

Everglades project - Phosphorus Threshold Research

Mandate: The Settlement Agreement and the Everglades Forever Act (EFA) require research and monitoring to establish a numeric criterion for surface-water phosphorus (P) in the Everglades. Specifically, a standard will be set that causes no "imbalance in the natural populations of aquatic flora or fauna."

Management Issue:

The Settlement Agreement and the EFA require the evaluation of the ecological and hydrological needs of the Everglades Protection Area. The quantification of ecological responses to P enrichment along nutrient gradients and in controlled P dosing studies are being used to establish a P criterion that is judged to be protective of different areas of the Everglades and, therefore, meet the requirements of the EFA.

Project Overview:

The effects of human-induced P enrichment are most evident in the northern Everglades. An extensive peer-reviewed research and monitoring program has been under way in WCA 2A since 1994 and in the LNWR since 1996. In 1999, similar studies were initiated in WCA 3A and Taylor slough (Everglades National Park) to assess whether the southern Everglades would have similar sensitivity to P enrichment and determine whether marl-based wetlands would respond differently than peat-based wetlands.

In all regions, ecological responses to P enrichment are being measured along existing nutrient gradients and in controlled P enrichment studies. Responses along nutrient gradients provide information on the long-term effects of P on the Everglades. Due to differences in other nutrients and changes in hydrology along these gradients, additional controlled P dosing were conducted to provide a causal basis for assigning impacts. Phosphorus additions were applied to a number of 5- and 6-foot diameter dosing chambers in all major regions of the Everglades. Dosing chambers enable researchers to isolate the effects of individual factors, in this case phosphorus loads, on Everglades structure and function. These chambers and experimental controls enclose representative sections of Everglades wetland and are injected with various rates of phosphorus loading on a weekly basis.

Project Objective:

Assess ecological responses to P enrichment throughout the Everglades Protection Area and provide data to support the establishment of a P criterion for the Everglades.

Application of Results:

Data from this project are presently being used by the Florida Department of Environmental Protection to establish a scientifically defensible P criterion for the Everglades.