

Abstract

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Speaker: Evelyn Gaiser

Expecting the Unexpected: Pandora's Box of Paradox in an "Upside Down" Estuary.

South Florida's "River of Grass" is often characterized by its differences from other wetlands, and the threat to this uniqueness posed by continued ecosystem degradation is a basis for urgency of Everglades restoration. Studies that contrast the Everglades with other types of wetlands enable the distinctive features of the Everglades landscape to be viewed not as outliers, but as a means for testing general ecological theories along broad ecological gradients. Many of the distinctive features of the Everglades result from the shallow-sloping, ancient limestone platform on which it is formed, which is not unique to South Florida, but prevalent throughout Caribbean coastlines. This carbonate platform creates an "upside down" gradient, where the limiting nutrient (in this case, phosphorus) is supplied by the ocean and groundwater, rather than by the estuary, as in most coastal settings. Adsorption of phosphorus to the calcium carbonate substratum causes extreme oligotrophy in upstream freshwater wetlands. However, productivity estimates are higher than ambient water column phosphorus concentrations would be expected to support. Unraveling this apparent "paradox of production" has been the focus of studies in the Florida Coastal Everglades Long Term Ecological Research (FCE-LTER) program. This presentation highlights results from 10 years of FCE-LTER science pertinent to this question, and also places the Everglades in the context of other Caribbean wetlands with surprisingly similar features.