

Biol 432 Group Project Outline -- Lustrous Loosestrifes

Members: Claire Smith, Zoe Clarke, Jamie MacKay, and Nestor Al Grandal

Data description: Data from the “WisAsp” common garden from the Arlington Agricultural Research Station, collected in 2014 and 2015. Dataset includes tree phenotypes, genotypes, and information about the insects present on the trees. More info can be found in the document “Data Description.pdf”.

Main questions:

- Does the presence of certain types of insects (or functional groups) have an impact on insect diversity?
 - E.g. a study they cite (49) found that biodiversity was higher in trees without aphids and their tending ants
- How do certain tree phenotypic traits affect insect community?
 - Do more insect nectaries correlate with lower species abundance of herbivores?
 - Does the timing of bud break and bud set impact species and/or insect functional groups?
- Does insect abundance or community make-up vary between years of study?
- To what extent do insect species and family vary in composition with regards to the totals of defensive chemicals found on the trees?
 - Do defensive chemicals affect the species or family abundance on trees?
 - Do defensive chemicals indirectly affect biodiversity found on trees by affecting tree phenotypes?

Outline of main analysis/Division of labour

- **General analysis:** Transform the data -> Calculate diversity metrics (if applicable) -> Perform analysis on individual question -> Visualize and interpret the results -> Write discussion section
- **Individual analyses:**
- Claire -> See if there are any transformations/adjustments that need to be done to data so that they fit assumptions/ are more clear -> calculate diversity metrics (like Shannon index, richness) -> make figures
- Zoe -> Square-root transform the data -> test paper's conclusion that timing of bud break and bud set impacted species and insect functional groups -> Outline results in figures
- Jamie -> Perform and necessary transformations -> test species diversity/diversity of herbivores in trees with/without extrafloral nectaries → visualize results and summarize
- Nestor - > Perform necessary transformations -> test diversity of insect species and then insect commons in trees with differing levels of total defensive chemicals (i.e. tannins, glycosides) -> visualize and draw conclusions
- **Writing:** For the writing, divide the results and discussion sections into 4. Each individual is responsible for completing their own sections, both written and visual (ie. graphs, etc.). Since the introduction is small, whoever is finished their section first will begin planning and writing the introduction. Others will contribute accordingly.