LAKE OKEECHOBEE PERIPHYTON BIOMASS AND NUTRIENT ASSESSMENT PROJECT

Mandate:

Comprehensive Everglades Restoration Plan (CERP),
Lake Okeechobee Watershed Protection Program (LOWPP)

Background:

This project involves periphyton - algae growing on plants, sediments or other submerged surfaces in the lake. Periphyton is an important food resource for invertebrates and fish. When abundant, periphyton removes nutrients from the lake water, thereby reducing the risk of nuisance blooms of planktonic algae. Under highly enriched conditions, periphyton may reach very high densities and reduce the amount of light available to the plants upon which they are growing. Therefore, quantitative data on periphyton is a key part of lake and wetland restoration evaluations. Periphyton performance measures are included in both the Comprehensive Everglades Restoration Program (CERP) and the Lake Okeechobee Watershed Protection Plan (LOWPP) monitoring and assessment plans.

Project Overview:

Periphyton has been monitored on a quarterly basis at seven locations along the north, south and west shoreline of Lake Okeechobee since 2002. Samples have been collected from dominant submerged and emergent plant species and from the sediment surface and analyzed to document trends in biomass, community composition, and nutrient content. Periphyton biomass was highest during the summer seasons between 2002 - 2004 and has been sparse or undetectably low at most locations since the disappearance of submerged plants and persistent turbid water conditions brought about by Hurricanes Frances, Jeanne and Wilma in 2004 and 2005. The taxonomic structure of Lake Okeechobee periphyton communities is strongly influenced by substrate type and season, but in all cases is dominated by nutrient-tolerant diatom taxa. At peak biomass measured during this project, periphyton may be able to temporarily store significant quantities of phosphorus.

Application of the Results:

The monitoring results are being analyzed to determine the potential importance of periphyton as a food source (from biomass and dominant species composition) and as a sink for nutrients. Long-term periphyton monitoring data will provide a more comprehensive and recent baseline to gauge improvement in water quality due to CERP and other lake and watershed restoration projects.