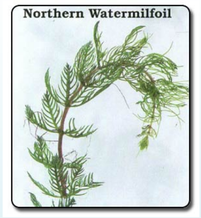

Sewage runoff on fragmented lakes and its impact on aquatic vegetation

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Introduction

The DuPage County Forest Preserve (DCFP) is a network of fragmented forests and lakes. Imapact of fragmentation can be measured by habitat connectivity, which is the degree to which the landscape facilitates animal or plant movement and other ecological flows.[2] The lakes are also altered by water run off that empties into the lake. Samples were taken at the Herrick Lake (HRK1) and Blackwell Forest Preserves (BKWL1-3, 3 sites) within the DCFP.

Objective

1. To compare the aquatic vegetation between pipe and non-pipe areas at lakes in Herrick and Blackwell forest preserves
2. Determine aquatic weeds connectivity between lakes.

Methods

Measured 1 meter away from shoreline and held quadrat in place at pipe location

Extracted all aquatic vegetation within quadrat (80x80cm²) and placed into bowl

Counted and classified all macrophytes

Walked 100 meters from pipe to obtain a non-pipe sample and repeated process

Results

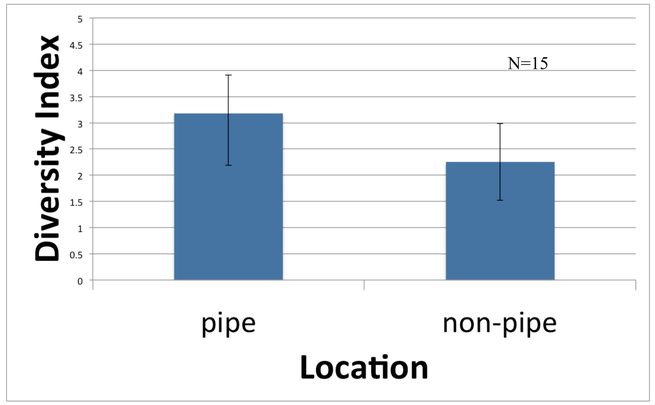

Fig. 1: Piped locations displaying a higher diversity index

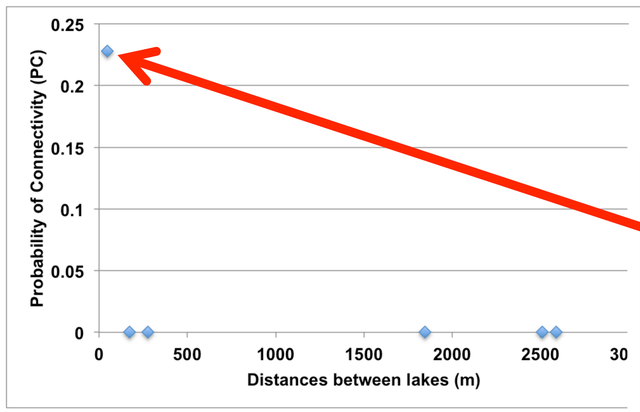

Fig. 2: White Pine and Sand Pond have the highest Probability of Connectivity

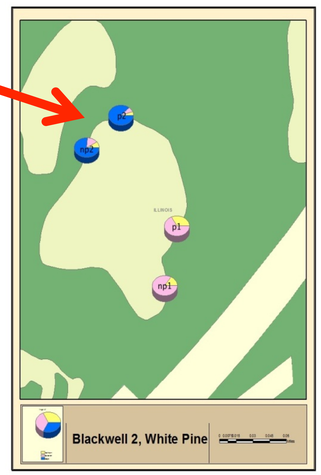

Fig. 3: GIS map of white pine south of sand pond

Conclusions

Piped locations showed a slightly higher diversity index overall. Due to eutrophication of foreign nutrients, plants may have been able to exhibit a higher diversity at pipe locations. However, the difference between the sites was insignificant. Silver Lake (BKWL1) had the highest abundance and diversity of aquatic plants while Sand Pond (BKWL3) and White Pine (BKWL2) had the least. Throughout all the sites, the Probability of Connectivity between Sand Pond and White Pine was highest. These two lakes are geographically closest to each other.

Future Investigations

Future exploration of the seafloor and sediment composition of the aquatic vegetation and acquiring samples away from the shore at various locations could improve information about the study.

References

1. ATOCHEM. *Submersed Aquatic Weeds and Algae Guide*. Philadelphia: ATOCHEM, n.d. Print.
2. Taylor, P.D., Fahrig, L, Henein, K., Merriam, G., 1993. Connectivity is a vital element of lanscape structure. Oikos 68, 571-573.

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