Algae as Potential Bioindicators of Florida's Freshwater Marshes

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Goal: to assess the use of algal genera and species abundance in describing the relative health of isolated depressional marshes.

Algal importance in Wetlands:

- Primary autotrophs
- Food source for higher trophic levels
- Biogeochemical cycling
- Oxygenation of water column
- N fixation
- Water chemistry regulation
- Refugia for other organisms

Methods:

- 35 marshes were sampled
- Collected Benthos, Epiphyton, Metaphyton (n=8, not analyzed), & Phytoplankton
- Ten aliquots collected from throughout wetland for each algae type, composite sample created & fixed
- Identified by Dr. R. Jan Stevenson, MSU
- Genera and species for abundance analysis based on empirical distribution along agricultural impact gradient and supported by literature.

Summary:

- Algae a promising indicator…
  - % Sensitive Genera & Species
  - % Tolerant Genera & Species

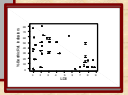
– Benthic algae and epiphyton more discernable response than phytoplankton

- Additional research will include a larger dataset (n=70) and regional differences

Benthic Algae Abundance Measures

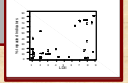
Reference Genera:

- *Anomoeneis* sp.
- *Chroococcus* sp.
- *Frustulia* sp.
- *Mougeotia* sp.
- *Pinnularia* sp.



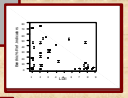
Impacted Genera:

- *Gomphonema* sp.
- *Navicula* sp.
- *Nitzschia* sp.



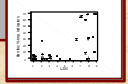
Reference Species:

- *Anomoeneis serians acuta, A. serians brachysira, A. vitrea*
- *Frustulia rhomboides F. rhomboides crassinerva, F. rhomboides saxonica*



Impacted Species:

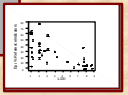
- *Gomphonema gracile*
- *Navicula difficillima, N. minima*
- *Nitzschia gracilis , N. palea debilis, N. perminuta, N. sociabilis*



Epiphyton Abundance Measures

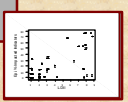
Reference Genera:

- *Anomoeneis* sp.
- *Frustulia* sp.
- *Pinnularia* sp.



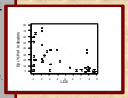
Impacted Genera:

- *Nitzschia* sp.
- *Navicula* sp.



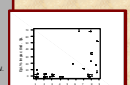
Reference Species:

- *Anomoeneis serians, A. serians acuta, A. serians brachysira A. vitrea*
- *Chroococcus turgidus , Desmogonium rabenhorstianum elongatum, Eunotia naegelii*
- *Frustulia rhomboides capitata F. rhomboides saxonica, Mastogloia smithii*
- *Navicula subtillissima, Oscillatoria limnetica, Pinnularia braunii*



Impacted Species:

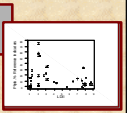
- *Achnanthes hungrica*
- *Caloneis bacillum*
- *Gomphonema parvulum*
- *Navicula confervacea N. cryptotenella, N. minima, N. pupula rectangularis, N. semiludum*
- *Nitzschia amphibia N. frustulum, N. palea*
- *Sellaphora rectangularis*



Phytoplankton Abundance Measures

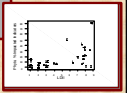
Reference Genera:

- *Frustulia* sp.
- *Scenedesmus* sp.



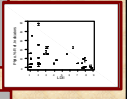
Impacted Genera:

- *Nitzschia* sp.
- *Navicula* sp.



Reference Species:

- *Anomoeneis serians, A. serians acuta, A. serians brachysira, A. vitrea*
- *Chroococcus turgidus, Desmogonium rabenhorstianum elongatum Eunotia naegelii,*
- *Frustulia rhomboides capitata , F. rhomboides saxonica , Mastogloia smithii, Navicula subtillissima Nitzschia brevissima, Pinnularia braunii amphicephala P. biceps petersenii, Sellaphora pupula capitata*



Impacted Species:

- *Achnanthes hungrica*
- *Caloneis bacillum*
- *Cratricula cuspidata*
- *Cyclotella meneghiniana*
- *Gomphonema angustatum, G. parvulum, G. truncatum*
- *Navicula confervacea N. minima*
- *Nitzschia frustulum, N.palea, N. palaeacea*
- *Sellaphora rectangularis*