

Everglades project - Seagrass Model

Mandate:

Minimum Flows and Levels rules development: For determination of minimum amount of freshwater flow required to Florida Bay to avert significant harm to seagrasses.

- Comprehensive Everglades Restoration Plan (CERP) ~ Florida Bay and Keys Feasibility Study: To determine feasibility project design elements and operational parameters to improve Florida Bay seagrass community and habitat quality.

Management Issue:

The seagrass *Thalassia testudinum*, or turtlegrass, has been determined to be a keystone species in the Florida Bay ecosystem, that is, a species upon which many other species in the ecosystem depend for survival. Seagrasses of various kinds have inhabited Florida Bay for centuries and provide food and shelter for juvenile and adult fish and other free-swimming aquatic animals, clean the water of excess nutrients, maintain sediment stability, and sweep sediments from the water column, thus increasing transparency. In recent years, the seagrass community has been declining, and in some cases dying off, possibly due to anthropogenic and water management effects.

Project Overview:

This project is designed to gather existing and new data into a dynamic simulation model framework, which will enable hypothesis and scenario testing for management of Florida Bay. The model will be used to develop management alternatives for improving the Florida Bay seagrass community.

Project Objective:

- to gather and organize existing quantitative data from diverse sources on seagrass ecology in Florida Bay
- to guide existing research efforts on Florida Bay ecology based on information gaps revealed by the model
- to develop a working model of Florida Bay seagrass, sediment and water column nutrient dynamics, and effects of freshwater inputs
- to generate and test predictive scenarios of system behavior based on alternative management scenarios
- to use the model to make recommendations for water management to optimize seagrass habitat

Application of Results:

This project is in preliminary phases, but has produced a database of information on seagrass ecology and related information. The model is working and calibrated for Little Madeira Bay and for Rankin Lake sectors of Florida Bay, and is undergoing expansion into additional areas. The model is a unit, i.e. a spatially averaged model for each sector, producing seagrass response to salinity, temperature and nutrient conditions in each sector. During 2002, the model will be merged with a GIS database to generate spatially explicit prediction of seagrass status throughout the Bay.