

ASSESSING THE EFFECTS OF FLORIDA MANATEES AND HUMANS ON NUTRIENT UPTAKE RATES IN KINGS BAY, FL

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Animals can play key roles in nutrient cycling in aquatic ecosystems via excretion and egestion of nutrients, sequestering limiting nutrients, foraging activities, and bioturbation of sediments. Florida manatees are an example of an animal with the potential to have large effects on nutrient cycling. Despite significant efforts to learn about and protect manatees and their critical habitat, we know little about how manatees affect and interact with the ecosystems they inhabit, especially in wintering locations where they aggregate in high abundances while seeking thermal refuge. To better understand manatee effects on nutrient cycling, we assessed the effects of Florida manatees and humans on nutrient uptake at Hunters and Three Sisters Springs in Kings Bay, FL during October, January, and April. Manatee abundances at Hunters Springs are low during the winter when manatees migrate into Kings Bay, but manatees aggregate in high abundances at Three Sisters Springs. Manatees are largely absent from Kings Bay by March, but human presence is high throughout Kings Bay during spring. We found three overall patterns: (1) Nutrient uptake rates (NO_3^- , NH_4^+ , PO_4^{3-}) were generally highest in October, when human presence was low and manatees were absent; (2) At both sites, uptake rates were similar between January and April; (3) Uptake rates of all nutrients and periphyton biomass decreased between October and January at Hunters Springs despite our expectation that uptake rates would be similar due to stable conditions in springs. Results suggest that manatees may have large effects on nutrient uptake across all of Kings Bay despite their highly localized abundances. This pattern is potentially driven by the hydrology of Kings Bay and tidal influences.

PRESENTER BIO: Adam Siders is a PhD student in the Soil and Water Science Department studying the effects of manatees on freshwater food webs and nutrient cycling.