ACR
AT WINROCK INTERNATIONAL

Restoration of Pocosin Wetlands

BACKGROUND

Pocosin wetlands are unique freshwater ecosystems endemic to eastern regions of Virginia south to the panhandle of Florida (which are also the ancestral homelands of the Lumbee, Waccamaw, Coree, Manú, Tuscarora, and Muscogee Tribes, among many others[1]).

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These wetlands occur in the middle Atlantic Coastal Plain ecoregion[2] and are characterized by annual flooding and drying periods[3]. Peat depth in these systems can exceed several meters, and the overlying vegetation may range from evergreen shrubs (such as *Cyrilla racemiflora*) to pond pine (*Pinus serotina*)[3,4]. Since European settlement in the early 18th century, roughly 60% of the nearly 2.47 million acres of Pocosin wetlands that originally covered the southeastern US have been drained for agriculture, forestry operations, or other development[5].

WHAT IS THE OPPORTUNITY?

Studies indicate that drained Pocosin wetlands are significant sources of carbon dioxide, due to decomposition of peat by microbial communities[5]. Where wetlands remain drained, they emit approximately 8.6 tons of carbon dioxide per acre per year [5,6], almost twice the emissions of the average passenger vehicle[7].

Worldwide, emissions from drained peatlands are responsible for approximately 4% of all anthropogenic greenhouse gas emissions, making wetland restoration a priority for climate action[8]. The process of rewetting Pocosin wetlands restores the function of these ecosystems, turning them from sources of greenhouse gases into net sinks[5]. In a Pocosin system, wetland plants grow and eventually die under naturally acidic and low-oxygen conditions. Flooding in anaerobic conditions promotes the organic material to persist and accumulate rather than being decomposed by microbes and released as carbon dioxide into the atmosphere. This process of a functioning peatland ecosystem forms the basis for restoration projects using the ACR methodology.

HOW CAN CARBON MARKETS HELP UNLOCK OPPORTUNITY?

Carbon projects that focus on the restoration of Pocosin wetlands reestablish the natural cycles of periodic flooding and drying through the removal of drainage ditches and other structures that prevent such conditions. The straightforward act of rewetting (flooding) these systems alters the microbial community, drastically reduces microbial respiration, and eventually restores the Pocosin wetland's function as a sink for greenhouse gases. One analysis of land use across four states in the southeastern US indicates that more than 300,000 acres of drained wetlands could be restored through rewetting, thus reducing emissions by as much as 1.6 million tons of carbon dioxide equivalent per year[5].

ACR's Restoration of Pocosin Wetlands methodology provides a framework to quantify the emission reductions and removals associated with restoring Pocosin sites to their natural conditions. For every verified ton of GHG emission reductions and removals due to the project activity, ACR issues a serialized carbon credit, also known as an Emission Reduction Ton (ERT). ERTs issued to the project can then be bought and sold in the carbon market.

ACR'S METHODOLOGY & CORE PRINCIPLES

Like all of ACR's methodologies, the Pocosins Restoration methodology operates in conjunction with the ACR Standard, which reinforces the integrity of all ACR's project types through the application of ACR's core principles. These include:

Real: Emission reductions or removals have been verified to have occurred (ex-post).

Additional: Emission reductions or removals are beyond what would have occurred in the absence of the project activity and under a business-as-usual (baseline) scenario. Pocosin projects demonstrate additionality by applying the ACR three-pronged test:

1. Project activities must exceed current effective and enforced laws and regulations, and activities must not be required by any law or regulation.
2. Project activities must exceed common practice when compared to similar landowners in the geographic region.
3. Project activities must face a financial or implementation barrier.

Permanent: Emission reductions or removals are permanent, or there are binding measures to mitigate and compensate for reversals.

Net of Leakage: Emission reductions or removals take into account any increase in emissions outside the project boundary due to activities taken by the project. For Pocosin wetland restoration projects, potential leakage is mitigated by Methodology applicability conditions and therefore is not included in stock calculations.

Independently Verified: Emission reductions or removals are validated and verified by a qualified, accredited, and independent third party.

Transparent: The ACR website and registry provide publicly available information on the methodology, the projects, and credits.

BASELINE AND PROJECT DEVELOPMENT

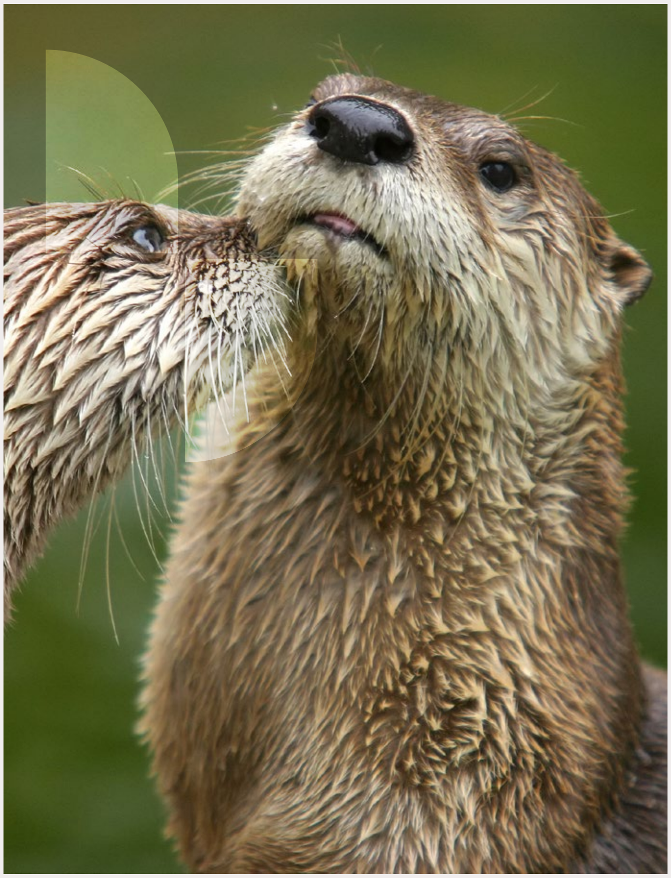
The baseline scenario under the methodology assumes the continuation of a drained wetland state (where the water table is 30 – 60 cm below the surface[5]) and continued emissions from the degradation of peat.

The methodology centers on two different approaches for estimating belowground emissions: (1) a stock change approach which estimates emissions from net surface level change (due to subsidence and root dynamics), and (2) a flux approach which models emissions as a function of one or more proxy variables (e.g., soil moisture, temperature, etc.) that are demonstrated to be significantly correlated with belowground emissions, as demonstrated by Richardson, et al (2022, 2023)[5,9].

Monitoring is conducted in the project area, as well as in a valid baseline site that matches conditions expected in the project area in the absence of the project activity (i.e., rewetting). Carbon credits are issued based on the difference in accrued carbon between the project and baseline scenarios.

Either net surface elevation change (stock change approach) or one or more proxy variables (flux approach) are monitored to estimate emissions from belowground. Trees and woody shrubs are monitored on permanent sample plots to assess and account for any detected differences in stock change due to differential growth, recruitment, or mortality between the project area and the baseline site. With the stock change approach, peat accretion is monitored via net surface elevation change (a proxy measurement for peat accumulation). Peat accretion is not monitored with the flux approach.

Crediting is a function of the difference between project scenario (rewetting) and baseline (drained) carbon stocks.



ADDITIONAL BENEFITS

Rewetting previously drained Pocosin wetlands offers both climate and other benefits, such as improved water quality, restored wildlife habitat and flood mitigation. ACR utilizes the United Nations Sustainable Development Goals (SDGs) as a metric for tracking a project's SDG Contributions. Tracking SDGs is one of several project requirements outlined in the GHG Project Plan – an overarching document that ensures adherence to the ACR standard and methodology.

Some of the benefits from Pocosin projects, as defined by the SDGs, include:

- **GOAL 6:** Clean Water and Sanitation
- **GOAL 13:** Climate Action
- **GOAL 15:** Life on Land

SOURCES

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Contact ACR

For more information or questions on ACR carbon projects, please contact the ACR forestry team at **ACR@winrock.org**