

Everglades project - Nutrient Cycling WQ in Everglades Tree Islands

Mandate:

The Everglades Forever Act (EFA), Comprehensive Everglades Restoration Plan (CERP) and Minimum Flows & Levels (MFLs)

Management Issue:

The EFA and CERP require the establishment of ecological and hydrological needs of the Everglades. The health of tree islands is considered to be one of the best indicators of the overall health of the Everglades ecosystem. While hydrologic conditions are likely the primary factor influencing tree island health and sustainability, nutrient dynamics are an integral component of tree island ecology.

Project Overview:

It is hypothesized that tree islands developed their unique shape as a result of nutrient mobility. This project will provide information on the spatial and seasonal changes in soil and water nutrient concentrations and ascertain the relative importance of water quality and water levels in tree island health and development. At present, there is limited information on tree island development and nutrient requirements to support healthy tree islands. The spatial distribution of soil nutrients will be assessed by collecting soil cores along transects across the head, near tail and tail. Soil cores will be collected and the nutrient content of several depth layers will be analyzed. The sites will be resampled at five-year intervals to assess any nutrient changes that may occur in response to hydrologic modifications. Labile soil nutrients will be determined by the quarterly collection of porewater from polyvinyl chloride (PVC) wells installed at three sites on each island. External loading of nutrients and internal nutrient recycling will be examined by measuring surface water quality during wet and dry seasons.

Project Objective:

Establish the soil and water quality characteristics of two intensively studied tree islands in WCA 3.

Application of Results:

Information from this project will be used to assess the relationship between the ecological status of tree islands and hydrologic and water quality conditions. Data will also be used to establish guidelines for tree island restoration.