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FUTURE WETLAND LOSS IN LOUISIANA THREATENS THE CARBON SEQUESTRATION POTENTIAL OF THE COASTAL HABITATS

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Study Description

As Louisiana, USA, implements its climate action plan and the restoration and risk reduction projects outlined in its Coastal Master Plan, it is critical to consider potential greenhouse gas (GHG) net sinks or sources of coastal habitats over time. This study estimated the potential climate mitigation role of coastal habitats from 2005 to 2050 to align with the Governor of Louisiana's GHG reduction targets. The coastal area was projected to remain a net GHG sink until 2050, when model-projected wetland loss caused the coastal area to be a net GHG source with or without Coastal Master Plan implementation.

Baustian, M. M., and B. Liu. 2023. Future Wetland Loss in Louisiana Threatens the Carbon Sequestration Potential of the Coastal Habitats. Bull Ecol Soc Am 104(3):e02072. https://doi.org/10.1002/bes2.2072



Photo 1. Scientists collecting aboveground biomass in a saline wetland (light green is smooth cordgrass, *Spartina alterniflora* and dark green are black mangroves, *Avicennia germinans*) located in coastal Louisiana. Aboveground net primary productivity, soil carbon accumulation rates, and greenhouse gas emissions can be used to estimate the net ecosystem carbon balance of coastal habitats like this saline wetland. Our estimates suggest that existing saline wetland habitats are a net sink of greenhouse gases. Photo credit: The Water Institute of the Gulf.



Photo 2. Saline wetland habitat (dominated by black mangroves, *Avicennia germinans*) and saline open water habitat in coastal area of Louisiana. The 2017 Coastal Master Plan model output projects that at year 2050, the highest area of habitat will be the saline open water. Photo credit: The Water Institute of the Gulf.



Photo 3. Fresh forested wetlands (dominated by cypress trees, *Taxodium distichum*) are commonly observed in the Atchafalaya Basin in the Louisiana coast area. Our net ecosystem carbon balance estimates suggest that existing fresh forested wetland habitats are a net sink of greenhouse gases. Photo credit: The Water Institute of the Gulf.

These photographs illustrate the article "Climate Change Mitigation Potential of Louisiana's Coastal Area: Current Estimates and Future Projections" by Baustian, Melissa M, Bingqing Liu, Leland Moss, Alyssa Dausman, and James W. Pahl published in *Ecological Applications*. https://doi.org/10.1002/eap.2847