

A Retrospective Study of Salt Marsh Response to Historical Anthropogenic Modifications at Seatuck and Wertheim National Wildlife Refuges

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The fact that salt marshes accrete, up to several millimeters a year, in order to keep pace with sea-level rise, essentially allows the environmental history of each system to be preserved. This project is a comparative historical analysis of two salt marshes, located on the South Shore of Long Island. The first part of this project was designed to characterize each marsh system, by laying out several transects and taking peat auger cores every 3 meters which were then photographed using high resolution digital photography. This preliminary assessment method allows us to quickly identify areas of interest and/or representative marsh environments to take larger cores for analysis. Using sediment cores taken from each marsh, the second part of this project examined several parameters in order to understand how the functioning of the systems changed over the past one hundred years, either as a result of natural environmental conditions or anthropogenic modifications. The parameters considered include plant root and rhizome identification, dry organic content, water content, radioisotope dating using ^{210}Pb and ^{137}Cs , and grain size distribution. The hypothesis of this study is that environmental changes recorded in marsh peat deposits of Wertheim and Seatuck National Wildlife Refuges are a consequence of historical grid-ditching activities and, in Seatuck, more recent OMWM-style ditch plugging modifications. By understanding the history of these two marshes, interested parties will be better informed as to how physical alterations made to salt marshes affect their functioning, and thus more knowledgeable decisions can be made when considering future management practices.