

A close-up photograph of several earthworms in dark, moist soil. The worms are segmented and have a reddish-brown color. They are positioned in various directions, some partially buried and others more visible on the surface. The lighting is soft, highlighting the texture of the worms and the soil.

The Relationship Between Invasive Earthworms, Leaf Litter, and Soil Conditions

David Mercado
Somers High School

Introduction

- No current native earthworms since last glacial period
- Brought over from Europe in 1600's
- In past decade, jumping worms have been discovered more frequently



Jumping Earthworms
(*Amyntas* spp.)

Introduction

- Past studies have shown a correlation with invasive earthworms and leaf litter disappearance



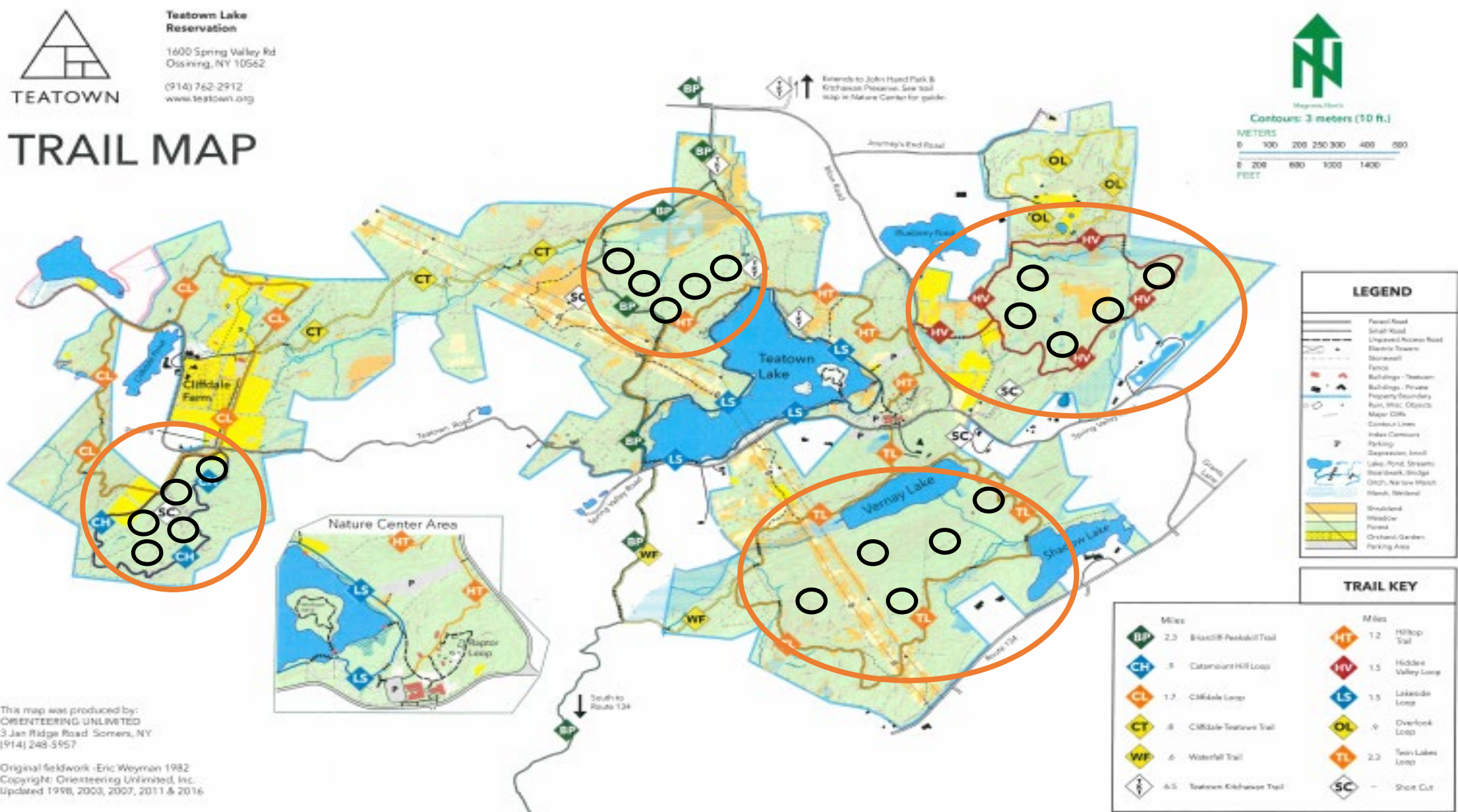
<http://www.nrri.umn.edu/worms/forest/index.html>

Deanna Saltmarsh APU

Research Question/ Hypotheses

- **Research Question:** Does the biomass and number of invasive earthworms change soil conditions and correlate to leaf litter disappearance?
- **H1:** If there is larger biomass of invasive earthworms, then there should be a change in soil conditions on the top and bottom layers of soil.
- **H2:** Larger biomass and number of earthworms would correlate with less leaf litter.

Sites Used



Methods

At each sub-site:

- Digging 6 inches of the soil
- Collect the top 3 and bottom 3 inches and find pH
- Collect leaf litter using 8x10 inch frame
- Pour 1 gallon of mustard seed mixture
- Collect earthworms in that frame



Methods



Find the biomass of earthworms and leaf litter



Methods



Find the biomass of earthworms and leaf litter



Sift the soil to get rid of rocks and pebbles



Methods



Find the biomass of earthworms and leaf litter



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Find bulk density



Methods



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Find organic matter by heating up the soil samples 2 different times



Methods



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Used LOI and OM equation to find the percentage of organic matter



Figure 1. Earthworm Biomass and Leaf Litter Relationship

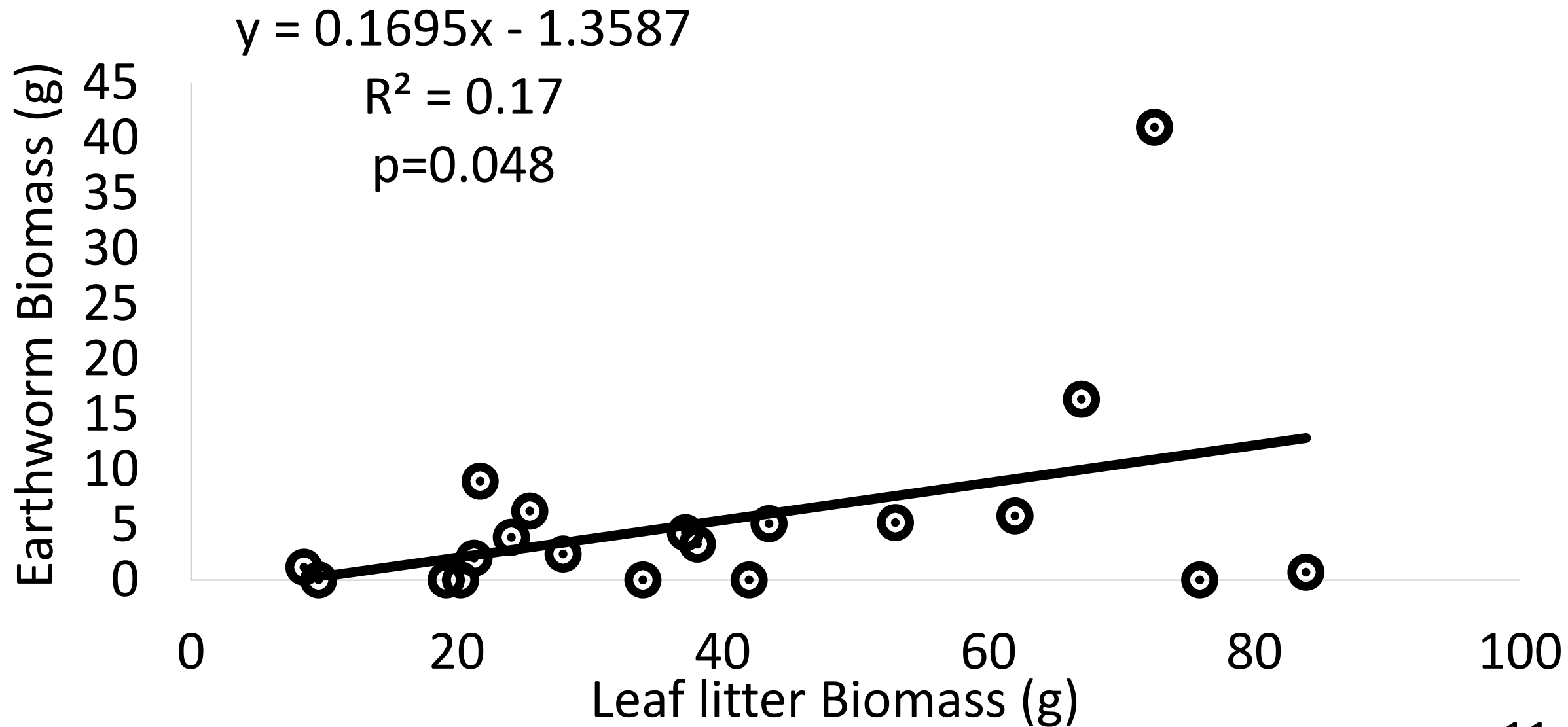


Figure 2. # of Earthworms versus Leaf Litter Biomass

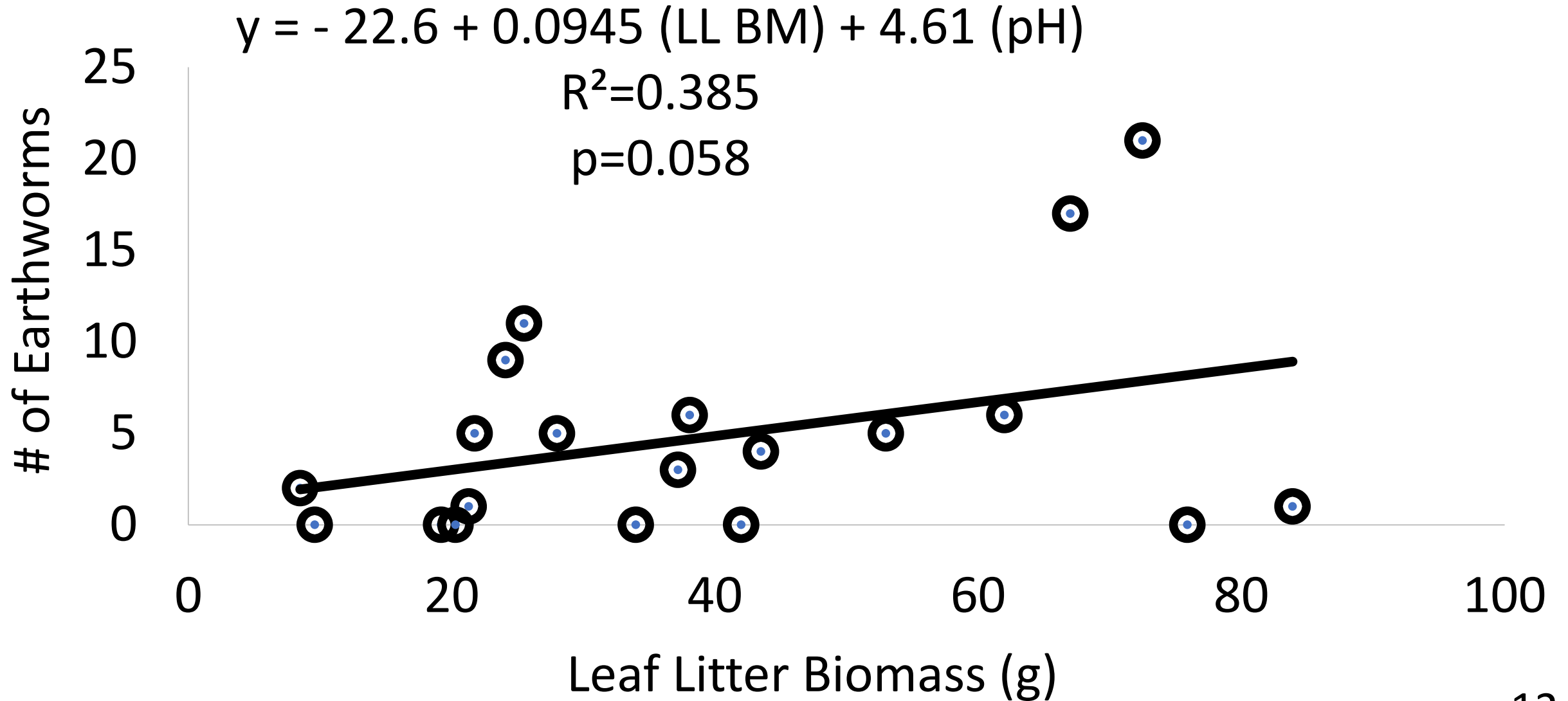
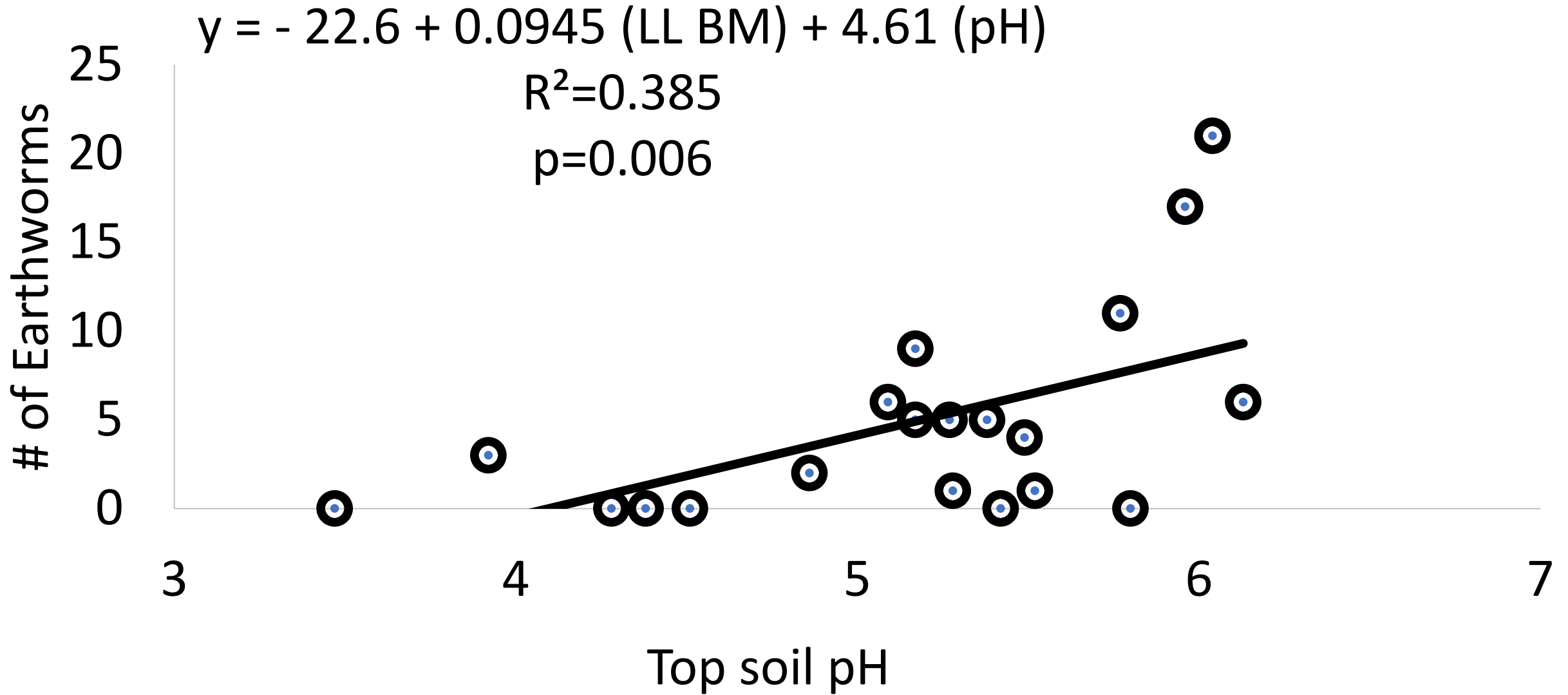


Figure 3. # of Earthworms versus Top Soil pH

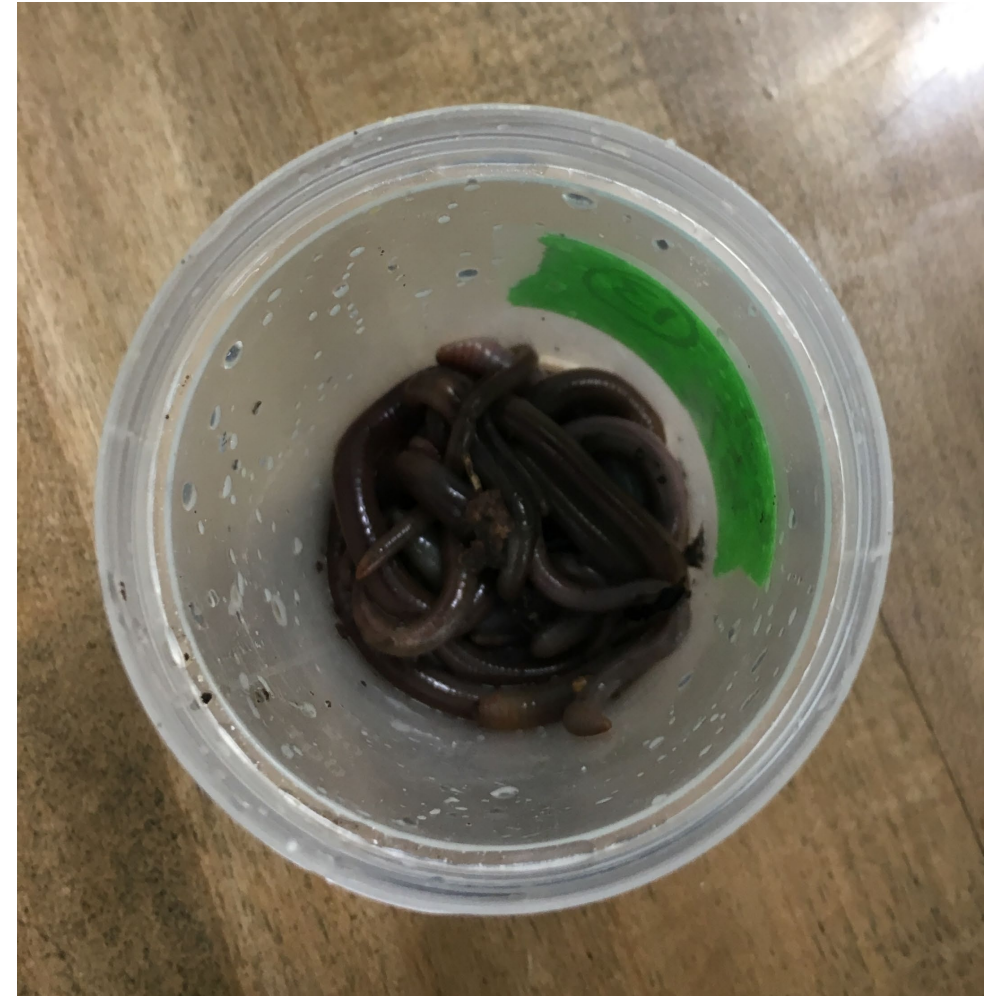


Discussion

- Biomass and # of worms had no correlation with organic matter or bulk density
- Biomass and number of worms also had no correlation with any soil qualities of the bottom 3 inches
- Data showed the larger biomass of earthworms, the more leaf litter biomass, contrary to past studies
- pH in the range of about 4 to 6 had larger numbers of earthworms

Future Research

- Testing other forest sites to see if there is any correlation between earthworms, soil conditions, and leaf litter



Take Home Messages

- My findings contradict past studies
- Teatown likely doesn't have an issue with overabundant invasive earthworms at the sites I tested



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Any Questions?