Applying the New Tidal Wetland and Seagrass Restoration Methodology

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www.estuaries.org

Coastal Blue Carbon

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

Recognizing the GHG values of these systems can lead to new incentives for restoration/conservation.

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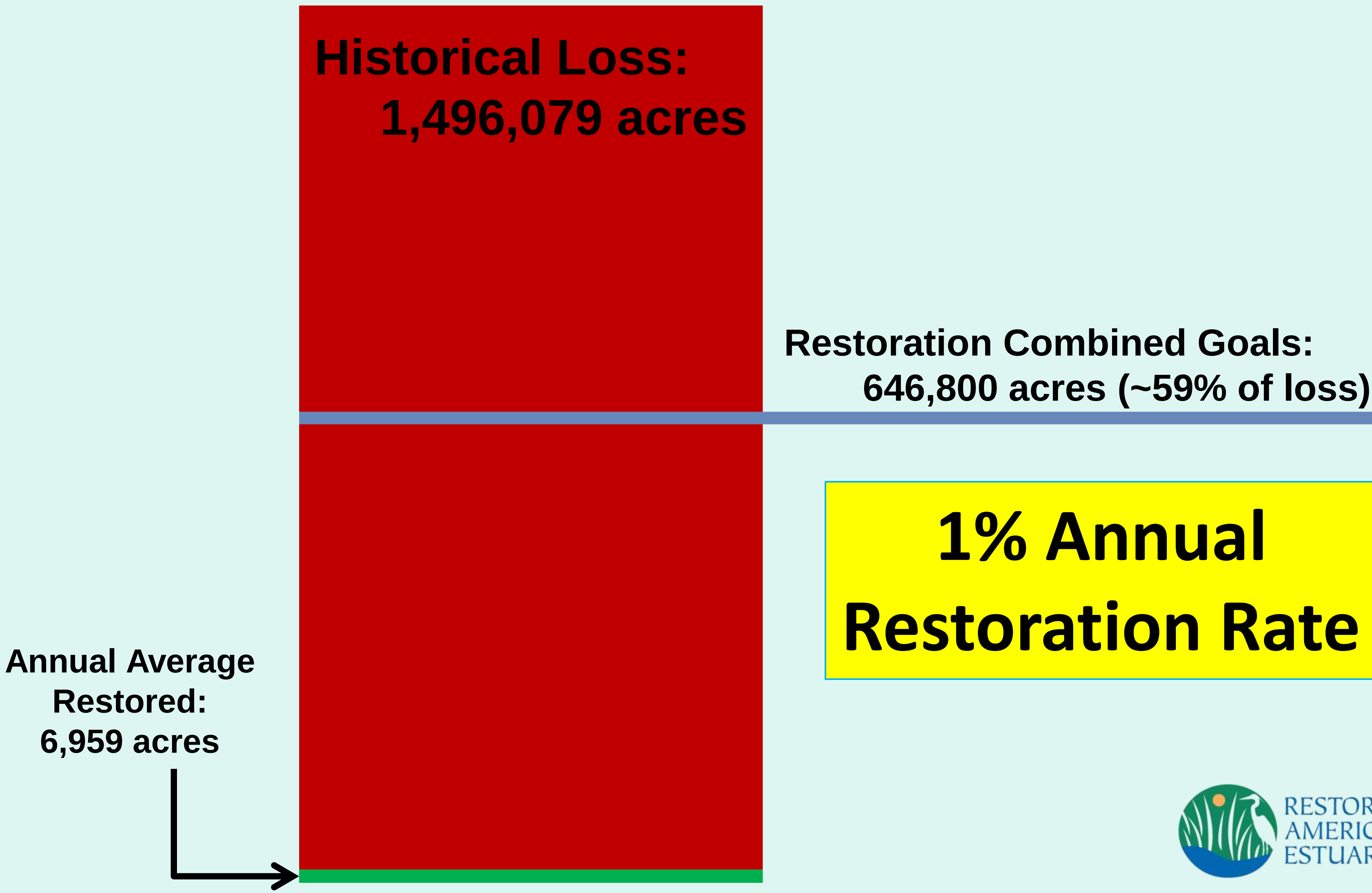
How Much Are We Investing in Restoration?



1% Annual Restoration Rate

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Compliance Markets in the U.S.

- California Global Warming Solutions Act
- Regional Greenhouse Gas Initiative

Voluntary Markets in N. America

- $78 million in N. America-2013
- Anticipated growth of 300% by 2020
- 38% of offsets are from forestry/land use
- Verified Carbon Standard largest issuer, 47%
- To combat climate change and for corporate social responsibility (CSR)

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Standards, Registries, & Methodologies

Standards for project activities

- Guarantee quality and integrity
- General requirements and guidance on GHG accounting
- Procedures for validation and verification

Registries ensure credits are tracked, prevent double-counting

Methodologies provide step-by-step requirements for quantifying GHG benefits following scientific good practice

New for the VCS 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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Activities with Potential Net GHG Benefits

- **<u>Restoration</u>** of tidal wetlands and seagrasses
- **<u>Creation</u>** of tidal wetlands (e.g. beneficial use, lowering water table)
- **<u>Conservation/avoided loss</u>** of existing tidal wetlands and seagrass beds

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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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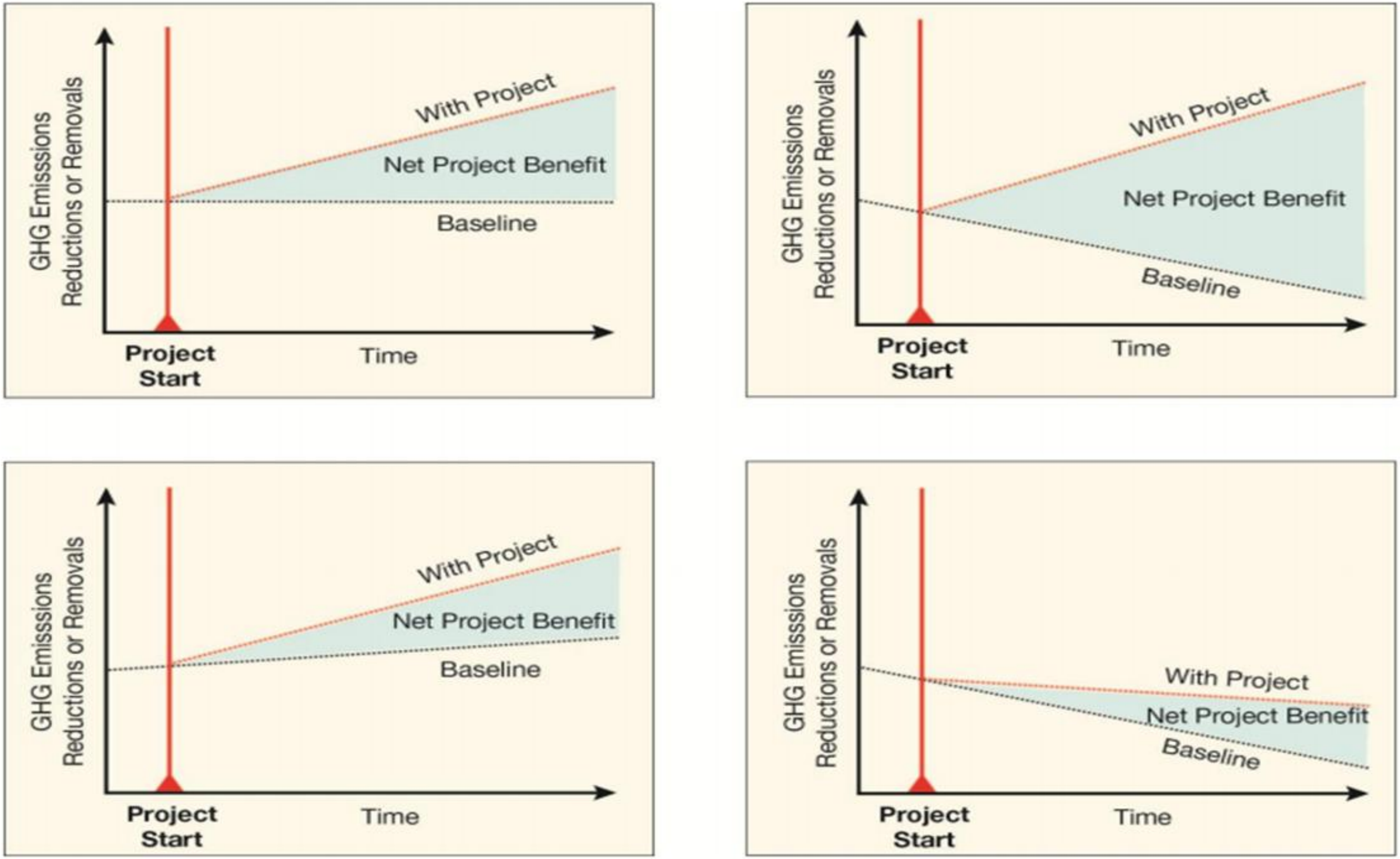
Baseline versus with-project scenario



Source: Forest Trends

Tidal Wetland and Seagrass Restoration Methodology

Habitats – all tidal wetlands and seagrasses, globally

- Marshes, all salinity ranges
- Mangroves
- Seagrasses
- Forested tidal wetlands

Eligible Activities

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

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Tidal Wetland and Seagrass Restoration Methodology

Additionality

- Standardized approach: In U.S., all voluntary tidal wetland restoration is additional (!)
- Seagrass restoration and non-US projects must follow project tool

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Tidal Wetland and Seagrass Restoration Methodology

- Submitted to VCS Dec 2013
- Draft available at www.v-c-s.org
- 1st validation complete, Final Spring2015

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Goals and principles used in developing methodology

- Scientifically credible
- Feasible to implement
- Flexible
- Insufficient science -> onus upon project proponents

Greenhouse gas accounting options

- Published data
- Default values
- Field-collected data
- Proxies
- Validated models

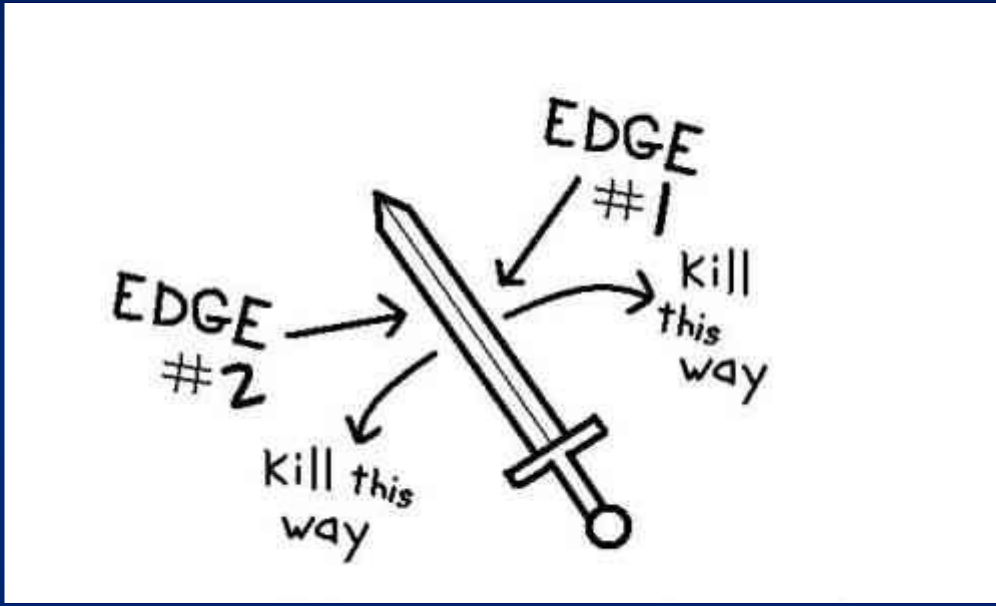
Greenhouse gas accounting: Soil carbon

- Default value:
  - 1.4 Mg C / ha / year for non-seagrass (Chmura et al. 2003)
    - 5.1 tons CO_2eq / ha / year

Greenhouse gas accounting: Allochthonous Carbon

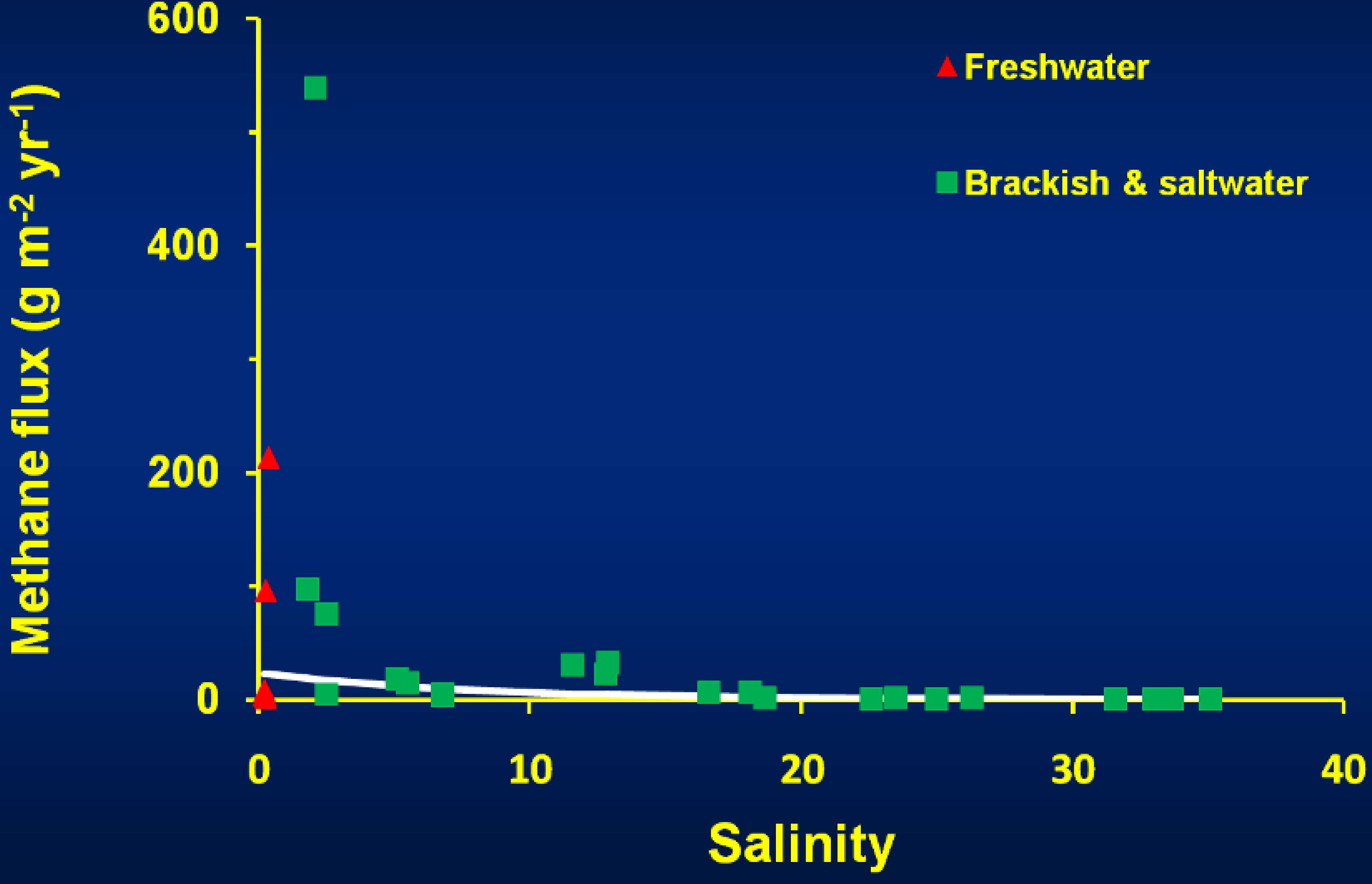
- “Allochthonous” carbon = carbon photosynthesized outside of the project area and deposited into it.
- Should only count if it would have been returned to atmosphere without the project.

Carbon fate following submergence



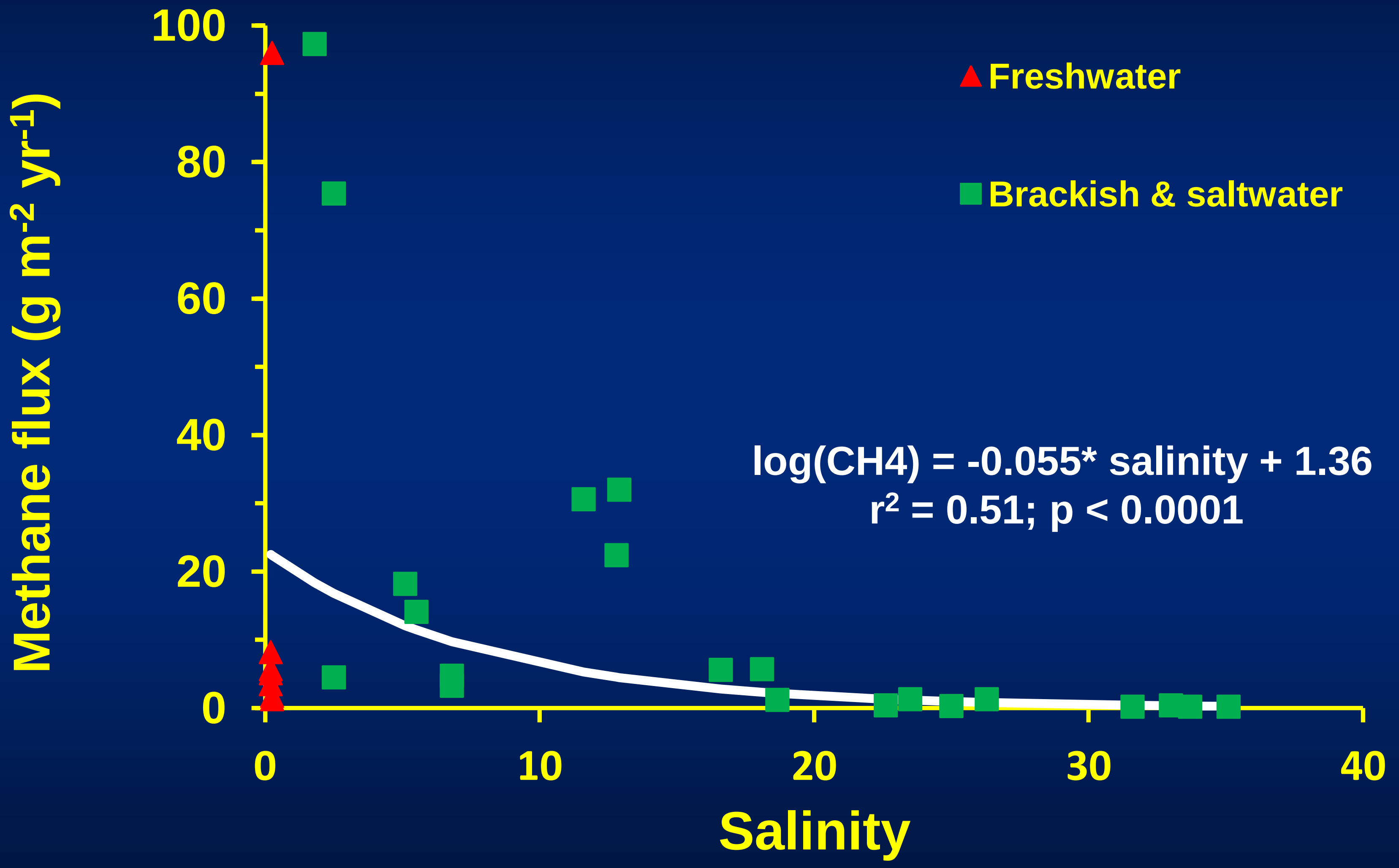
- Carbon not returned to atmosphere, unless you can demonstrate otherwise.

Salinity versus methane flux



Poffenbarger, Needelman & Megonigal, Wetlands, 2011

Salinity versus methane flux



Greenhouse gas accounting: Methane

- Default values
  - Only for salinity > 18 ppt
- Field-collected data
- Published data
- Proxies
- Validated models

Summary

- Highly flexible and universal methodology for tidal wetland systems
- Some remaining challenges:
  - Methane emission estimation in fresh and brackish systems
  - Carbon fate following submergence
  - Additionality outside U.S.

Thank you! Questions?

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www.estuaries.org/bluecarbon