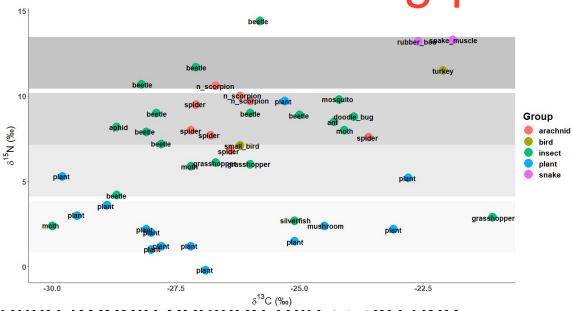
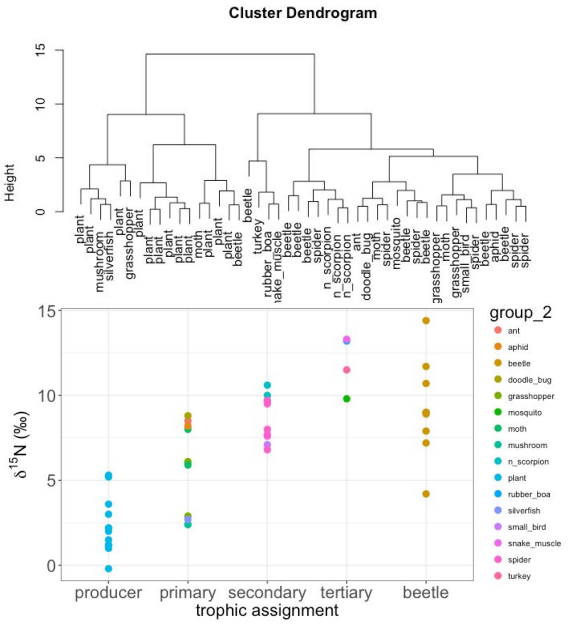
Group 1 -- HAIR TO THE THRONE: Herbaceous Assemblages Influence Relative Trophic Oscillations, Truly Hairy Estimations To How Radical OmNivores Eat

grp 1

Abstract: The stable isotope ratios of carbon and nitrogen have been extensively used to assess the structure of food webs and remains *in vogue* in the literature. Here, we evaluate the variation in isotopic niche position of various organisms collected at the proposed roadside LTER, Stockton-Rush Lake, a locale representative of much of the rural Greater Salt Lake. Organisms represented four hypothetical trophic niches, *primary producers, primary consumers, secc consumers.* We expected that isotopic composition would reflect both relative trophic position (via □ N) and likely source (via □^{13}C) and that the top consumers would be the most enriched with □^{15}N and would likely be either snakes or birds. We found that our hypotheses generally held, but that the most enriched consumer was neither a snake nor a bird, but rather a beetle found consumer a snake carcass. These results suggest that top consumers in many ecosystems may not be the largest consumers, but rather scavengers!





Hypotheses: Isotopic niche variation in organisms interacting in a food web will reflect trophic structure and resource discrimination. In particular, □^{15}N will be the most depleted in primary consumers, especially for nitrogen fixing plants, and highest in top consumers. Variation in □^{13}C will reflect variation in photosynthetic discrimination, though few plants at this site are expected to employ C4 photosythetic pathways. Omnivorous primary and secondary consumers will fall between top consumers and sources and the most variation will be seen in invertebrates with plastic trophic ecology. Random sampling will inform our understanding of individuals that cluster with in the community as well as the ones that are more likely to be mobile, this will be shown in clustering of □^{13}C values.

Methods: We collected 48 organisms in a sage-brush environment that represent at least four functional trophic groups. In the laboratory we dried the organisms, ground samples, measured a subsample, and performed EA-IRMS analysis. We plotted the □^{13}C and □^{15}N values for to visualize food web structure in delta space, and we evaluated the □^{15}N value for each estimated functional trophic group to determine relative trophic position. Moreover, we used Ward's method to conduct a hierarchical cluster analysis to organize our samples according to relative distance-difference among □^{13}C :□^{15}N in Euclidean space.

Results: Plotting via □^{13}C vs □^{15}N shows a first look of species groups with in the community. Plants are sown at lower □^{15}N values and species at higher trophic values shower higher □^{15}N levels. Clustering occurred on the lower □^{13}C range showing a trend within the community. Examples of species that may have entered from other spatial regions are a grasshopper, turkey, and rubber boa. When □^{15}N levels are plotted versus trophic level in a box plot, a distinct positive trend arises sowing a significant difference and increase between each level.

Conclusion: Beetles Rule the Lands.