

Soil Searching

By: Nick Michael and Kate Elkort

Introduction

- **How do properties of soil change based on the environment?**
- **Why is soil/secondary succession important?**
- **Indicator to nutrient regulation**
- **Indication of polluted environment**
- **Indicates human effects on environment**

Hypotheses and Tests

- **We hypothesize that the exposed lake bed will have more nutrients present in the soil than the original meadow since nutrients have not been assimilated into organisms.**
- **We hypothesize that the white soil could be due to the presence of calcium carbonate or varying nutrient levels.**
- **We tested moisture, light, pH, PNK, particulate size, and percolation rate.**

Method

- **Tested: five sites on meadow, five sites on dried up lake.**
- **From each site: five soil cores tested for presence of nitrogen, phosphate, and potassium and particulate size**

Sites Tested



Meadow Site Soil



Lake Site Soil Core



Results: Meadow vs. Lake

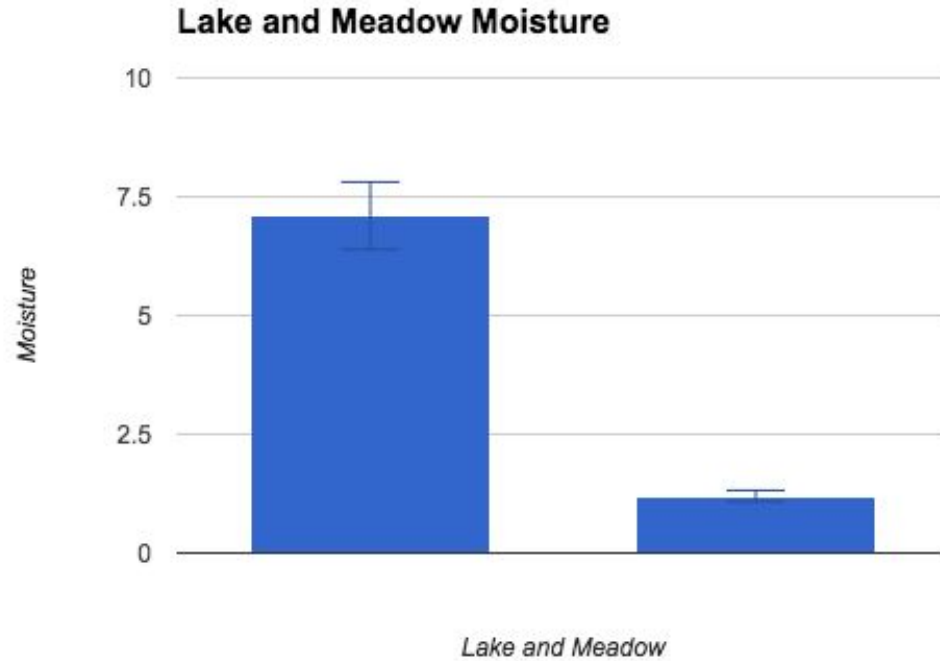
Moisture T-test

$p = 0.0293$

$t = 2.6496$

$df = 8$

**standard error of
difference = 279.285**



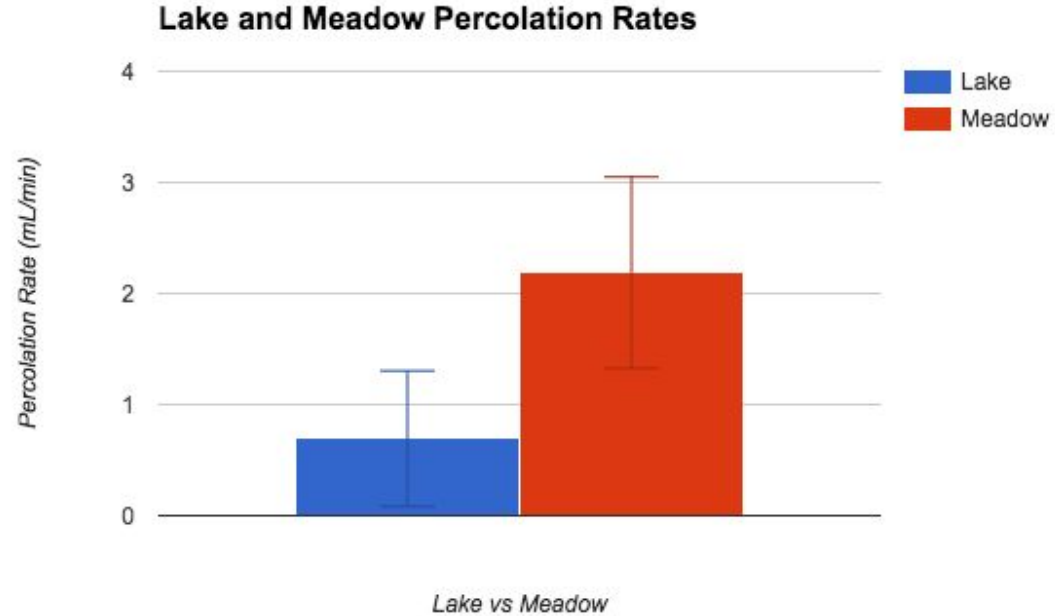
Percolation Rates T-test

p = 0.1949

t = 1.4148

df = 8

**standard error of
difference = 1.056**



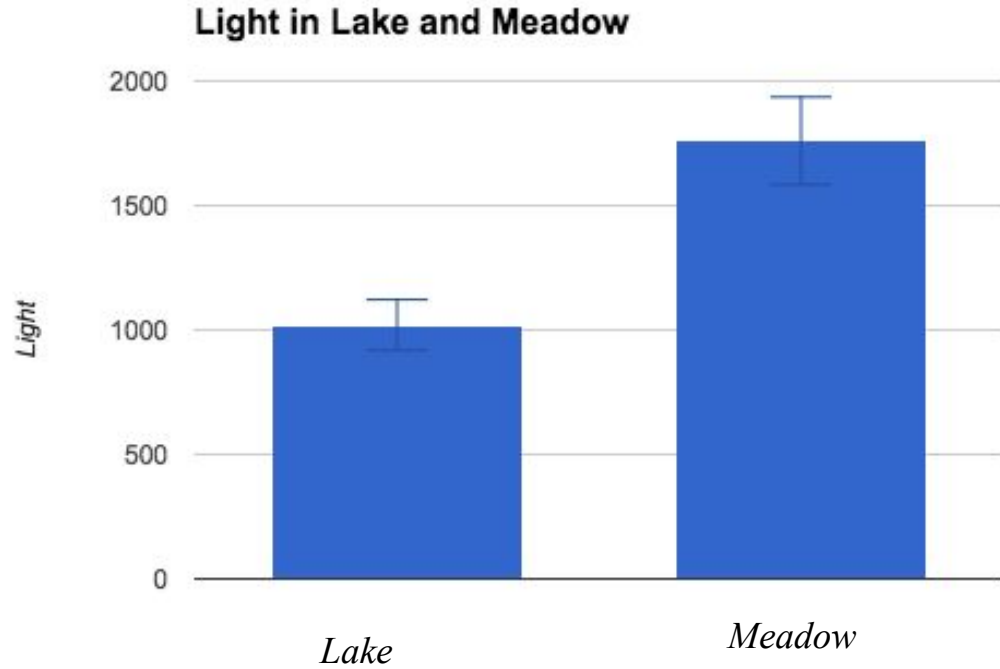
Light T-test

p = 0.0293

t = 2.6496

df = 8

**standard error of
difference = 279.285**



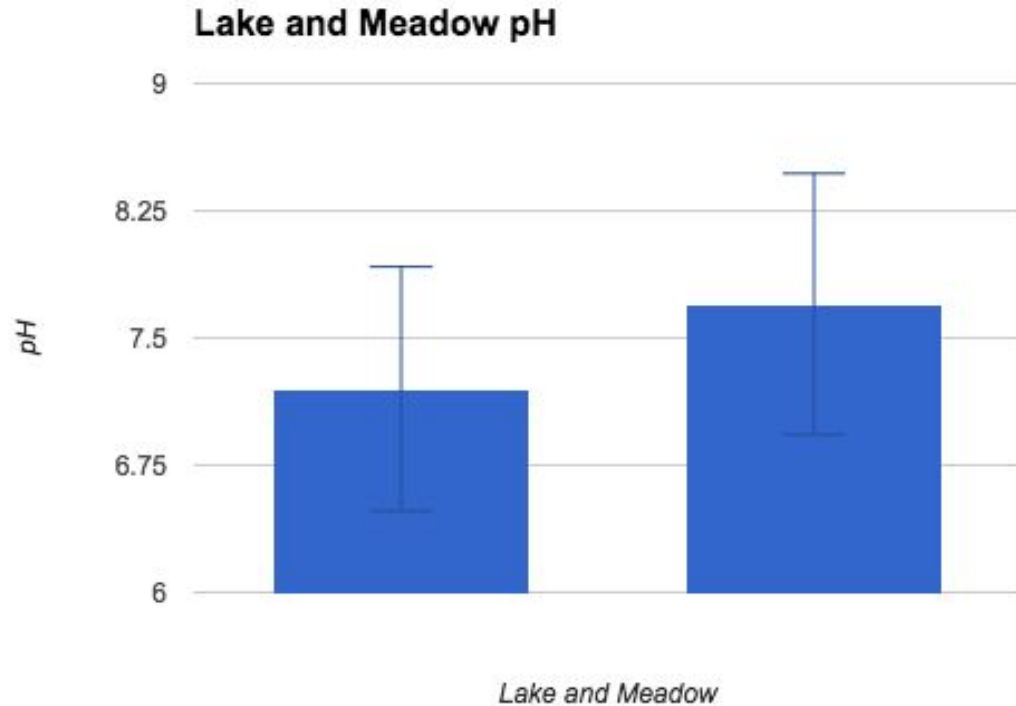
pH T-test

$p = 0.2902$

$t = 1.3868$

$df = 8$

**standard error of
difference = 0.361**



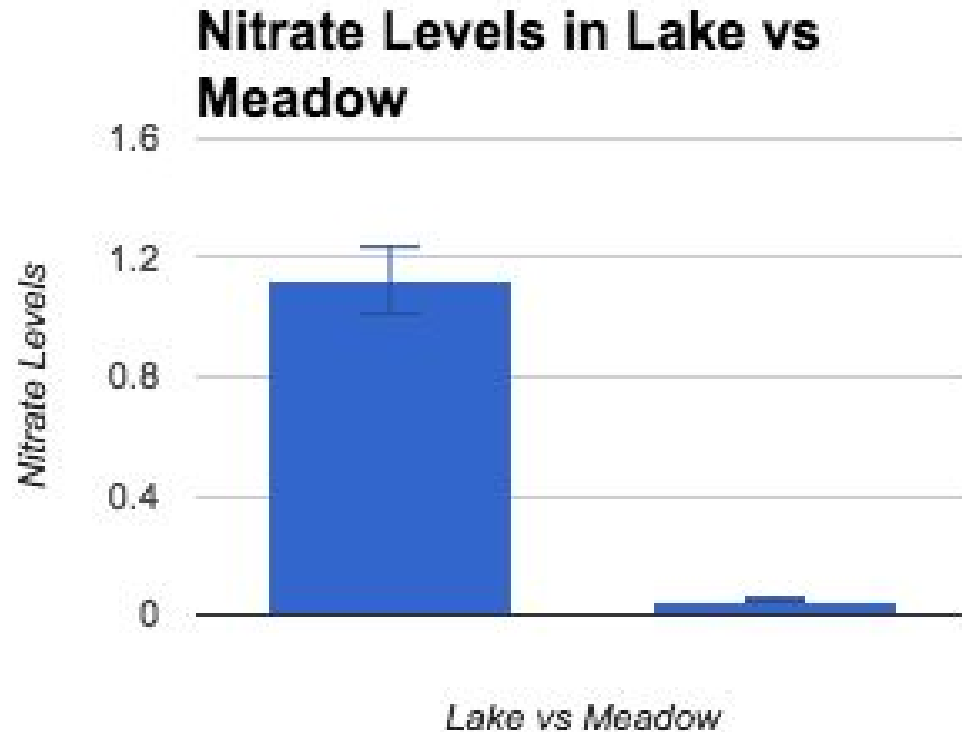
Nitrate T-test

p = 0.0015

t = 4.5113

df = 9

**standard error of
difference = 0.238**



Phosphate T-test

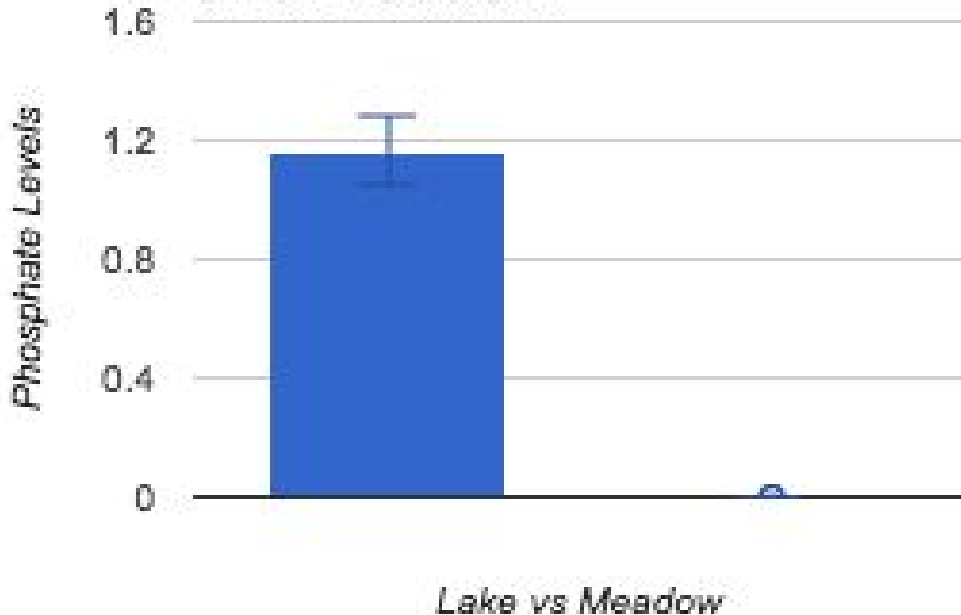
$p = 0.0455$

$t = 2.3198$

$df = 9$

**standard error of
difference = 0.503**

Phosphate Levels In Lake and Meadow



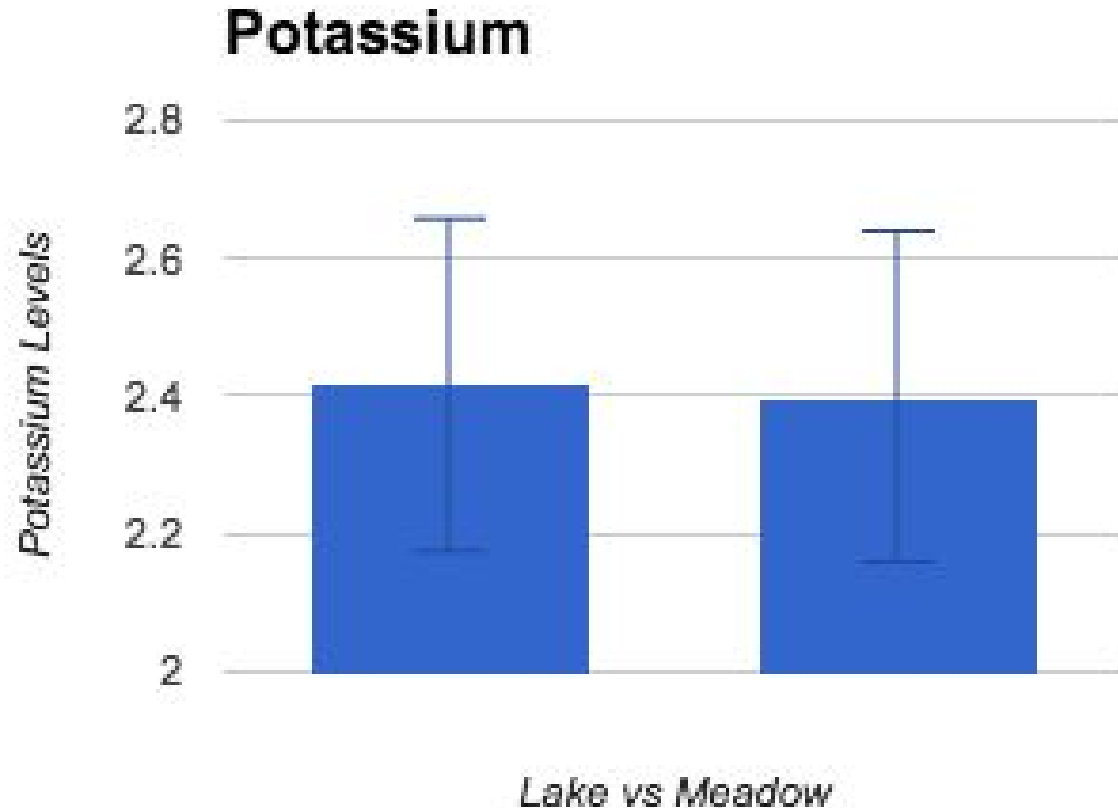
Potassium Levels T-test

p = 0.9714

t = 0.0368

df = 9

**standard error of
difference = 0.453**



Conclusion

nutrients higher

moisture and light different results

pH, percolation rate, potassium not significant

soil particulates

exposure of lakebed

Further Questions

- Is the white soil caused from calcium carbonate being brought to the surface?**
- How will a year change the nutrient composition of the soil?**
- Will time also affect particulate size?**
- When will succession reach its second stage in the lakebed?**