuary Program

In 1994, LISS agreed to fund a CCMP recommendation to develop a bi-state habitat restoration plan.

Since 1998 – LISS funded a dedicated staff position in CT and NY for implementation – these staff could secure more federal funding from other federal restoration programs than EPA could ever direct toward on-the-ground construction.



**Restoring Long Island Sound's Habitats**

1998    **RESTORATION SITES**

# GIS – CSC Fellow

Thames River

Stonington

- ● COMPLETED RESTORATION SITES
- ● IN PROGRESS RESTORATION SITES
- ● POTENTIAL RESTORATION SITES
- 〰 PROJECT BOUNDARY
- 〰 RIVER

sland

k Cove

## Tidal Wetland Restoration Sites

**Wetland Restoration Database**

Add a Record    Duplicate

⏮  🔍  ⬅  ➡

Open Map    Funding

SITECODE: 027002    027002
CEP: ☑  027002    027002
LISS: ☐  027002    027002
FORMER LISS: ☐

Photos: d:\docs\chris\images\hammock

TOWN: Clinton
SITE NAME: Hammock River
OTHER NAMES:
LOCATION DESCR: Site is east of the tide gates at Beach Park Rd. Bounded on the south by Shore Rd. and on both sides of Route 1 (Boston

SITE DESCRIPTION: Predominantly salt marsh downstream of Rout and presumably a mix of salt marsh and brack marsh upstream of Route 1.

HISTORY and DESCRIPTION of DEGRADATION: The nature of degradation present prior to restoration was typical of drained tidal wetland and was documented by Charles Roman (197

TOTAL ACRES: 201.8    (for individual project acres see project information table below)
YEAR: 1985

HABITAT TYPE    DATA AVAILABLE    TYPE OF DEGRADATION

Salt marsh: ☑    water quality survey: ☐    reports: ☐    filling: ☐    nuisance species: ☐
Brackish marsh: ☑    vegetative survey: ☐    photo: ☐    nonpoint stormwater: ☐    Phragmites: ☑

# DIRECTED RESEARCH

Funds have never been available to support annual monitoring of all key ecosystem functions

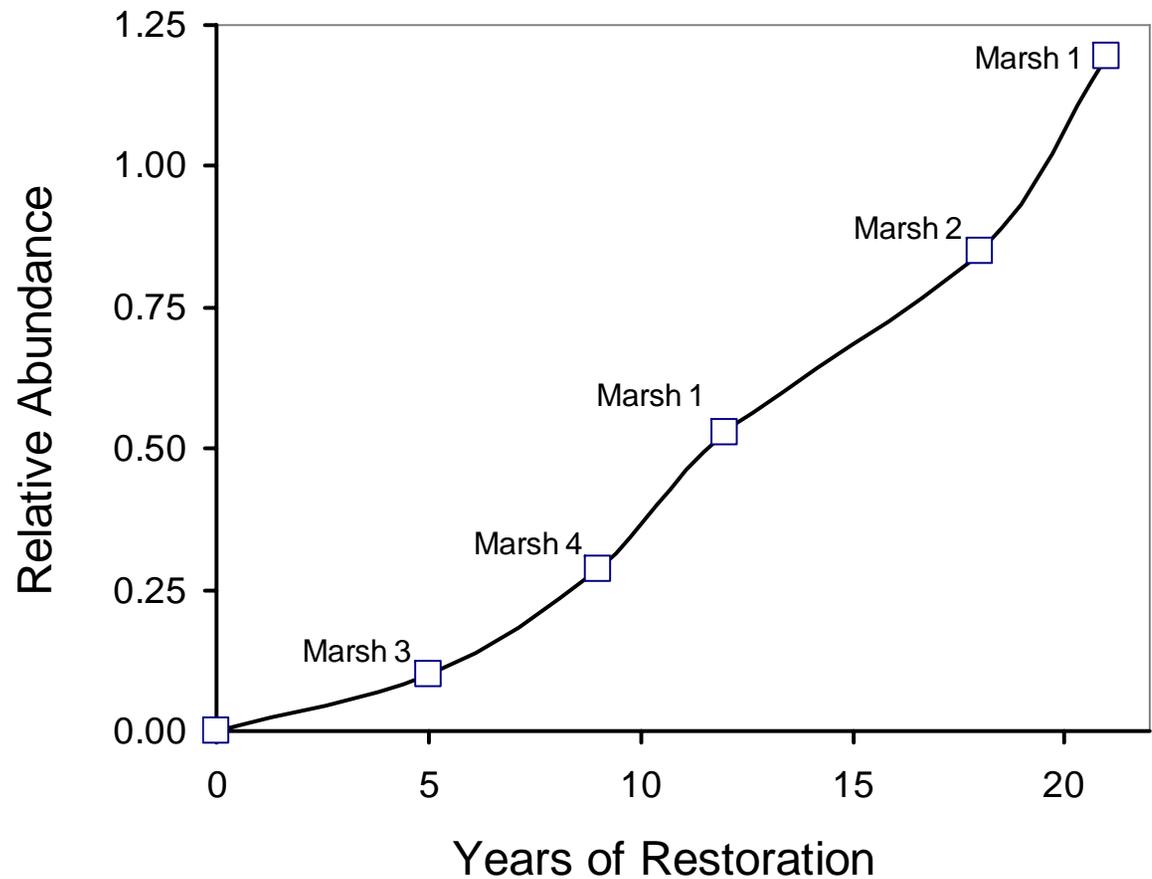Adopted simple monitoring techniques – permanent photo stations



Directed Research – types of degraded marsh is few in number – we opted to follow a strategic suite of sites through time.

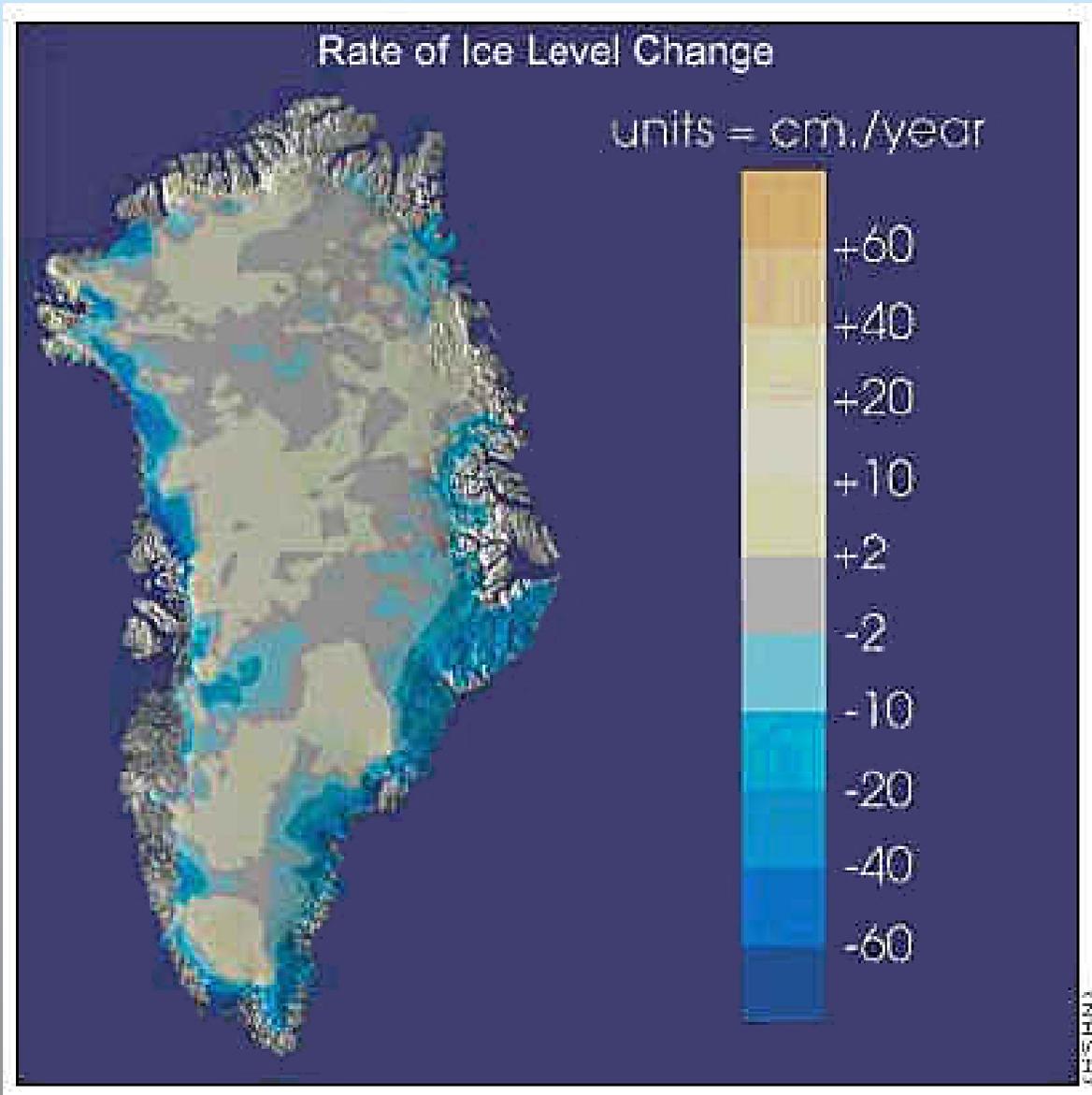## Salt Marsh Restoration in Connecticut: 20 Years of Science and Management

R. Scott Warren[1,3], Paul E. Fell[1], Ron Rozsa[2], A. Hunter Brawley[1], Amanda C. Orsted[1], Eric T. Olson[1], Varun Swamy[1], William A. Niering[1]

Restoration is occurring on geological time frames not human time frames!

# SUSTAINABLE COASTS???

# CLIMATE ADAPTATION