An Introduction to Coastal Blue Carbon Concepts

RESTORE AMERICA'S ESTUARIES

Stefanie Simpson, Baton Rouge, LA

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Who we are

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www.estuaries.org

National Summit

RESTORE AMERICA'S ESTUARIES

Coalition to Restore Coastal Louisiana

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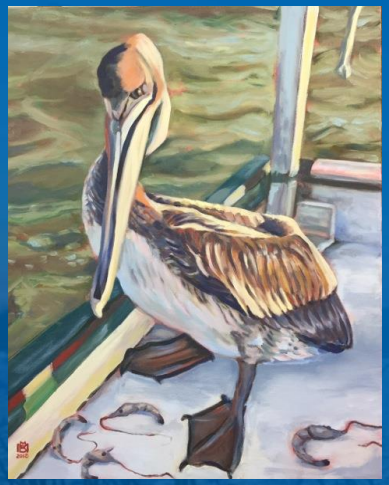
THE COASTAL SOCIETY

December 10 – 15, 2016

Hilton Riverside in New Orleans, LA



Registration is now open!

www.estuaries.org/summit

Gratitude

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What Is Blue Carbon?

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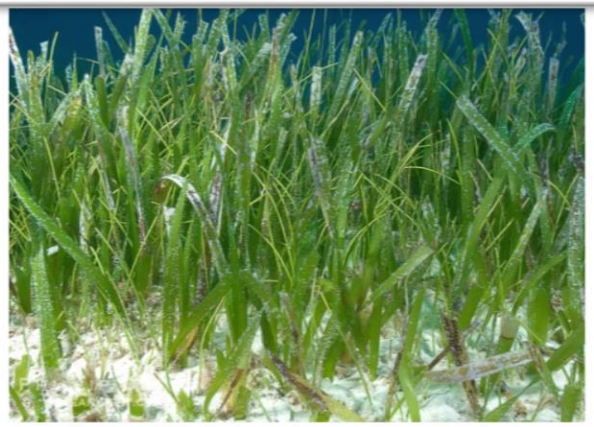
"Blue Carbon"

the greenhouse gases (GHGs) stored in, sequestered by, and released from coastal marine ecosystems such as seagrasses, mangroves, salt marsh, forested tidal wetlands, and other tidal wetlands.



<u>Goal:</u> Increase public and private investment in coastal habitat restoration and conservation.

Why Blue Carbon

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Blue Carbon at the Nexus

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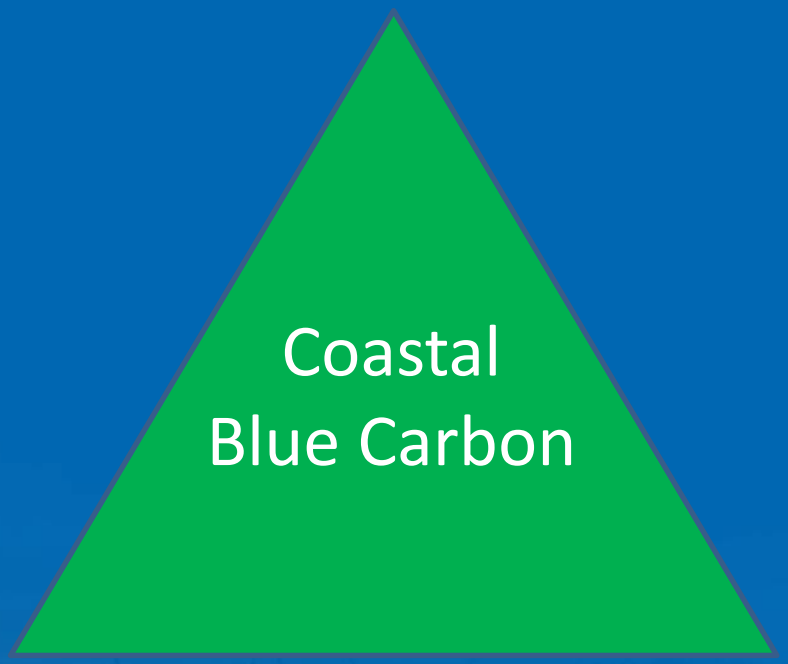

Carbon Sequestration

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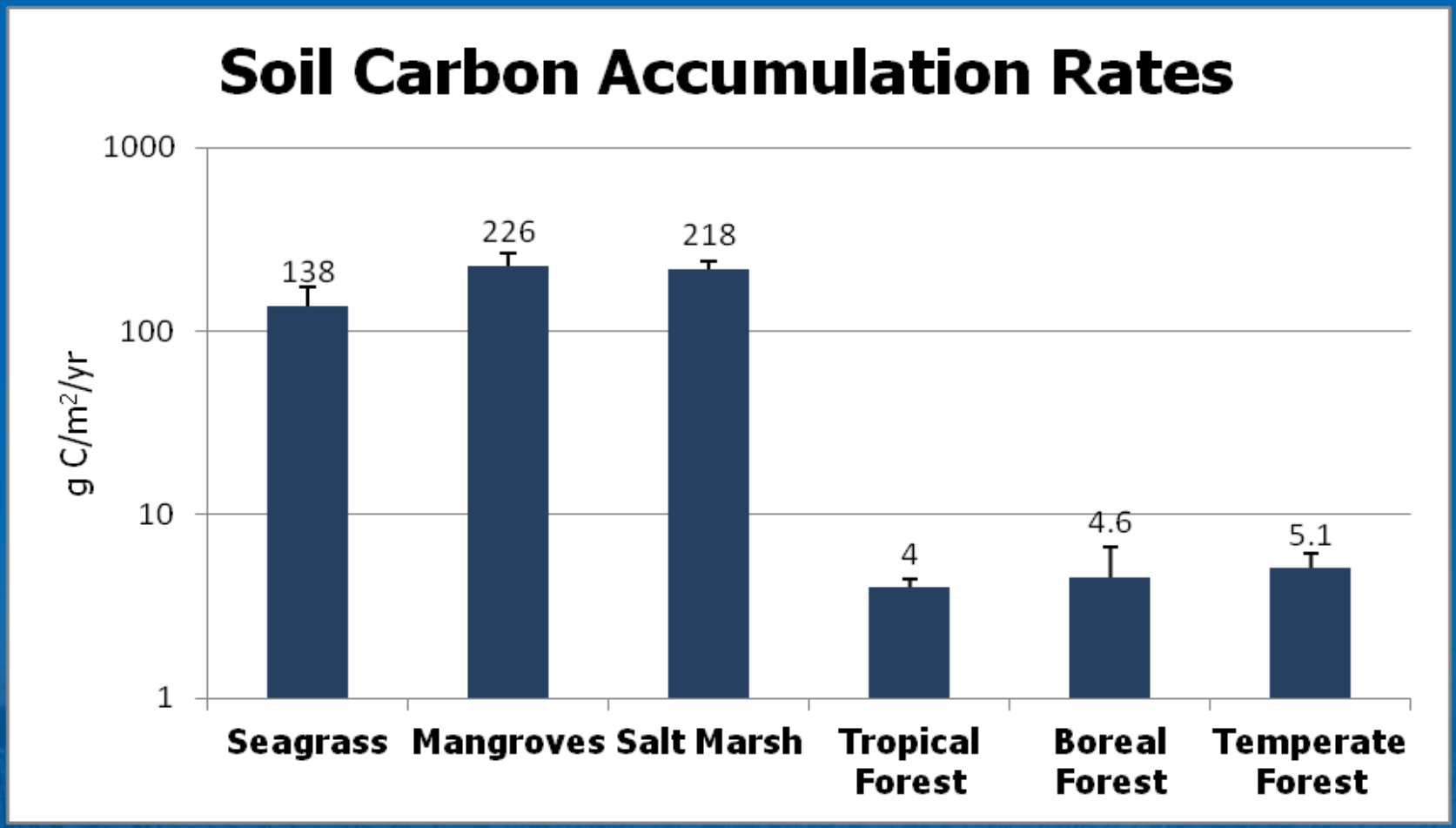
Wetlands can remove >10 times more CO_2 per hectare



Source: Mcleod et al. (2011)

Carbon Storage

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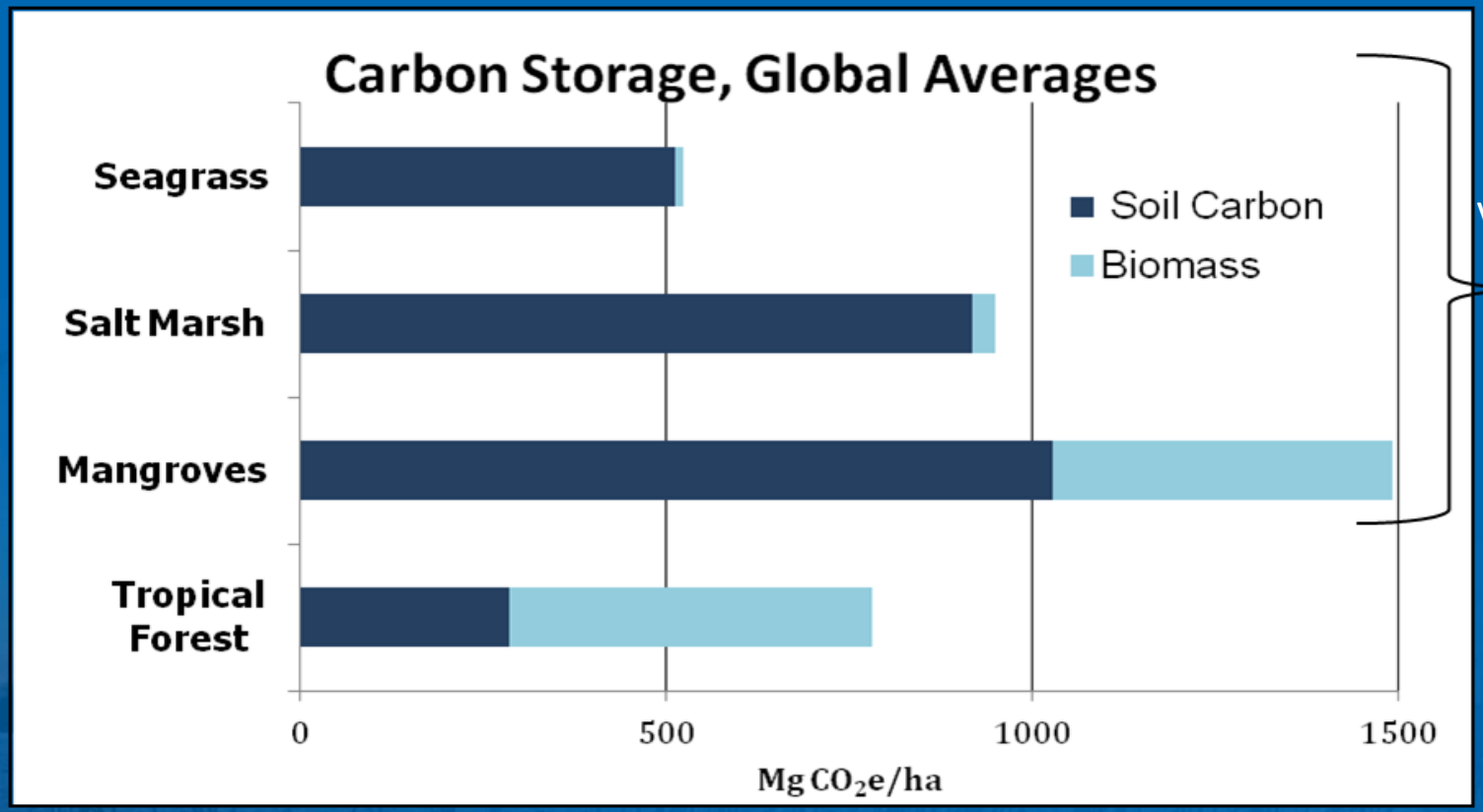
Primary carbon storage in soils, where it can remain for centuries



Soil carbon values for 1st meter of depth only (total depth = several meters)

Source: Pendleton et al. (2012) and Pan el al, (2011)

Carbon loss

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- Global habitat loss 0.7-7% per year
- Half a billion tons CO_2 released annually (equivalent to Canada's yearly emissions)

Why Blue Carbon

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Tidal Wetland Restoration Progress

- Minimum 1.5 million acres of tidal wetland losses among 28 NEPs – a low estimate
- Combined goals of NEPs to restore ~650,000 acres
- 4 year average reported restoration is ~7,000 acres – barely 1% of the goal
- Average coastal wetland losses of 80,000 acres/year

RAE Blue Carbon Strategy

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Introduction into Carbon Markets

- VCS Requirements
- Restoration Methodology
- *Conservation Methodology*
- *Demonstration projects*

Explore Policy and Regulatory Options

- National Accounting, e.g.

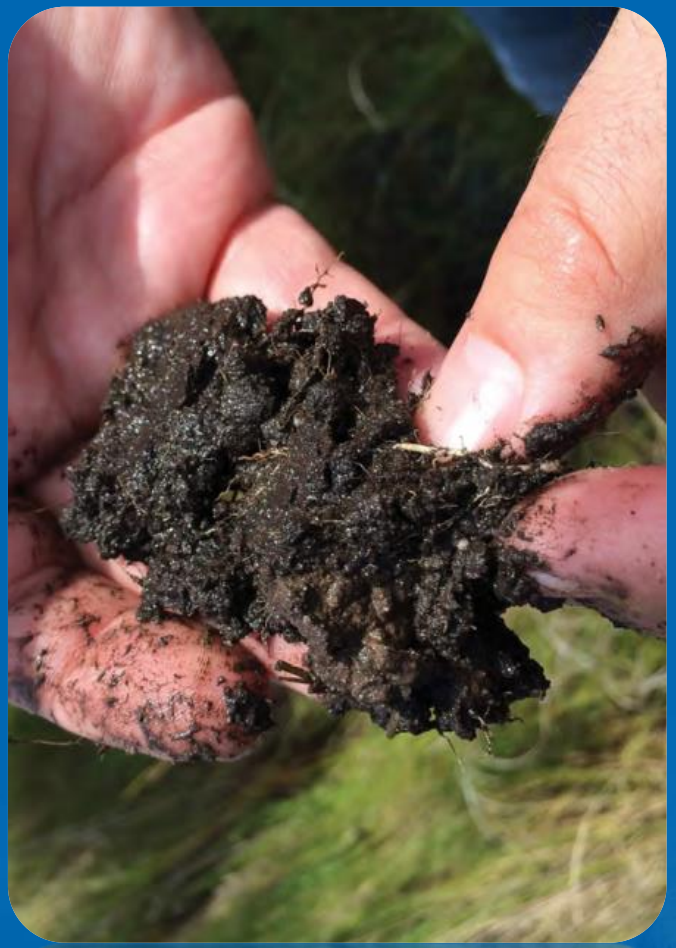
Support Science

- Tampa Bay and Snohomish Assessments
- Bringing Wetlands to Market project

Coordinate Blue Carbon Initiatives

- National and Regional Working Groups

Raise Awareness and Build Capacity



Carbon Markets

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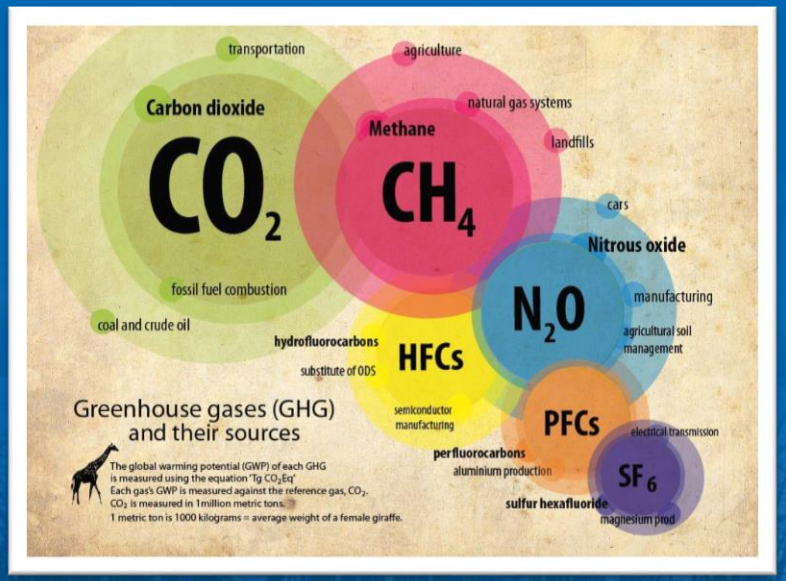
- CO_2 and other GHGs are global pollutants
- GHGs measured in discrete units – tons of CO_2eq
- All GHGs ≠ CH_4 GWP of 21 to 34, N_2O GWP of 310
- Market defines = all payments for third-party emissions reductions, called "offsets"
- Either regulatory ("compliance") or voluntary



Voluntary Carbon Market

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- **Standards** for offset quality and integrity
  - General requirements and guidance on GHG accounting
  - Procedures for validation and verification

VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

American Carbon Registry

CLIMATE ACTION RESERVE

- **Registries** ensure credits are tracked, retired, prevent double-counting

APX
Energy. Environment. Market Integrity.

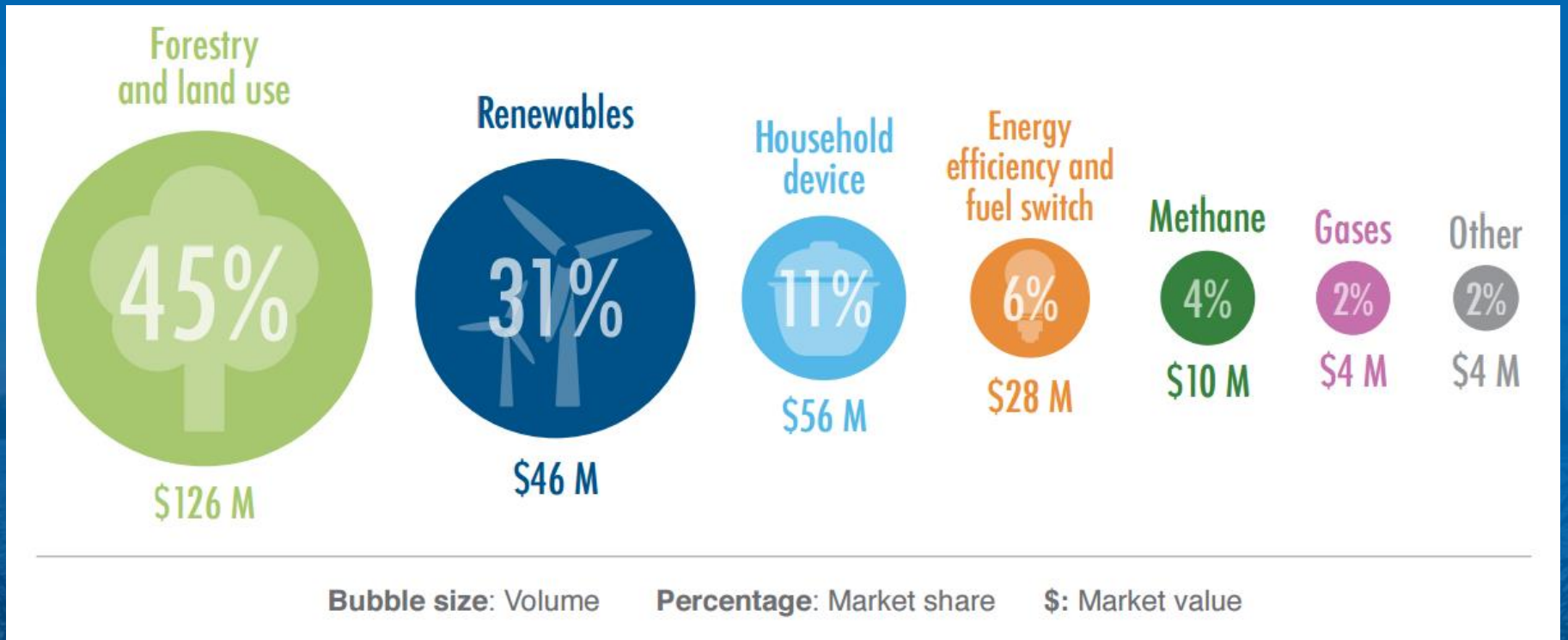
markit

- **Methodologies** provide step-by-step requirements for estimating and monitoring emissions following accepted, scientific good practice

Voluntary Carbon Market

- $78 million in N. America-2013
- Anticipated growth of 300% by 2020
- 45% of offsets are from forestry/land use
- Verified Carbon Standard largest issuer, 47%

Market Share and Value by Project Category, 2013. Ecosystem Marketplace.



Are Wetland GHG Offsets Attractive?

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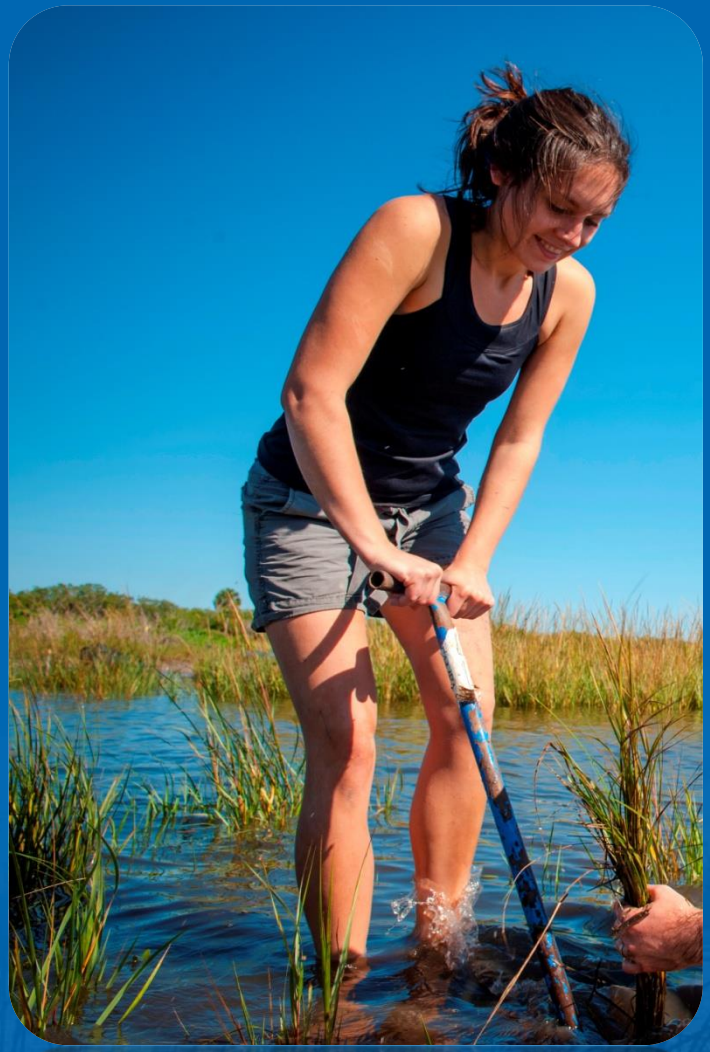
- Tidal wetland and seagrass restoration creates "co-benefits"
- Climate mitigation and corporate social responsibility are primary reasons to buy
- AFOLU offsets sell at a premium
- Wetlands offsets could be highly charismatic in the marketplace

"We like projects that have co-benefits and side benefits in addition to just pure GHG benefits… and we're really drawn to reforestation projects in particular that have watershed protection, habitat rehabilitation as well as a GHG component." – Bob Antonoplis, Assistant General Counsel for The Walt Disney Company

Wetland Methodologies

- Coastal Wetland Creation (VCS) – LA CPRA
- Restoration of Degraded Wetlands of the MS Delta (ACR) – Tierra Resources
- Global Tidal Wetland and Seagrass Restoration Methodology (VCS) – RAE
- Global Tidal Wetland and Seagrass Conservation Methodology – initiated by RAE



Voluntary Carbon Market

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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

Activities with Potential GHG Benefits

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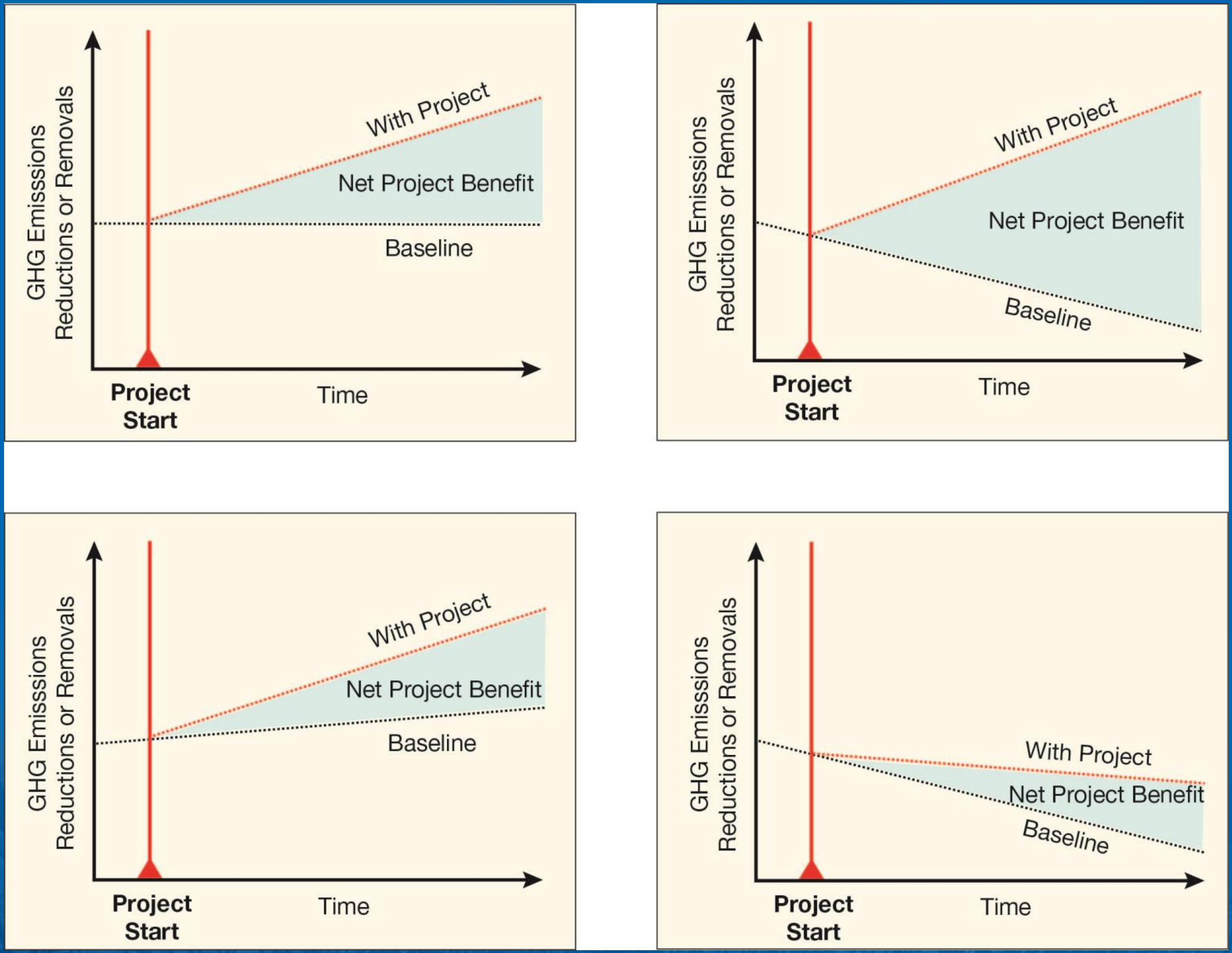
- **Restoration** of tidal wetlands and seagrasses
- **Creation** of tidal wetlands (e.g. beneficial use)
- **Conservation/avoided loss** of existing tidal wetlands and seagrass beds

Goal of Carbon Management (Mitigation)



Source: Forest Trends

Tidal Wetland and Seagrass Restoration Methodology

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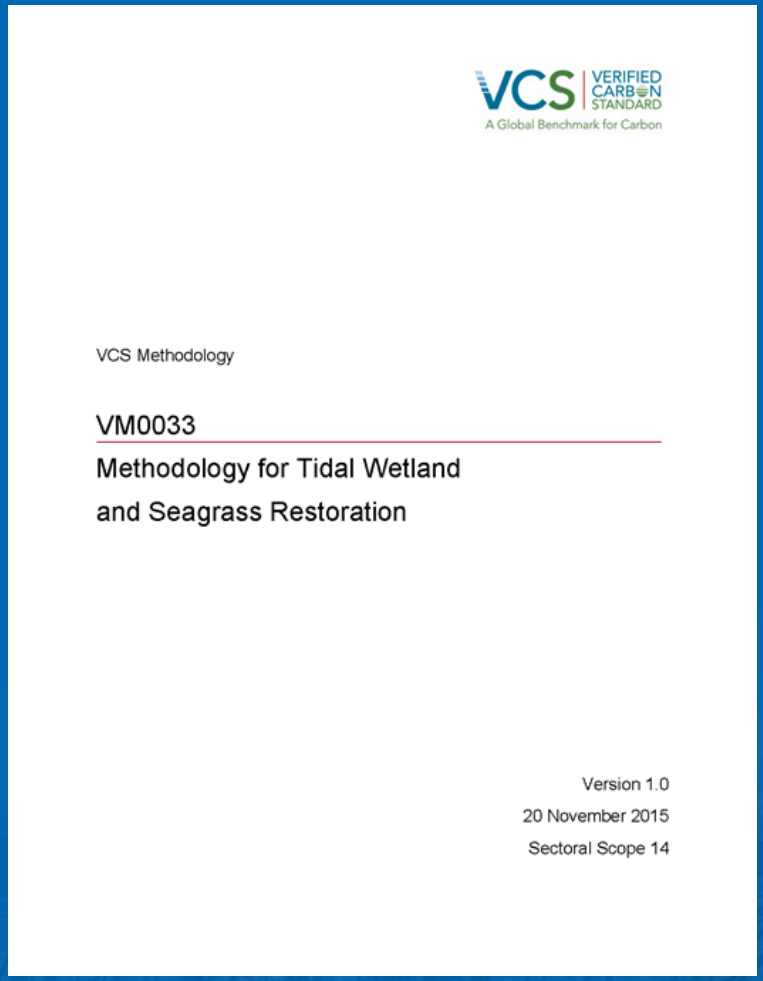
Habitats – all tidal wetlands and seagrasses, globally

Eligible Activities

- Restoration via enhancing, creating and/or managing hydrological conditions, sediment supply, salinity characteristics, water quality and/or native plant communities.

Additionality

- Standardized approach: **In U.S., all voluntary tidal wetland and seagrass restoration is additional!**
- Non-U.S. projects case-by-case


VCS VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

VCS Methodology

VM0033

Methodology for Tidal Wetland and Seagrass Restoration

Version 1.0
20 November 2015
Sectoral Scope 14

Summary of First Project Steps

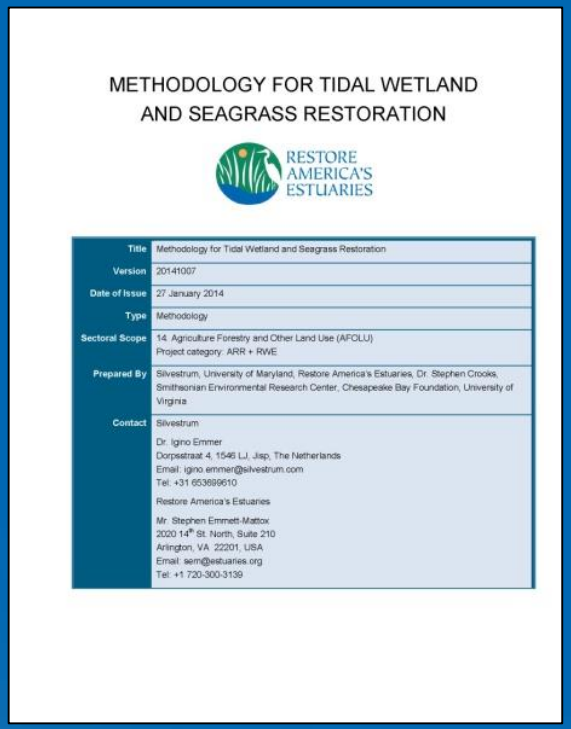
A feasibility assessment to determine a potential blue carbon project's suitability and anticipated GHG benefit.

Technical feasibility – assessment of the best restoration practices, anticipated GHG benefits, available methodologies, land suitability, project boundary, additionality, and permanence.

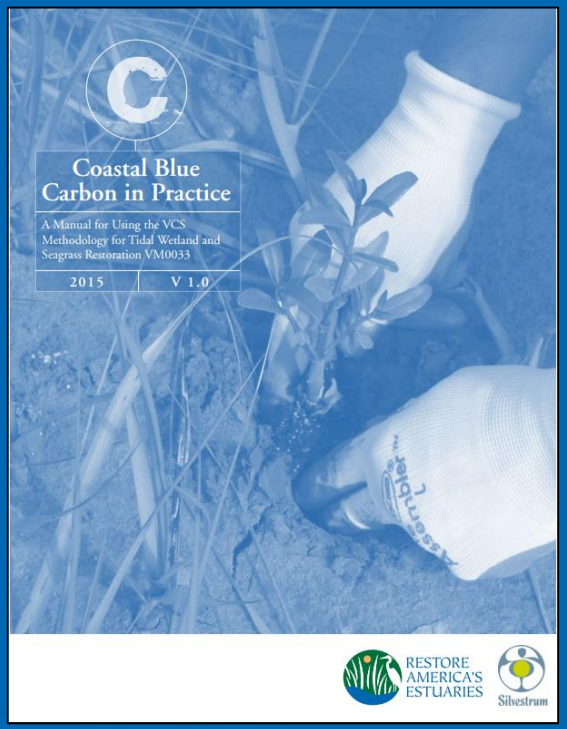
Financial feasibility – estimate of income and expenses, stakeholders, financial flows over project lifetime, , potential for grouping and best practices for structuring carbon finance.

Legal and institutional feasibility –carbon and land rights, taxation issues, relevant regulatory requirements, and transactional structures.

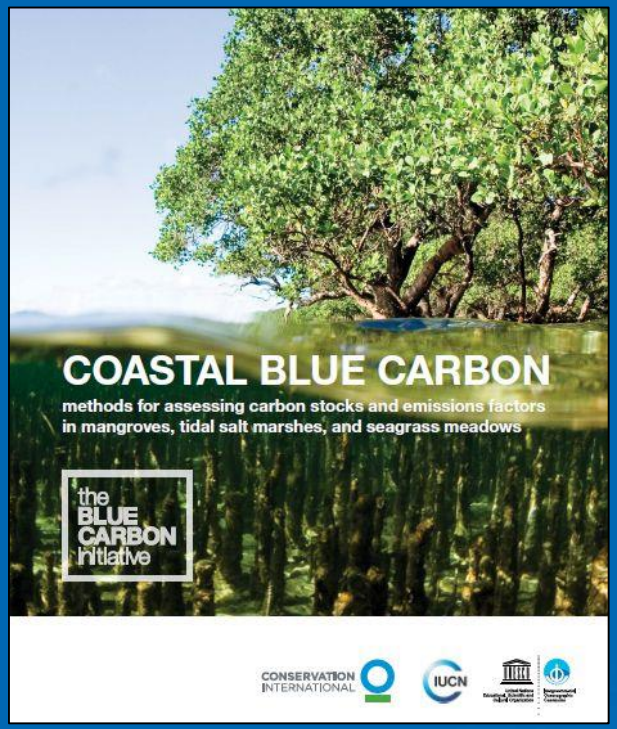
Blue Carbon Toolbox



Restoration Methodology



Project Guidebook



Field Manual

These resources and more at
www.estuaries.org/bluecarbon-resources

Methodology - Demonstration

Herring River Restoration, Cape Cod National Seashore – carbon project feasibility study

- Begins early 2016
- NERRS SC Phase II, NOAA OHC, Friends of Herring River

Blue Carbon Science

Snohomish Estuary, Puget Sound, WA

- Current restoration plans:
  2.55 million tons CO_2
  1-year emissions 500,000 cars

- Full restoration 4700 ha:
  8.9 million tons CO_2
  1-year emission 1.7 million cars

https://www.estuaries.org/bluecarbon-science

Coastal Blue Carbon Assessment for the Snohomish Estuary: The Climate Benefits of Estuary Restoration

Blue Carbon Science

Tampa Bay Assessment

- 74 mil metric tons (160,000 cars/year) by 2100
- Modeled habitat change due to SLR
- Mgmt recommendations:
  - Allow habitat to accrete
  - Conserve upland
  - Prioritize vulnerable areas
  - Maintain water quality

Blue Carbon Science

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Bringing Wetlands to Market

- Quantify GHG emissions and C sequestration in salt marshes
- Understand processes to predict fluxes with change
- Develop user-friendly model for managers and policy makers
- Develop market tools
- *Assess carbon project feasibility for Herring River restoration*

http://www.waquoitbayreserve.org/research-monitoring/salt-marsh-carbon-project/

Blue Carbon Policy

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White House Commitments

- **Develop Estimates of Baseline Carbon Stocks and Trends to Inform Federal Natural Resources Management:** use the best-available information and methods to develop baseline estimates of carbon stocks and trends at local or regionally-appropriate levels for lands and coastal wetlands
- **Assess, Restore, and Protect Coastal Habitats to Understand and Enhance the Storage of Blue Carbon:**
  - National Accounting (NOAA and EPA)
  - Determine the value of protecting coastal habitats to safeguard carbon services (NOAA, FWS, EPA and USGS)

Priority Agenda

Enhancing the Climate Resilience of America's Natural Resources

COUNCIL ON CLIMATE PREPAREDNESS AND RESILIENCE

https://www.whitehouse.gov/sites/default/files/docs/enhancing_climate_resilience_of_americas_natural_resources.pdf

Education and Capacity Building

National Working Group (BCNWG)

- Support network for project development and implementation

Publications, Webinars, Outreach

- Website and resources
- Frequent briefings
- Educational webinar series
- Publications, such as Blue Carbon in Practice Manual

Upcoming webinar **July 7**
Tampa Bay Findings
www.estuaries.org/bluecarbon-events

Education and Capacity Building

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Capacity Building

- Series of workshops in the Gulf Coast supported by EPA, NOAA NERRS, NOAA OHC, USFWS Coastal Program
- Regional working groups
- Technical assistance for project development
- Advanced blue carbon workshop to conclude project (early 2017)

Overall Goal

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Better understand and promote ALL ecosystem services:

- Marine habitat and biodiversity
- Water quality
- Storm and flood protection
- Recreation & Tourism
- Support jobs and economy
- **Climate change mitigation**

Better understanding of these ecosystems to improve management & restoration & increase investment

Thank you!

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www.estuaries.org/bluecarbon