Title: Hydrologic restoration of a shallow oligotrophic marl wetland. What is the soil telling us?

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Abstract

Restoration of the Florida Everglades has been occurring for the better part of three decades. Alteration of ecosystem hydrology and anthropogenic pressures upstream have resulted in the degradation of water quality within the Everglades ecosystem which in turn compromises the systems ecology. High nutrient waters from agriculture and development coupled with variation in water management practices from 1960-2000 resulted in variable phosphorus (P) loading into Taylor Slough (TS) in Everglades National Park. This loading and hydrologic manipulation has contributed to the enrichment soils in this ultra-oligotrophic wetland allowing the proliferation of *Typha domingensis* (cattail). This study aims to assess P enrichment and cattail proliferation temporally after the onset of restoration efforts by evaluating soil biogeochemical properties and species composition within TS. A total of three soil sampling events were conducted in 2007, 2012 and 2018 to assess soil nutrient concentrations. Soil enrichment of P decreased in the main channel of TS with marl/mineral soil accretion contributing to a reduction in soil nutrient concentrations. A decline in soil P concentrations in the main channel lead to a plateau in cattail presence over a ~10-year period. However, analysis of vegetative communities displays species shifts between dominant communities and declining species richness. With soil P decreasing at a rate faster than previously thought, this study could indicate that restoration efforts are effectively decreasing soil P enrichment within a 10-year period.