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Evaluating the Impacts of Seagrass Restoration on Ecosystem Carbon Sequestration[1] HAILEY GILMAN, Randolph College Department of Physics and Engineering — Coastal ecosystems capture carbon from the environment, mitigating the climate effects of human carbon emissions. Seagrass contributes to this *blue carbon budget,* storing carbon within healthy meadow beds through a number of natural processes. However, much of the carbon stored within seagrass beds comes from beyond the beds and there is little information evaluating the impact of seagrass on carbon storage in adjacent sediments at a bay-wide scale. This study quantifies the relationship between carbon stored within sediments adjacent to restored seagrass beds at the Virginia Coast Reserve along the Eastern Shore by evaluating data collected before and after restoration. Sediment samples were taken at 27 locations within Hog Island Bay, a shallow coastal lagoon, before (2003-2004) and after (2020) seagrass restoration. Samples were analyzed for percent fine sediment using wet sieving and percent organic matter by loss on ignition. The change in these parameters for each sampling location was calculated and the distance from the nearest restored seagrass bed was determined using ArcMap Pro and Excel 2016. Many of the sediment samples beyond 1300m from restored seagrass showed a net decrease in carbon storage, indicating that some carbon may be relocated from other parts of the ecosystem, not a true enhancement of carbon storage. This relationship seems driven by linear distance to restored seagrass sites (R2=0.21, p=0.2), unaffected by percent fine sediment, water residence time, and sample site depth.

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