Coastal Blue Carbon Opportunities and Strategies

Waquoit Bay NERR
March 20, 2013

Project Partners: NERRS Science Collaborative - Knowledge Transfer, Waquoit Bay NERR, Steve Crooks, and Restore America's Estuaries

RESTORE AMERICA'S ESTUARIES

Our mission is to preserve the nation's network of estuaries by protecting and restoring the lands and waters essential to the richness and diversity of coastal life.

EARTH CORPS

SAVE THE BAY
NARRAGANSETT BAY

clf
conservation law foundation

Save the Sound

SAVE THE BAY

North Carolina Coastal Federation

GALVESTON BAY FOUNDATION

TAMPA BAY WATCH
Restoring the Bay Every Day

RAE Strategic Objectives

- Increase capacity
- Catalyze on-the-ground projects
- Convene
- Host National Conference – Nov 1-6, 2014, DC
- Advance strategic initiatives

www.estuaries.org

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Outline

1. GHGs and tidal wetlands
2. GHG Markets
3. Non-market applications
4. Making the connection
5. Relevance and potential approaches

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Coastal Blue Carbon

Greenhouse gases (GHGs) stored in, sequestered by, and released by coastal marine ecosystems such as seagrasses, mangroves, and other tidal wetlands.

Recognizing the GHG values of these systems can lead to new market and policy incentives for conservation.

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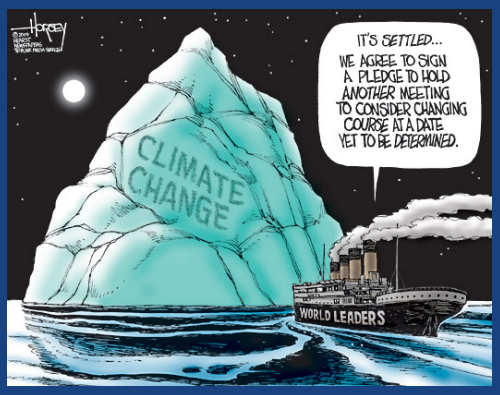
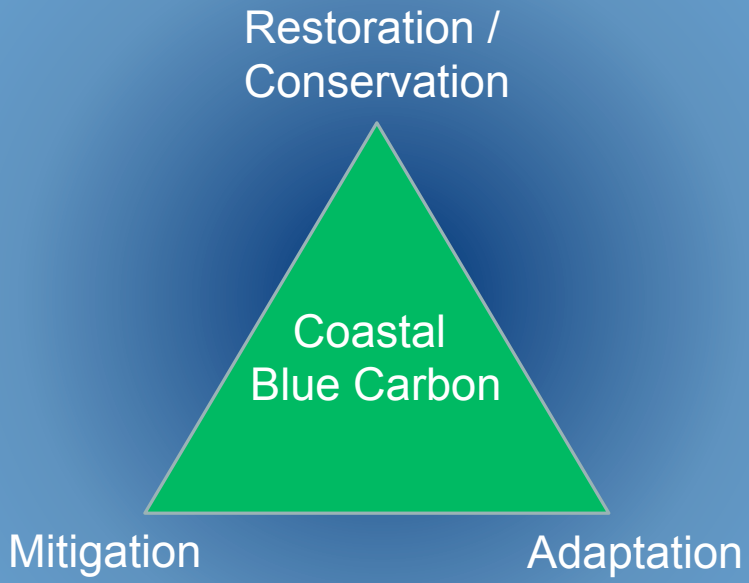
Why Blue Carbon?



Coastal Blue Carbon at the Nexus



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GHGs and Tidal Wetlands

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Relevant GHGs

CO_2: Sequestered by plants and stored in plant material and soils

N_2O: Production is anthropogenic in wetlands and estuaries, x300

CH_4: Highly variable at <18 ppt salinity

Insignificant above 18-20 ppt, x25

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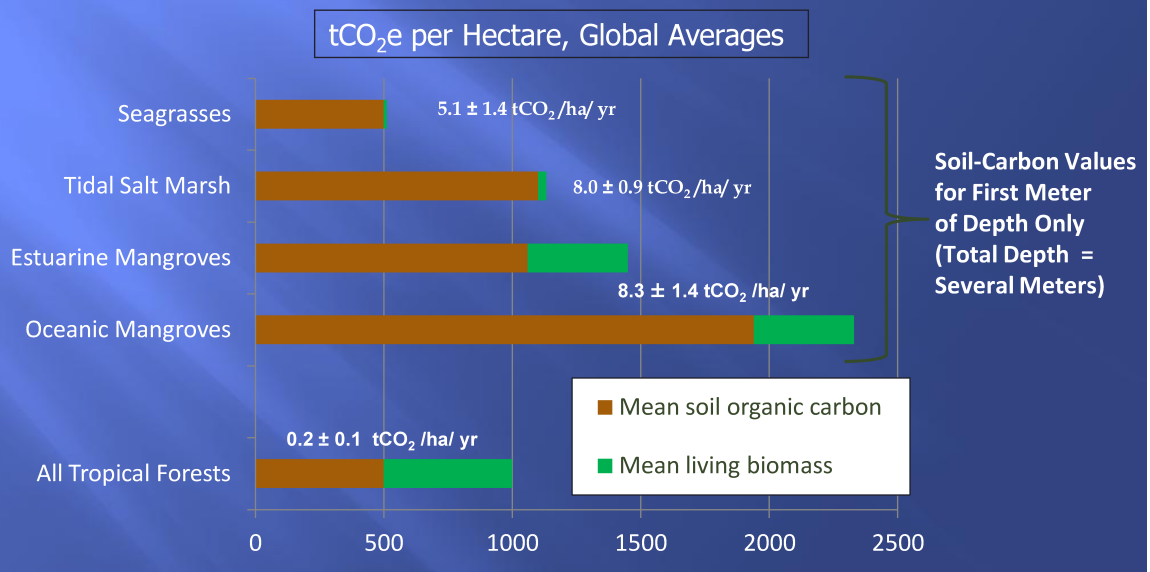
Distribution of carbon in coastal ecosystems



Data summarized in Crooks *et al.*, 2011; Murray *et al.*, 2011

For Comparison

15,000 mi 11 tons CO_2e

15,000 mi 3.7 tons

1 acre (~3) tons

1 acre (~1) ton

Activities with Potential Net GHG Benefits

- **Restoration** of tidal wetlands
- **Creation** of tidal wetlands
  (e.g. beneficial use, lowering water table)
- **Conservation/avoided loss** of existing tidal wetlands.

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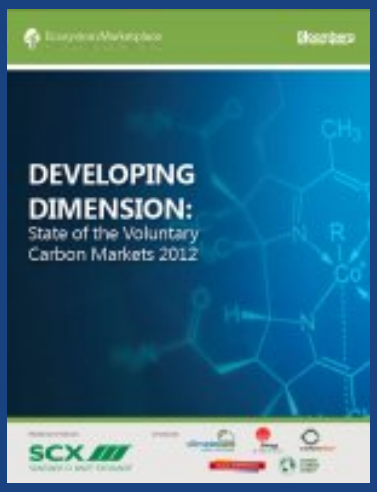

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GHG Markets

1. **Compliance Markets**
   e.g. Cap and Trade

RGGI Regional Greenhouse Gas Initiative

AB32

2. **Voluntary Markets**

= $6.20

3. **Standards**
   - guarantee quality and integrity
   - ensure emissions reductions are real, permanent, measurable and additional

CLIMATE ACTION RESERVE

American Carbon Registry

VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

4. **Registries**
   - ensure offsets are tracked and retired

APX Energy. Environment. Market Integrity.

markit

cdc climat

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Requirements for GHG Offsets

Real	Demonstrate that reductions have actually occurred
Additional	Ensure reductions result from activities that would not happen in the absence of a GHG market
Permanent	Mitigate risk of reversals Verify reductions ex-post
Verified	Provide for independent verification that emission reports are free of material misstatements
Owned unambiguously	Ownership of GHG reductions must be clear
Not harmful	Avoid negative externalities
Practicality	Minimize project implementation barriers

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Standards and Methodologies, Oh My!

Standards for project activities

- General requirements and guidance on GHG accounting
- Procedures for validation and verification
- Registry and clearing house for 'carbon credits'

Methodologies

Step-by-step explanations of how emission reductions or removals are to be estimated in line with the requirements following accepted scientific good practice.

Project description or design documents

Detail how a specific project complies with the requirements and applies the methodology

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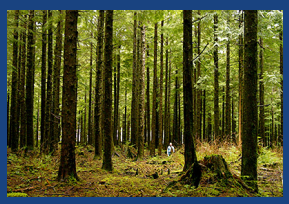
Types of GHG Offsets

- Credit Projects such as:

LANDFILL METHANE OUTREACH PROGRAM

- Agriculture, Forestry and Other Land Uses (AFOLU)



and…..

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New for the Verified Carbon Standard in 2012: Wetland Restoration and Conservation

"The WRC project category provides a framework for accounting emission reductions in mangroves, freshwater tidal coastal wetlands, salt marshes, seagrasses, floodplains, peatlands and potentially other areas. These groundbreaking requirements are the first for crediting restoration and conservation activities across wetland ecosystems." -- www.v-c-s.org

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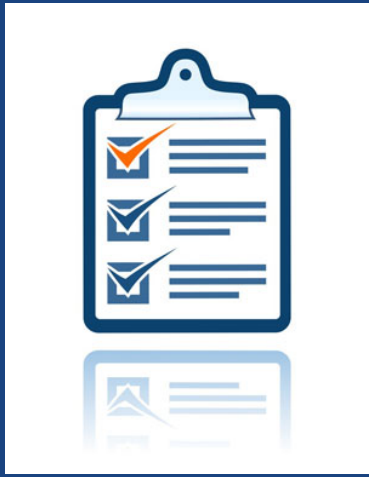
GHG Accounting

- ❑ Set project boundary and GHG pools
  - CO_2, CH_4, N_2O
- ❑ Additionality assessment
- ❑ Baseline assessment
- ❑ Monitoring, Reporting and Verification (MRV) of GHG reductions and removals
- ❑ Credit issuance



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Restoration Scenarios

Levee/dike breach to restore salt marsh on former agricultural land

1. Baseline
2. Net reductions and removals – Project case

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Restoration Scenarios

Seagrass restoration by re-seeding

1. Baseline
2. Net reductions and removals – Project case

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Restoration Scenarios

Beneficial Use of Dredge Material

1. Baseline
2. Net reductions and removals – Project case

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Are Wetland GHG Offsets Attractive?

- Existing standards for co-benefits, require additional certification, increase value of credit
- 54% of offsets are purchased for Corporate Social Responsibility and public relations reasons
- AFOLU offsets sell at a premium
- Wetlands offsets could be highly charismatic in the marketplace

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Value of C sequestration for marsh restoration (3 tons CO_2/yr for 50 years)

Price per ton CO_2	100 acres	1000 acres
$5.00	$75,000	$750,000
$10.00	$150,000	$1,500,000
$20.00	$300,000	$3,000,000
$40.00	$600,000	$6,000,000

Before subtracting baseline, methane, uncertainty, insurance, verification, …
Adapted from a slide by Brian Needelman, UMD

Non-Market Applications

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What is a Non-Market Application?

The recognition of GHG values of tidal wetlands can help achieve restoration/conservation/adaptation goals.

Integrating GHG values into:

- Policy-making
- Land use planning
- Land use management
- Demonstration projects (e.g. bragging rights)

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Potential Non-Market Applications

Examples:
- National Ocean Policy
- NEPA review
- Wetland permitting
- Public lands

Coastal Blue Carbon is an incentive to achieve existing projects, goals, strategies.

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GHG & Financing Nitrogen Management Strategies

Requirements:
1. Cause and effect – water quality
   +/- ghg flux in wetlands
2. Methodology

Challenges:
1. Setting project boundary
2. Ownership and control
3. Appropriate AFOLU category

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Making the Connection

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So you are interested in a blue carbon project...

Evaluate potential opportunities

What are my options?

→

Feasibility Assessment based on ***Tidal Wetlands Restoration Methodology***

Is this a good offset project? What do we need to do?

→

Implement Project

Promote GHG benefits of project. Make it happen! Get credit!

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Partial List of References

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