

Landscape change in the Biscayne Bay area from the mid-1800s to the present



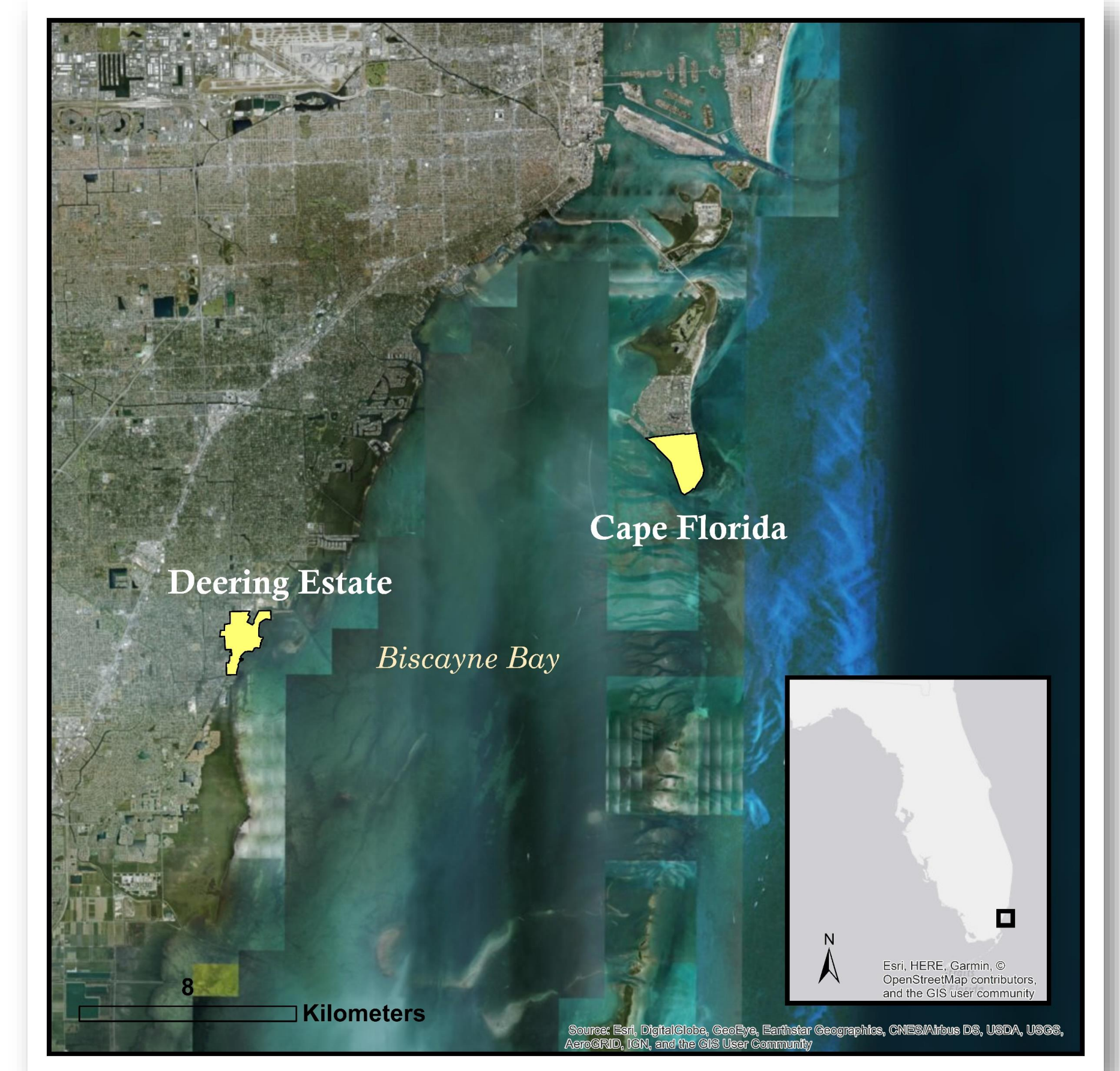
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A proposal to investigate a century and a half of environmental change

In this study, I will assess landscape change in the Biscayne Bay area from the mid-1800s to the present, with a focus on the period from 1847 to 1928. This period is significant because it spans drainage of the transverse glades and intense settlement with modification of upland habitats, such as pine rockland and rockland hammock. The specific dates chosen, 1847 and 1928, represent the dates of US Government

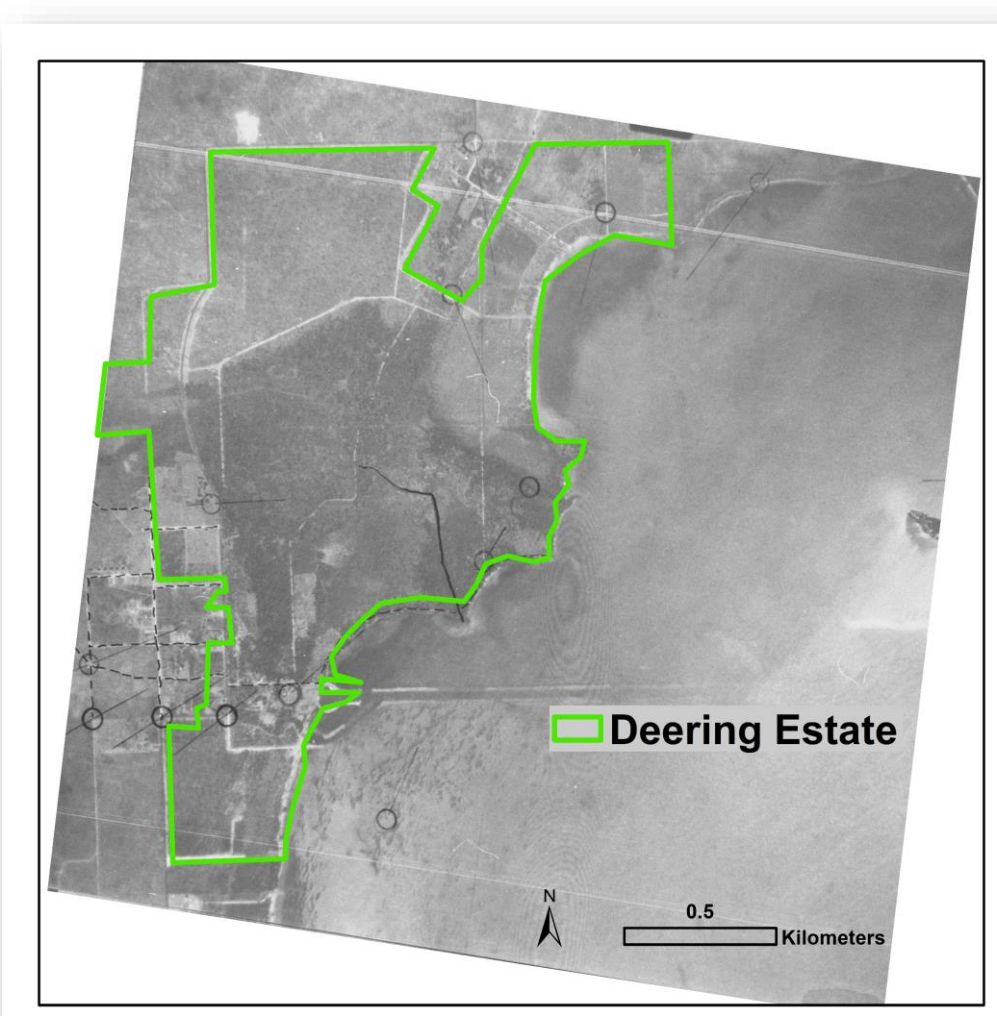
surveys and an early set of aerial photographs, respectively. Public land survey maps, surveyor's notes, and aerial photos will be my primary data sources, but I will also make use of archival materials, including historic photographs and written communications regarding land uses and historic landscape states in the Biscayne Bay area.



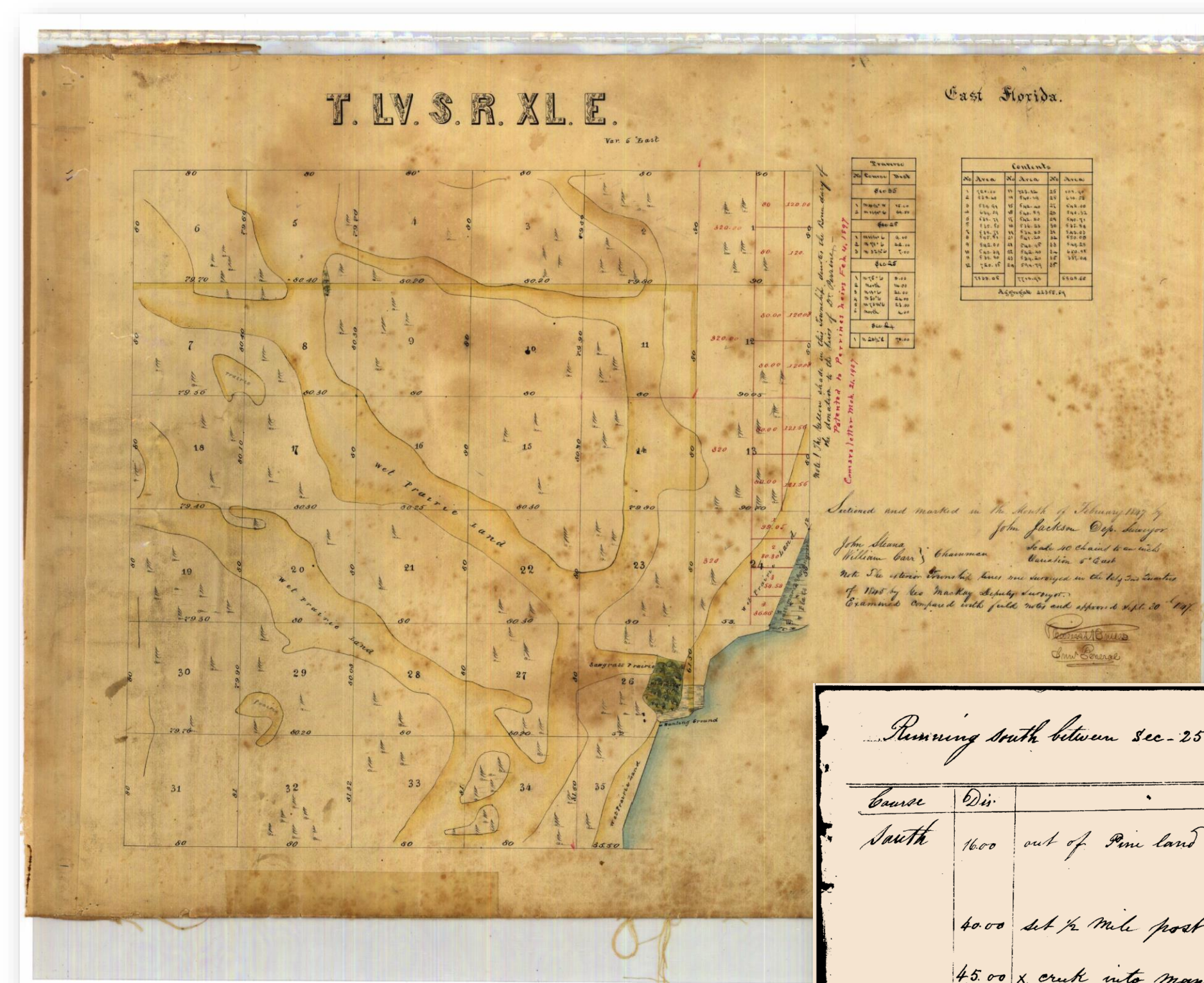
Location of study sites in relation to Biscayne Bay

Government surveys and aerial photos for reconstructing past ecosystems

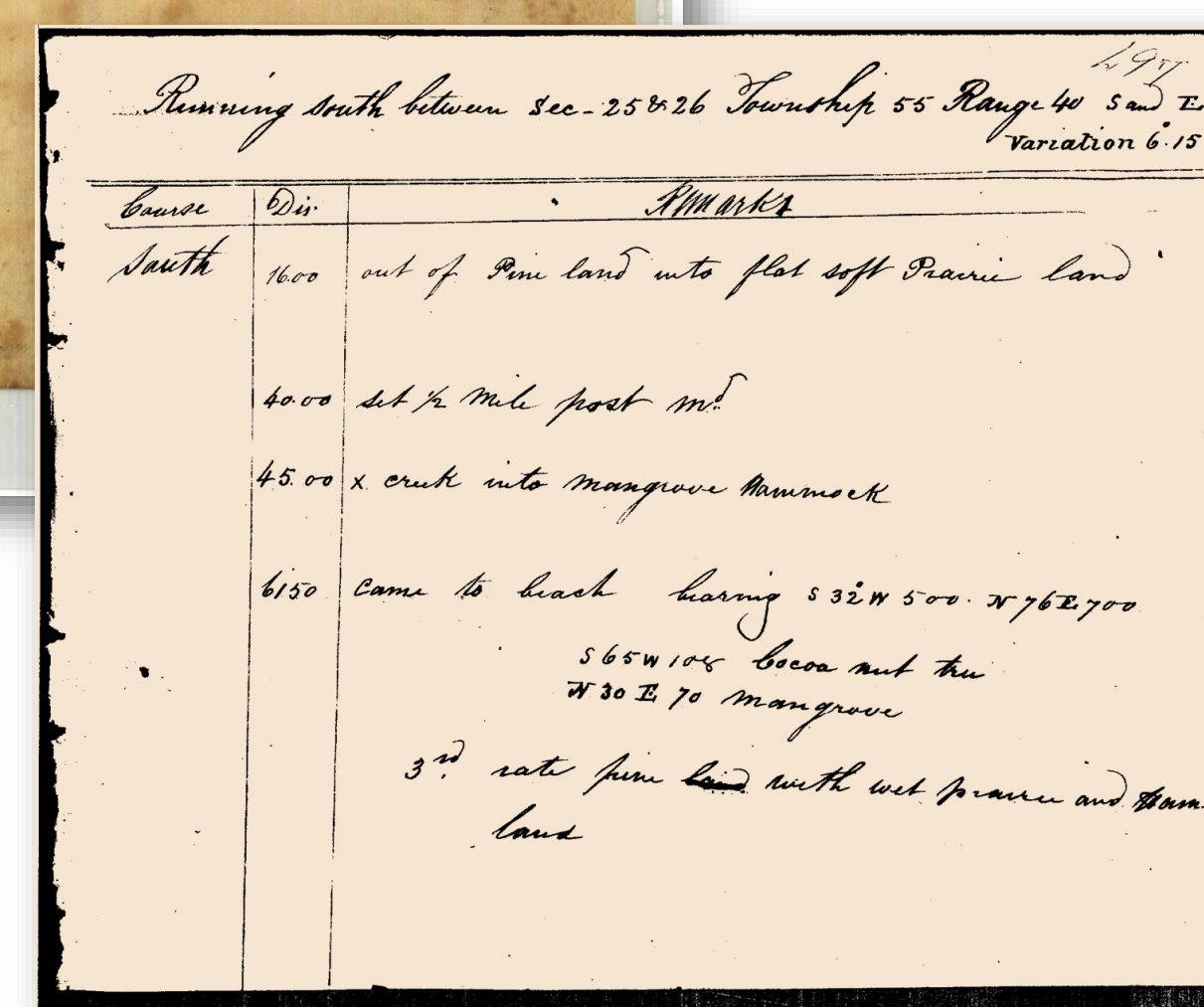
- Digitization of survey maps and analysis of surveyor's notes to determine 1847 vegetation boundaries
- Vegetation classification of 1928 aerial photographs, with analysis of historic photos or archival materials as methods for ground truthing.



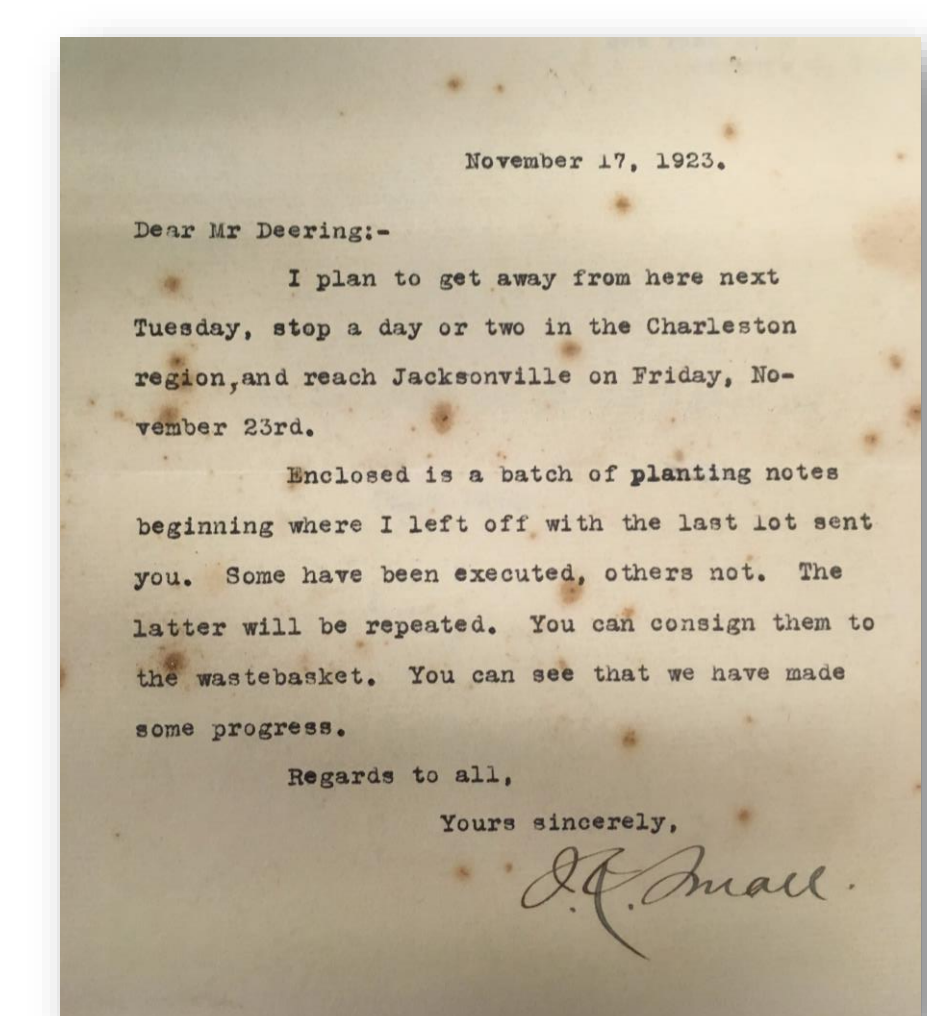
1928 aerial photograph of the Deering Estate. Photograph from <http://maps.fiu.edu/sfchap>



1847 survey map of Township 55 Range 40, includes the Deering Estate and surrounding areas. Source: labins.org



Surveyor's notes taken while heading south between Section 25&26 of Township 55 Range 40 in what is now the Deering Estate. Source: labins.org



Letter from John Kunkel Small to Charles Deering regarding planting at the Deering Estate. Source: the archives at History Miami

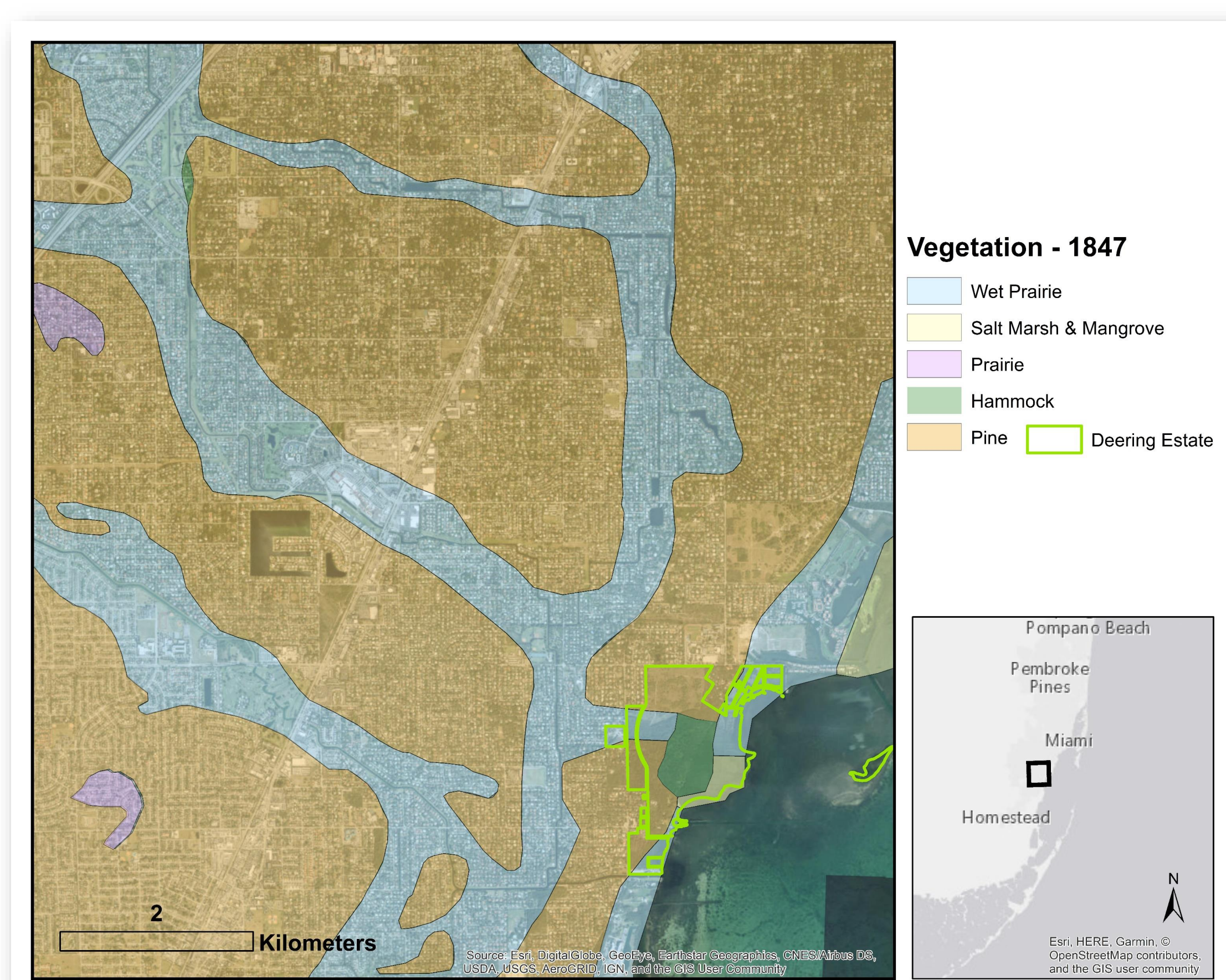
Historic drivers of change at the Deering Estate and Cape Florida

- Archival research to describe land uses and management actions relevant to ecosystem patterns at Deering Estate and Cape Florida
- Examples of relevant archival materials include historic letters describing land management activities at the Deering Estate

Expected results

This project will provide estimates of early landscape change in the Biscayne Bay area. I expect results to include a steep reduction in the extent of pine rockland, rockland hammock, and short hydroperiod wetlands between 1847 and 1928, with smaller decreases in long hydroperiod wetlands. Upland areas occupied by pine and hardwood forests were targeted by early settlers for settlement and short hydroperiod wetlands were targeted for agriculture, making it likely that these

vegetation types experienced high rates of conversion in the period of early settlement and urbanization. I expect higher conversion of long hydroperiod wetlands in the period from 1928 to the present, reflecting the progression of urbanization into lower elevation wetlands. The results of this project will provide valuable information on historical baselines for restoration projects and advance understanding of the environmental history of the Biscayne Bay area.



1847 vegetation boundaries for the Deering Estate and surrounding area