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THE IMPORTANCE OF CARBON SEQUESTRATION

Slowing and reversing the effects of climate change is not an easy task but can be greatly offset by encouraging **carbon sequestration**.

Carbon sequestration is a natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form.¹

- Carbon is naturally sequestered through plants which absorb carbon dioxide (CO₂) from the air and use it to make food and grow, storing carbon as cellulose and other organic compounds within the plant and the soil.

Wetland plants and soils, especially organic soils, play a significant role in sequestering carbon worldwide and in the United States.² The low oxygen content in saturated wetland soils limits the conversion of cellulose (organic carbon) back to carbon dioxide.

- Within wetlands, carbon is sequestered quickly when organic matter becomes buried in mud, and slowly over thousands of years as buried plant tissues accumulate to form deep peat soils.³
- Through these processes, carbon can be stored for hundreds, thousands and even millions of years if left undisturbed.

Carbon sequestration in wetlands can vary quite a bit from one wetland to another, but overall,

wetlands play a huge role globally in preventing carbon from entering the atmosphere. Some examples:

- **Coastal wetlands** trap a great deal of suspended sediments including carbon-rich materials relatively quickly, which build up over time and result in greater amounts of carbon being stored rather than released.
- **Freshwater inland wetlands, especially peatlands**, can hold nearly ten times more carbon per acre than tidal coastal wetlands due to their woody biomass and deep organic soils.⁴
- **Peatlands** are a significant feature of the landscape in the Carolinas. The Santee Coastal Reserve Wildlife Management Area (South Carolina), the Green Swamp (North Carolina), and Pocosin Lakes National Wildlife Refuge (North Carolina) are all examples of large peatlands in the Carolinas.



When wetlands are drained or filled for agricultural use or development, the loss means not only the loss of that carbon sink, but also that the carbon stored in that wetland will be released into the atmosphere.

- Therefore, the carbon sequestration process can be quickly undone with improper land management.

Protecting and restoring wetlands, however, will help to avoid releases of sequestered carbon into the atmosphere.

- The true value of wetlands comes from the **massive amounts of carbon they have accumulated** over thousands of years, making them considerable carbon sinks.⁵

By restoring drained wetlands (e.g., through ditch plugging) and protecting intact wetlands from development, Carolinians can make a significant contribution in the carbon sequestration process, offsetting the impacts of climate change.

Photo Courtesy of ncwetlands.org

References

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