Zooplankton Biodiversity Patterns Across a Novel Water Storage Complex in the NJ Pinelands

Emily Wang1, Kathryn Mickle2, Courtney Richmond1, Nathan Ruhl1
1: Department of Biological Sciences, Rowan University, Glassboro New Jersey, USA 08028
2: College of Life Sciences, Thomas Jefferson University, East Falls Campus, Philadelphia Pennsylvania, USA 19144

Introduction:
- Humic systems display ecological dystrophy
- Whitesbog is a shallow humic complex used for water storage
- Whitesbog possess pristine water quality, but experiences hydrological disturbance in the fall

Methods:
- Aug: 2-10g of water through net then sieve
- Oct: 1 L of water through sieve
- Handheld water quality instruments
- Scaled and standardized for temporal comparisons to account for differences in sampling method
- Paired t-test, hierarchical clustering with recursive partitioning, variable-selection via step-wise regression followed by polynomial and linear regression (JMP) and NMDS (R)

Q1: Do we have the same pattern of zooplankton abundance across Whitesbog complex between sampling dates?
Q1a: Are some sites within the Whitesbog complex more similar than others between sampling dates?
Q1a. Results: Sites 5 and 9 have higher abundances than predicted

Q2: Is zooplankton density across Whitesbog complex predicted by environmental conditions?
Q2. Results: Water temperature was best predictor of abundance and biodiversity, but turbidity also important

Q3: Is zooplankton biodiversity across Whitesbog complex predicted by environmental conditions?
Q3. Results: Environmental predictors do not describe a major variation axis in zooplankton biodiversity

Conclusion:
- Zooplankton density and biodiversity varies across complex
- Significant temporal complexity

Future Work:
- Need to increase suite of environmental predictors (e.g. hydrology)
- Weekly sampling to bracket Cranberry Harvest; targeting Fall 2020