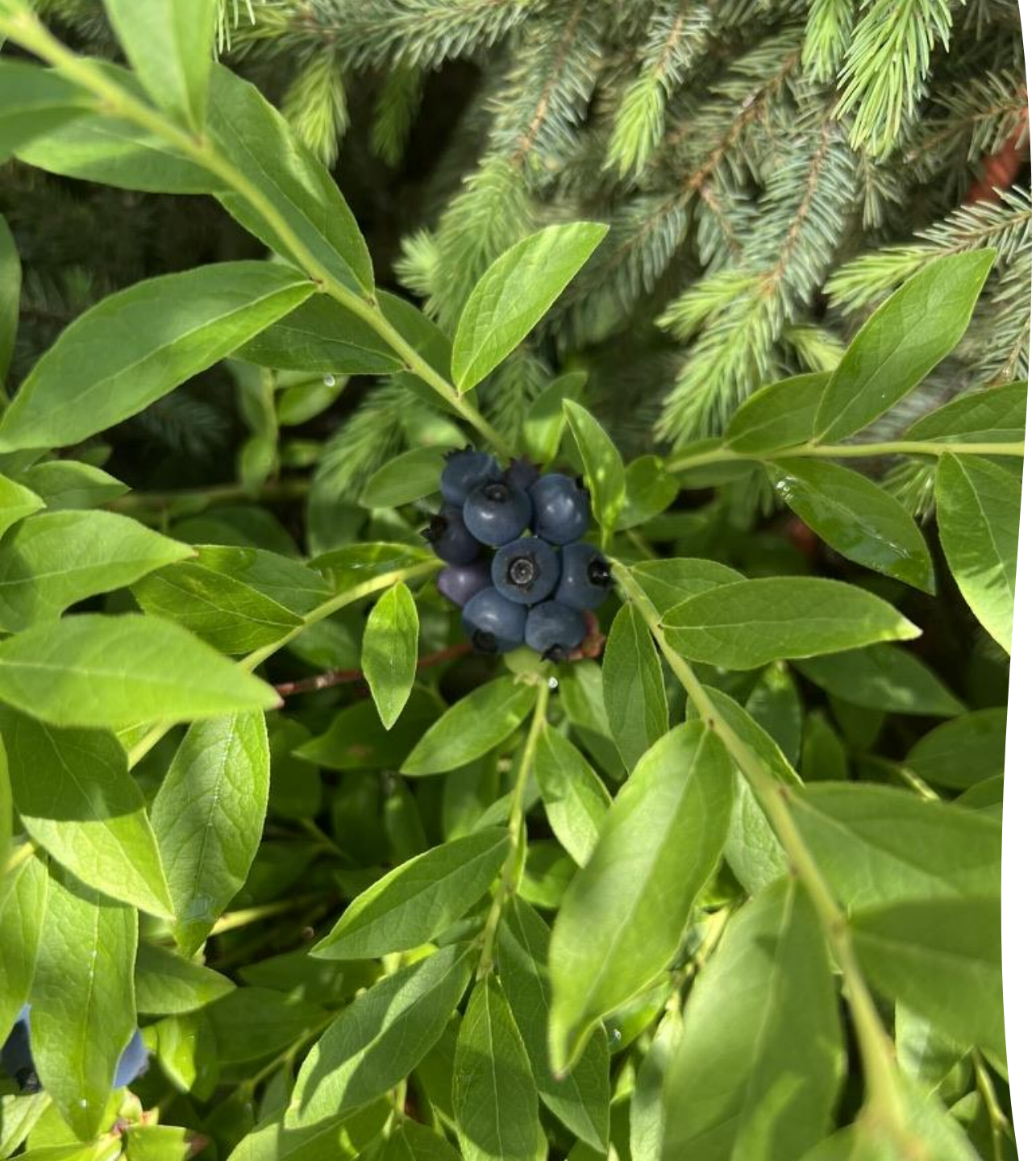
2024 Shrub Reproductive Investment

Kyle Pearson, Mark Guilliams, Joshua Birkebak

February SPRUCE Meeting

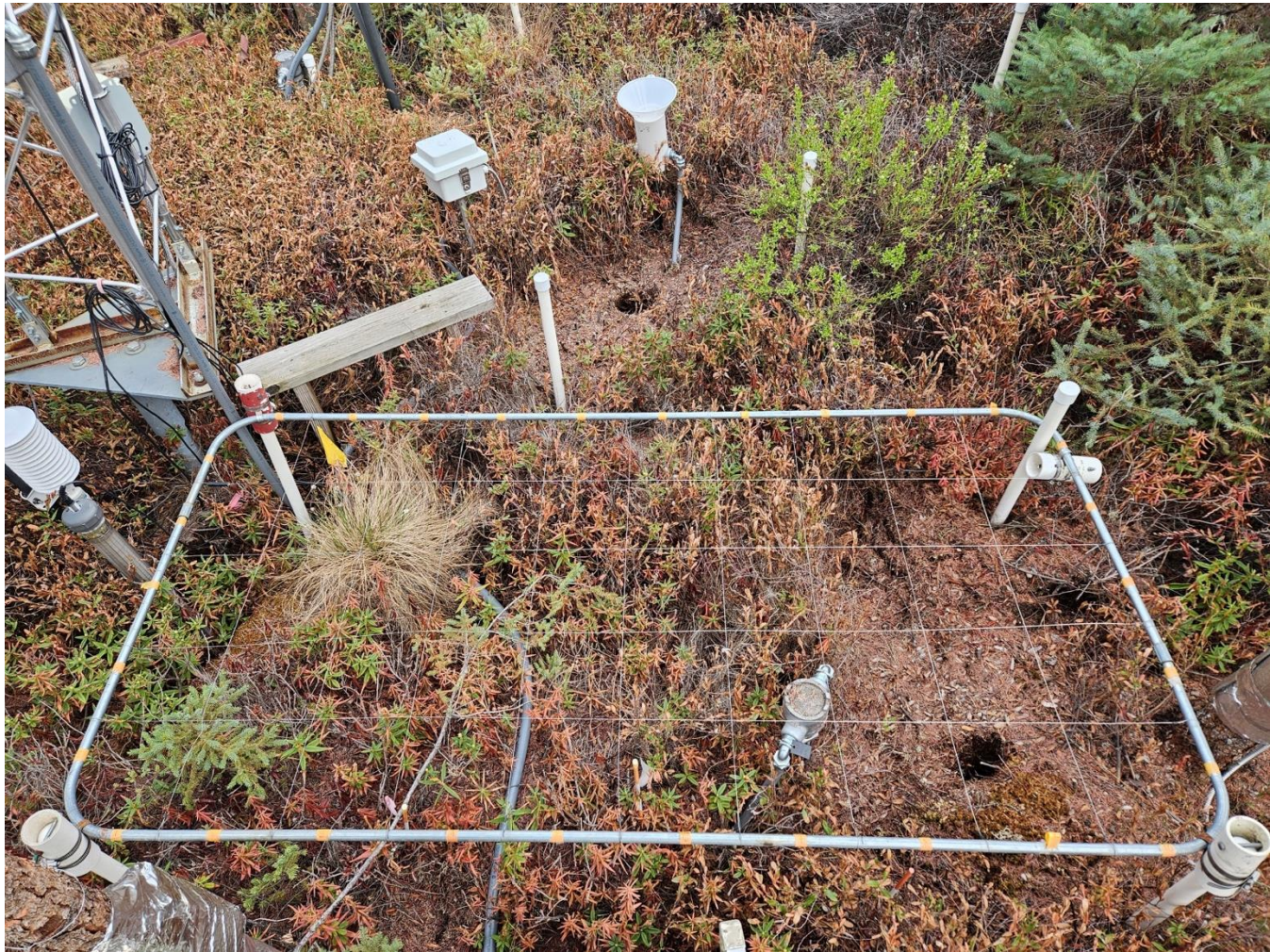


Background

- Changes in shrub-layer community composition and resource allocation has occurred.
- Reproductive phenology responds to changes in temperature.
- Timing recorded but not quantity or quality of reproductive structures.
  - CHCA in the warmest plots barely flowering (previously none at all).
  - VAAN berries in warmer plots.
- How does shrub reproductive resource investment and success respond to elevated temperature and CO2?

Experimental Design

- Use existing survey plots



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  - CHCA, VAAN – index value
  - RHGR – Count.

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- Photographed weekly during growing season
- 0.2 m grid added
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  - CHCA, VAAN – index value
  - RHGR – Count.
- Exclude blocked grids

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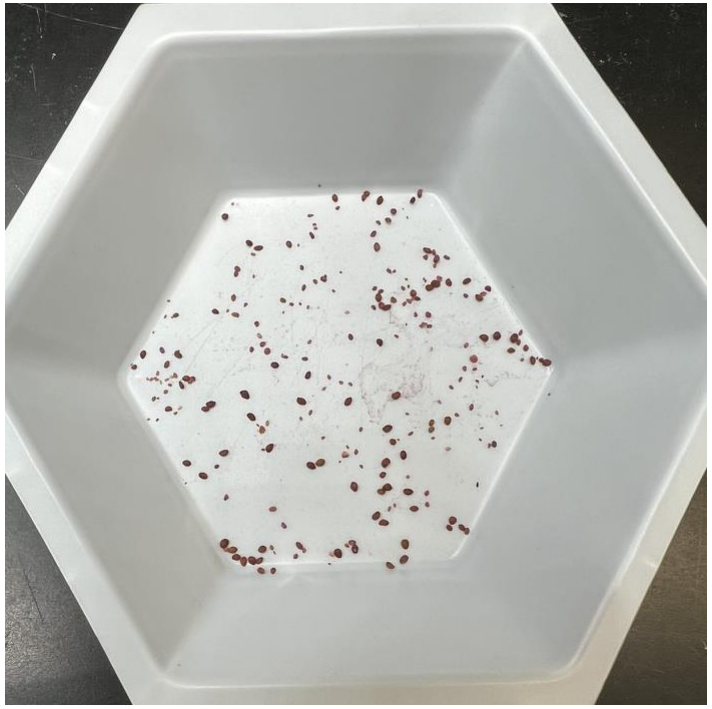
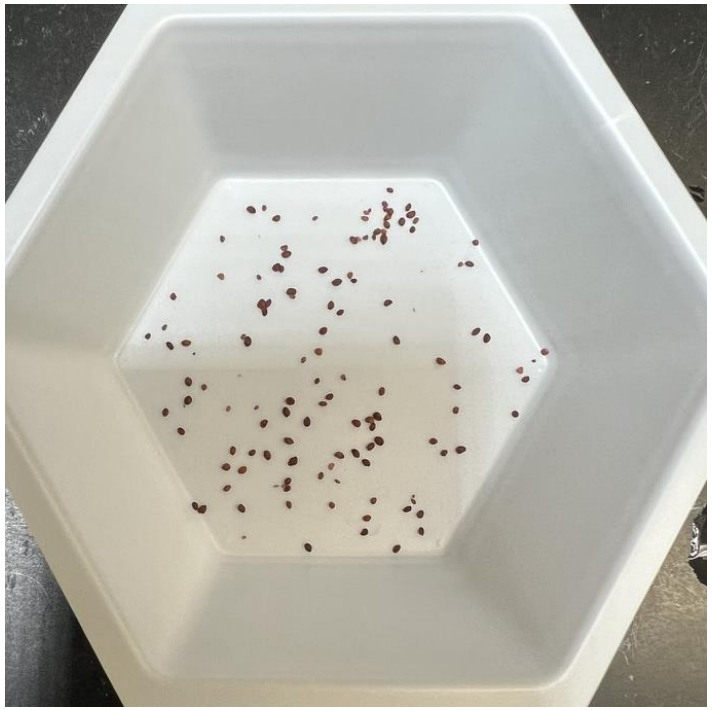
- Blueberries collected when ripe frozen.
  - Frozen and shipped to ORNL
  - Counted, weighed
  - Seeds removed and >0.5 mm kept
  - Counted, dried, weighed





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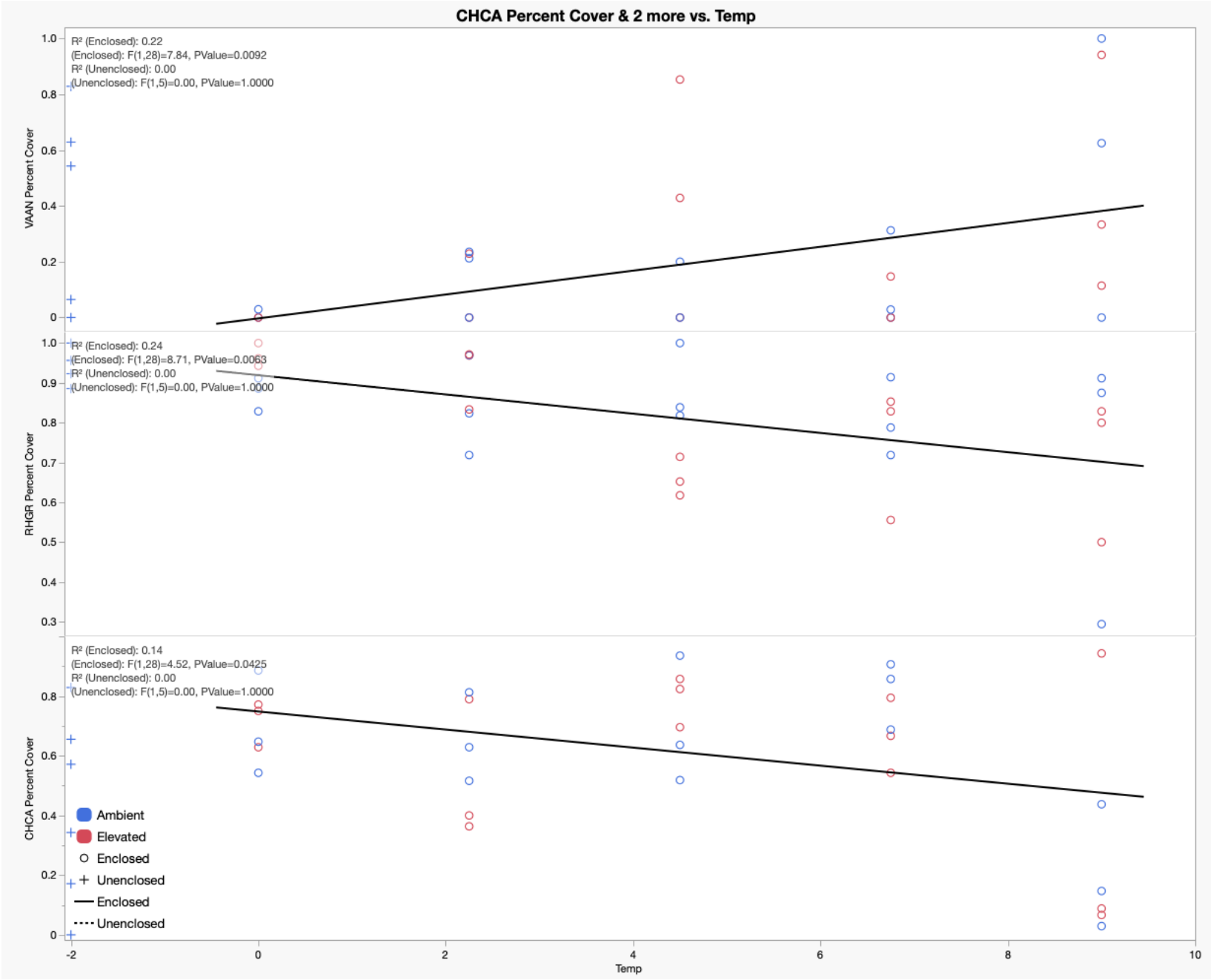
Data Analysis

- Used peak flowering week per species per plot
- Excluded obscured grids
- Calculated percent cover for each vegetation plot
- Summed inflorescence count/index (per species) and normalized by percent cover
- For blueberries, compared berry count/mass with seed count/mass

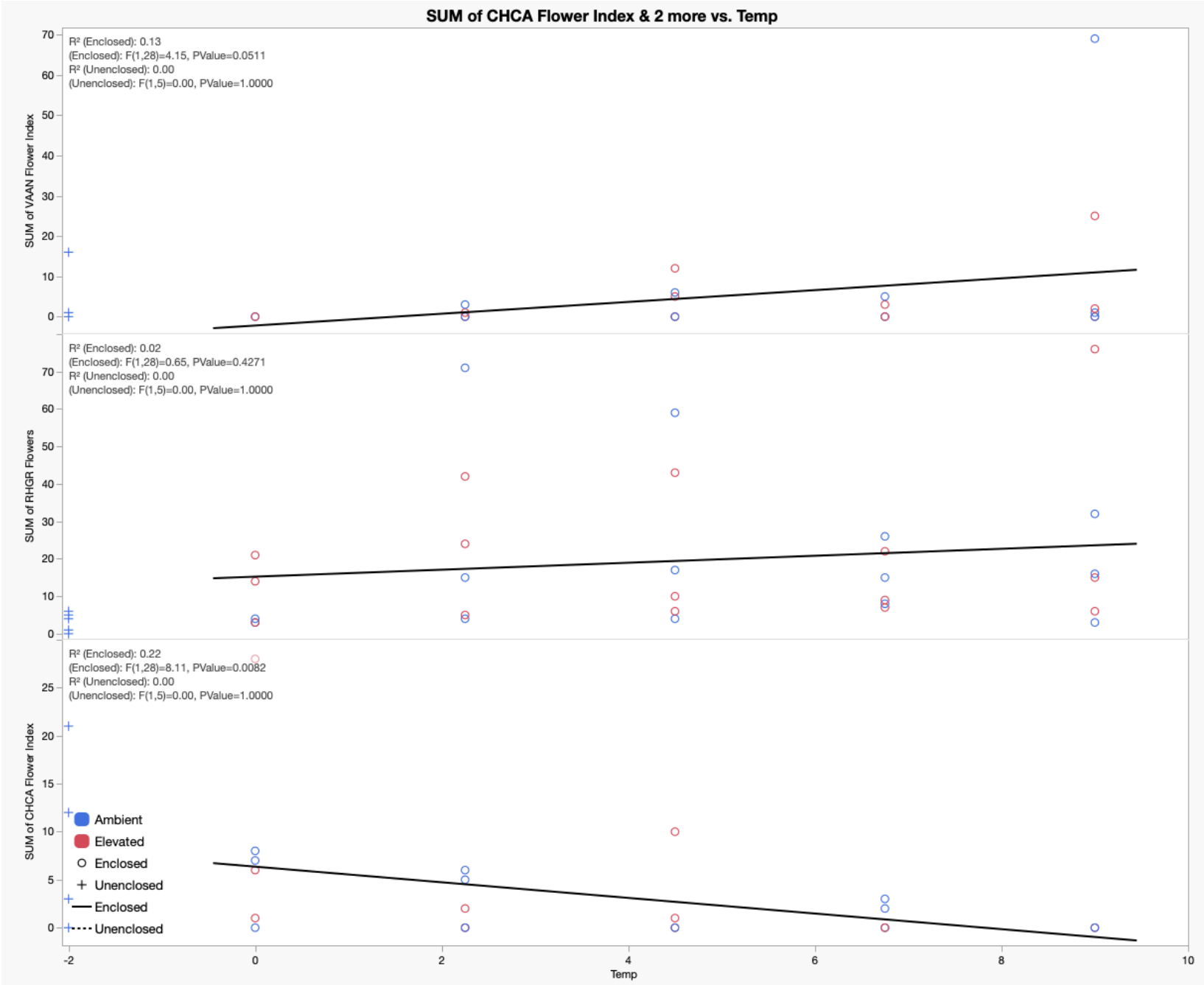
Results

- Shrub percent cover



Results

- Shrub percent cover
- Shrub floral investment



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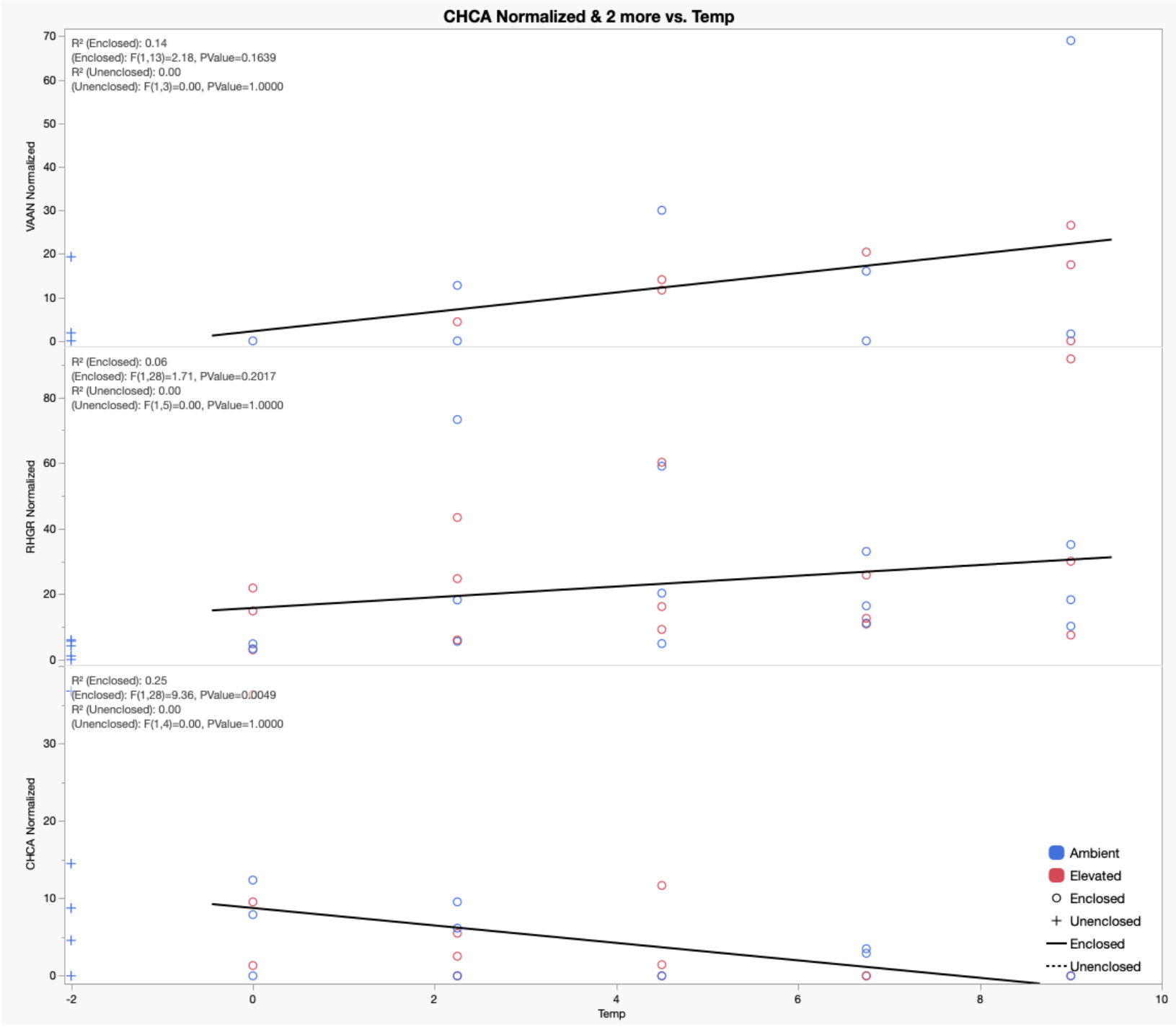

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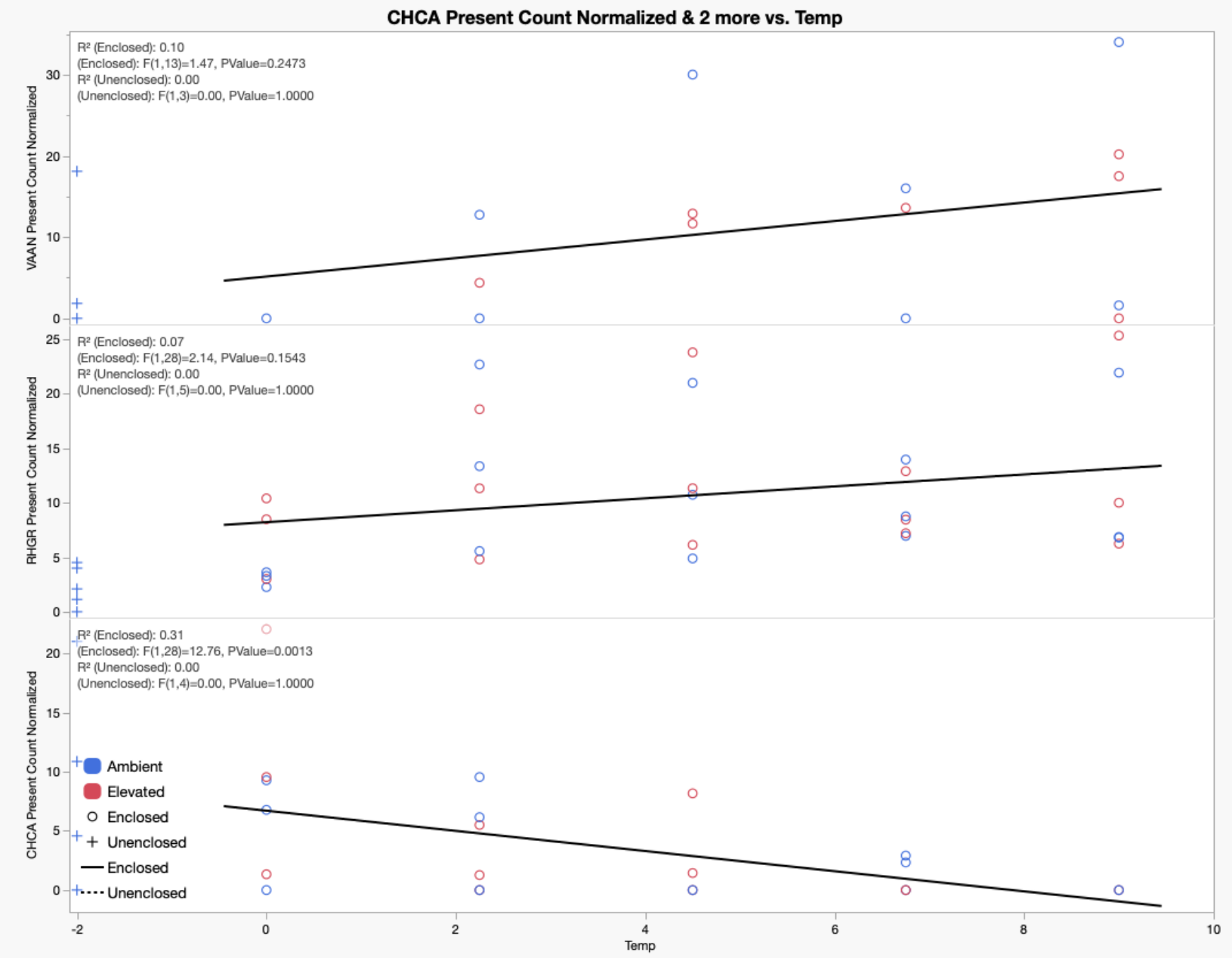
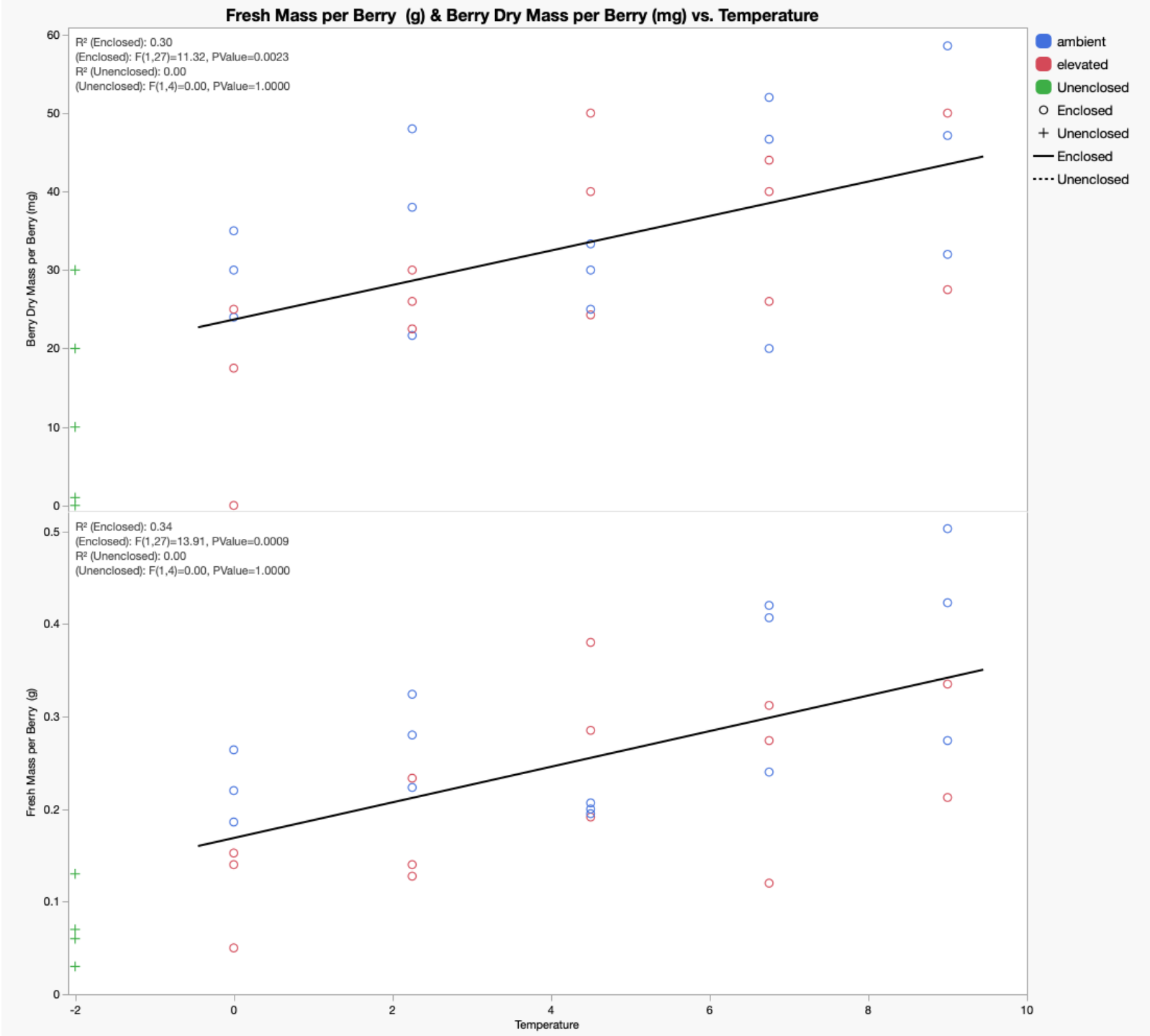


Results

- Shrub percent cover
- Shrub floral investment
- Shrub normalized floral investment
- Berry mass



Results

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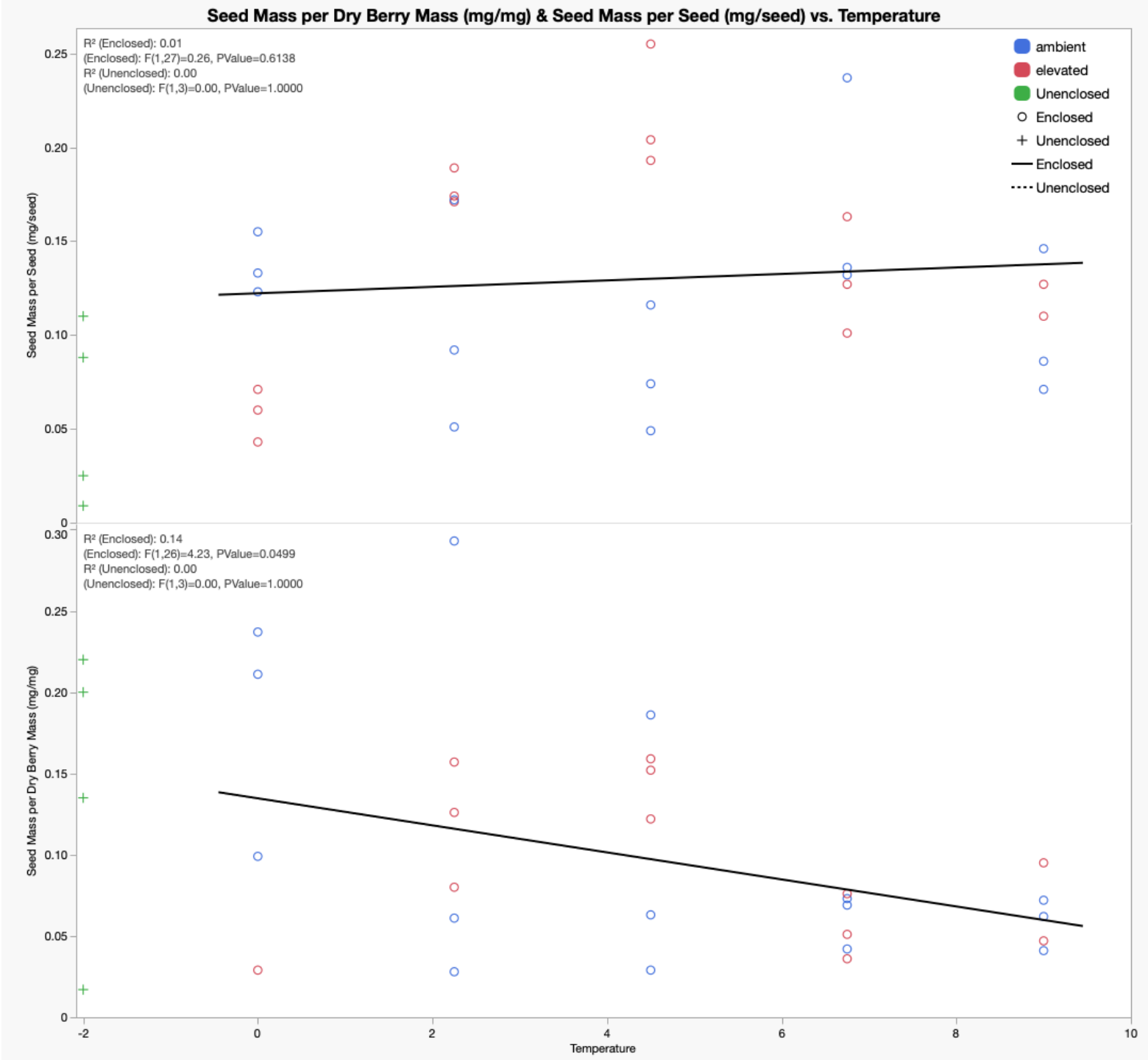
- Berry mass
- Seed mass



Results

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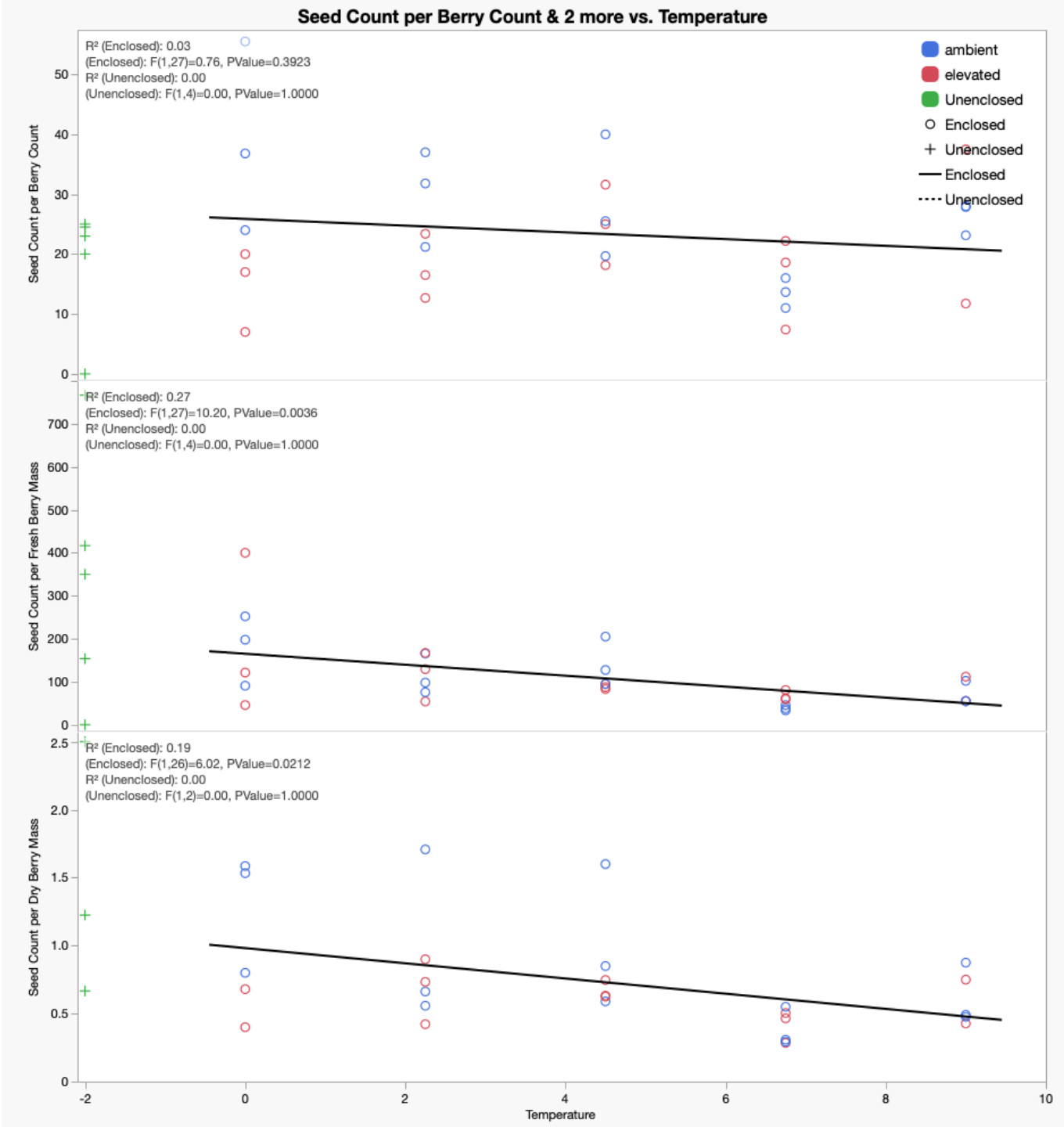
- Shrub floral investment
- Shrub normalized floral investment
- Berry mass
- Seed mass
- Seed count



Next

- Salvage what we can from RHGR, if anything
- Count CHCA
- Blueberry and seed C:N?
- Do again in 2025?
  - Get more robust blueberry measures?
  - Brainstorm better way to collect RHGR seeds?
  - Collect seeds for: Sugars, Metabolomics, Epigenetics?

Thanks! Questions?