Zooplankton in Retention Ponds

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Question

How does pond size, runoff area, impervious cover, and age of different storm water retention ponds affect zooplankton concentration and CNP?
Hypothesis

- Percent of impervious cover is the biggest determining factor
- Impervious cover ↑
  - concentration of zooplankton ↓
  - amount of CNP ↓
Field Methods

- 10 L of water
- Pour in plankton net
- Get sample
Lab Methods

- Rid of extra debris
- Find concentration
- Find carbon, nitrogen, and phosphorus
GIS

- GIS was used to find:
  - Pond size
  - Runoff area
  - Impervious cover
Concentration and CNP Pond Size Relation?

- Larger ponds are consistent
- No correlations overall
Concentration and CNP
Runoff Area Relation?

- Larger runoff areas are consistent
- No correlations overall
Concentration and CNP
Impervious Surface Relation?

- No relation with GIS impervious cover
- Positive relation with JCC impervious cover for concentration and N:P

**JCC Impervious vs. Concentration**

\[ y = 0.0092x - 0.1136 \]

\[ R^2 = 0.8065 \]

**JCC Impervious vs. N:P**

\[ y = 2.2209x + 41.773 \]

\[ R^2 = 0.3974 \]
Concentration and CNP Age Relation?

- No relation with pond age.
General Observations

- Redfield Ratio is 106 C: 16 N : 1 P for marine plankton
  - Data shows
    - C:P ratios in the 1000s
    - N:P ratios in the 100s
- Copper sulfate does not work
Conclusion

- Relations not strong
  - No relations with pond size and runoff area, but consistency with larger ponds and runoff areas
  - Concentration and N:P increase with impervious cover percentage
  - No relation with age
Further Research

- Look at one variable
- How does time of year affect zooplankton?
- How does type or amount of vegetation affect zooplankton?
- How does water quality affect zooplankton?
- What are the phosphorus ratios like in other areas or at different times?
Field Work is Fun !!!

Do you want to test by that cheeseburger?

Green Frog!!!
References


