

Bringing Tidal Wetlands into
the Carbon Market – Part I:
*Developing a National Greenhouse Gas
Offset Protocol for Tidal Wetlands
Restoration and Management*



November, 2010

Making the Case for a Tidal Wetlands Protocol

Since 1996, Restore America's Estuaries has been protecting and restoring the lands and waters essential the richness and diversity of coastal life.



Making the Case for a Tidal Wetlands Protocol

The convergence of:

- ✓ net carbon sequestration potential,
- ✓ restoration opportunity and need,
- ✓ market opportunities, and
- ✓ need for climate mitigation and adaptation.

Making the Case

Net Carbon Sequestration Potential

Wetland Type	Carbon Sequestration Potential (tons CO ₂ e/acre/year)	Methane Production Potential (tons CO ₂ e/acre/year)	Net balance
Mudflat (saline)	Low (< 0.74)	Low (< 0.2)	Low C sequestration
Salt Marsh (salinity >20ppt)	High (0.74 – 3.71)	Low (< 0.2)	High C sequestration
Mangrove	High (0.74 – 3.71)	Low – High	Depends on salinity
Brackish Tidal Marsh (salinity <20 ppt)	High (0.74 – 6.68)	High (0.51 – 10.12)	Unclear ^[1]
Freshwater Tidal Marsh (Managed)	Very High (8 - 25)	Very High (5 - 12)	Potential very high C sequestration^[2]
Freshwater Tidal Marsh	Very High (2.02+)	Medium to very high	Unclear – Net GHG emissions uncertain
Estuarine Forest	High (1.49 – 3.71)	Low (< 1.01)	High C sequestration

^[1] Too few studies to draw firm conclusions. CH₄ emissions from brackish wetlands may negate carbon sequestration within soils. Further research required.

^[2] Too few studies to draw firm conclusions. CH₄ emissions from freshwater tidal wetlands may partially or fully negate carbon sequestration within soils.

Making the Case

Opportunity for Restoration



- Between the 1780s and 1980s, conterminous U.S. lost 53% of its historic wetlands (117 million acres)
- California has lost 91% of its historic salt marshes
- Coastal Louisiana has lost 1.3 million acres of wetlands since the 1930s and loses an area the size of a football field every 38 minutes
- Florida has lost 9.3 million acres of wetlands

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Opportunity for Restoration

Limited by Funding

- NOAA Restoration Center
- Estuary Restoration Act of 2000
- San Francisco Bay
- Louisiana



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Restoration Opportunity and Need

Limited by Funding

An offsets protocol will enable new and expanded projects through carbon market funding.



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Market Opportunity

- Wetlands offsets are a new, mostly unrecognized option to help us meet long-term reduction goals
- Cost of restoration ranges from \$2,000 to \$100,000 per acre
- GHG offsets credits can pay for all or a portion of many wetlands restoration projects.



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Co-Benefits Make Wetlands Offsets Attractive for Investors and Private Sector

- Habitat for fish, wildlife, plants and threatened and endangered species
- Ecosystem services (e.g., water quality, flood and storm protection)
- Cultural-socio-economic (e.g., fisheries, recreation, tourism, housing, historic)
- Adaptation to climate change
- Carbon sequestration benefits will continue for centuries

Making the Case for a Wetlands Protocol

A tidal wetlands GHG offset protocol will be attractive to project investors and the restoration community and merits further development.



RESTORE
AMERICA'S
ESTUARIES

Resources

Crooks, S., Emmett-Mattox, S., and Findsen, J. 2010. ***Findings of the National Blue Ribbon Panel on the Development of a Greenhouse Gas Offset Protocol for Tidal Wetlands Restoration and Management: Action Plan to Guide Protocol Development.*** Restore America's Estuaries, Philip Williams & Associates, Ltd., and Science Applications International Corporation. August, 2010.
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Thank you!

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