The CERP Monitoring and Assessment Plan and the Trophic Hypothesis: a broader and deeper scientific foundation for restoration

Part I: Dale E. Gawlik
Part II (3:30): Joel C. Trexler
Directed at hypothesis clusters rather than regional Conceptual Ecological Models

Greater Everglades Module hypothesis cluster

- Wading Bird Nesting in the Mainland and Coastal Everglades in Relation to the Aquatic Fauna Forage Base Hypothesis Cluster
  - i.e. “Trophic Hypothesis”
Robertson 1965

“The water spreads across miles of marsh, and food chains of fresh-water organisms flourish in the warm shallows. The summer flood poured into brackish coastal bays feeds nutrients into other cycles. As the water recedes with the onset of the dry season, aquatic life is forced into an ever-diminishing volume of water. At various points of optimum food concentration, the summer’s production of lesser creatures is translated into an increase of alligators, otters, egrets, ibis, anhingas, limpkins, all the rest.”

Kahl 1967
Higer and Kolipinski 1967
Kushlan et al. 1975 and 1976
Ogden et al. 1976
Frederick 1980s
1. Show recent evidence of the causal linkage of hydrology and nutrients to fish and birds
2. Show how the CERP Monitoring and Assessment Plan is integrated with other studies and providing a broader and deeper scientific foundation for restoration than what was originally conceived
Everglades
Trophic
Hypothesis
(wading birds)

Local-scale environment
- Microtopography
- Water depth
- Water recession rate

Regional-scale environment
- Vegetation structure
- Landscape configuration

Local-scale environment
- Nutrient levels
- Frequency of drying
- Time since end of last drying
- Duration and severity of last drying event

Periphyton standing stock and composition

Prey population size

Prey availability (dry season prey concentrations)

Large fish population size

Wading bird characteristics (morphology, foraging behavior)

Habitat selection, food intake, foraging aggregations, physiological condition

Nesting effort and productivity

Mortality

Population size

Wading bird responses
Session structure

- Overarching perspective on how wading birds and other performance measures are being used in the MAP
  - Frederick
- Recent advances in science starting with lower trophic levels
  - Gaiser, Trexler, Parker, Botson, Gawlik, et al.
- End with models (tools) translating science into management
  - Banet, Beerens, et al.