Nematode and Plant Data Analysis

**Nematode data (Seth’s):**

Soil cores were collected from EWU’s 15-acre prairie restoration pilot site, Steptoe butte, Kamiak butte, and Medical Lake during the months of June and July 2021. Soil cores were collected from the EWU pilot site using a systematic approach and cores from the other three sites were taken using a stratified random sampling method. Three soil cores were taken from four aspects (North facing slopes, South facing slopes, Ridges, and Troughs) at each site for a total of 12 samples per site (these sites overlap with sites surveyed by Kristy Snyder and were collected the same day). From each soil sample I analyzed nematode abundance, nematode functional group composition, soil moisture, soil organic matter, pH, and soil texture. Nematodes were extracted from 40g of field moist soil, and nematode abundance was recorded as nematodes/g dry soil. Soil moisture and soil organic matter were analyzed using gravimetric analysis and were recorded as a percentage. Soil texture was analyzed using the micropipette method and soil texture was recorded as a percentage of sand, silt, and clay. pH was analyzed using an EcoSence pH probe. The goal of my research was to compare soil abiotic variable and soil food webs at EWU’s prairie restoration site and three intact Palouse prairie remnants.

**Plant Data (Kristy’s):**

Soil cores were collected from EWU’s 15-acre prairie restoration pilot site, Steptoe butte, Kamiak butte, and Medical Lake in March 2021. Six aspects and terrain shapes were assessed.

The top 5 cm of soil was extracted at each quadrat using a soil corer at the quadrat's four corners. All soil cores were pooled, keeping quadrats separate. The samples were sifted to concentrate the seeds and remove large rocks. The sifted soil was spread on top of potting mix in shallow greenhouse flats, and a fine layer of sand was be added to the top to reduce damping-off of seedlings. All species germinated will be identified, and if a seedling cannot be identified, it will be transplanted and grown until it can be keyed.

At the same sites and quadrats, aboveground vegetation was sampled in early June and mid July. All species present in each quadrat was recorded with percent cover. All species were classified by introduced or native and annual or perennial.

**Data sheets in respository:**

1. SoilData\_Combined = raw datasheet
2. SoilData\_Both = data with second row as a combination of native/introduced and annual/perennial
3. SoilData\_Native = data with second row as native or introduced only
4. SoilData\_annualperennial = data with second row as annual or perennial only
5. SoilData\_NativeNemAbundance = only quadrats where Seth collected nematode data with the second row as native or introduced only

**What we want to compare:**

**Seth-Nematode**

* Compare nematode abundance at EWU site and remnants
  + ANOVA or Tukey HSD ?
* Compare nematode functional group composition between site types
  + NMDS/PERMANOVA
* Compare abiotic factors to nematode abundance

**Kristy- Plants**

* Compare native and nonnative species richness and abundance by site and aspect
  + GLM
* Compare species compostion among site type
  + NMDS

**Both- Interactions**

* Abiotic (SOM/pH/SM) vs nonnative/native cover
  + PCA/ RDA?
* Nem abundance vs nonnative/native cover
  + Compared with month and site and see no obvious relationship
  + Still need to find correct stats test-maybe MANCOVA or nonparametric version
  + SEM???
* Compare nem function group composition to presence/ab of species (maybe native vs nonnative)
  + SEM?
* Annual/ perennial cover vs abiotic factors
* Annual/ perennial cover vs nem abund
* Compare everything by seasons?

**Key to datasheet:**

|  |  |
| --- | --- |
| Title | Description |
| Initials | Who surveyed |
| Survey | Survey number (1, 2, etc.) |
| Site | Location:   * EWU- Eastern Washington University Prairie Restortion Site * KB- Kamiak Butte County Park * ML-Medical Lake WA DNR land * SB- Steptoe Butte State Park |
| Aspect | Aspect or terrain shape   * Bottom- bottom of hill, trough * Top- top of hill, ridge * North * South * East * West |
| Quad | Quadrat sampled, 5 quadrats per site and aspect/terrain shape |
| Label | Combined code for site, aspect, and quadrat |
| Date | Date surveyed or collected |
| Month | Season collected   * June- considered spring survey * July- considered summer survey |
| Code | Combined code for site, aspect, quadrat, and month |
| ErikCode | Combined code for site, aspect, and month (no quadrat) |
| SoilMoisture | Seth’s soil moisture- grams of water/grams dry soil |
| SoilMoisture% | Seth’s soil moisture converted to a percent |
| SOM | Soil organic matter as a percent |
| pH | pH of soil |
| Sand% | Percent of sample that was sand |
| Silt% | Percent of sample that was silt |
| Clay% | Percent of sample that was clay |
| NematodeAbundance | Nematodes present per gram of dry soil out of 40 grams of field moist soil- ratio of nematodes |
| TotalNematodes | Total nemadtodes in soil sample |
| BF | Nematode functional groups- bacterial feeders |
| FF | Nematode functional groups- fungal feeders |
| PP | Nematode functional groups- plant predator or parasite |
| Tyl | Nematode functional groups- tylenchulus |
| Omn | Nematode functional groups- omnivore |
| Pred | Nematode functional groups- predator |
| SM\_ks | Kristy’s soil moisture using a Vegetronix soil moisture meter |
| Column AA-DQ\* | Plant species percent cover   * I-introduced * N-native * A-annual * P-perennial |