**Summary**

Mass mortality events, in which a large of animals perish rapidly, are increasing in magnitude and frequency, even as aspects of decomposition involving even single carrion, remain largely unknown. I explored how carrion decomposition affects arriving seeds (e.g., seed rain) and seeds in the soil (e.g., seed bank) position proximally and adjacent to carrion. Such seeds can be assigned to broad functional groups associated with physical, chemical, and morphological characteristics. Because of the extreme microhabitat characteristics associated with cadaver islands, I predicted that seed functional group and positioning of seeds would result in differing seed survival and subsequent plant community composition. We assigned multiple seeds of twelve species (3-10 seeds depending on species) belonging to these functional groups to each of four carrion deployment sites, each themselves consisting of six subplots arranged in a factorial design crossing scavenger exclusion, herbivore exclusion, and no exclusion with low and high amounts of carrion biomass. After carrion deployment in April, seeds were placed in the soil and on top of the soil surface both proximal and adjacent to carrion inside mesh packets designed to allow passage of putrefying carrion and moisture while retaining seeds. In addition, there was a reference plot with no carrion at each site where seed packets were placed underneath and on top of soil. Packets were recovered 21 days after carrion deployment and germination tests were conducted to determine the proportion of surviving seeds in treatment plots in comparison to the reference. The most parsimonious model indicated that decomposition presents a strong filter which promotes seeds with impermeable seed coats (physical dormancy), and that seeds arriving through seed rain have a greater chance to colonize cadaver islands than those in the seed bank. After one growing season of plant sampling, this filtering effect has not impacted community composition.

**Panel a**. I hypothesized that carrion decomposition would affect seeds differently depending on seed characteristics and position, which should have downstream consequences on recolonizing vegetation and landscape heterogeneity. The experimental design included four sites at the Nobel Research Institute, OK, each of which crossed carrion biomass with animal functional group exclusion using six plots and an additional reference plot. Within each plot, I nested four packets, crossing plant functional group with seed position. Plants can be assigned to one of three functional groups related to these seed characteristics: no dormancy (ND), physiological dormancy (PD), and physical dormancy (PY). Likewise, seed position can be described by four categories: seeds previously established in the soil bank or seeds arriving on the soil surface as seed rain, both proximal and adjacent to carrion. The results of the seed functional group experiment are represented in panel b, the vegetation community samples are presented in panel c, and the ordination comparing community composition across the landscape is displayed in panel d.

**Panel b.** All levels of seed placement and the physical dormancy functional group were significant predictors of seed survival, which I calculated as the difference in the proportion of surviving seeds compared in a treatment plot to seeds placed in the reference plot. Points represent individual species and plot comparisons with reference proportions (n = 432) and are jittered to prevent overlap (i.e., values are bounded between one and negative one, but may appear greater or less than these boundaries in the figure). Boxes are 95% confidence intervals with a crossbar representing the mean and solid lines showing the range of values. Arriving seeds survived more often than those in the seed bank and seeds positioned adjacent to carrion survived more often than those directly proximal to carrion.

**Panel c.** Over the sample period, plants in each functional group at treatment plots show no significant differences in mean cover, which I calculated as the difference in relative percent cover at the treatment as compared to the reference plot. Boxes again depict 95% confidence intervals with a the mean as a crossbar. A fourth group beyond the three plant functional groups is also represented here. This group compromises all observations of carrion, bare ground, dead plants, and plant litter, which represents open niche space for newly colonizing plants. Although there are no significant patterns in the vegetation data yet, there is more niche space available in plots with high carrion biomass, indicating the potential for changes in the community.

**Panel d.** Throughout the sampling period, plots show high site fidelity, but by the end of the sampling period, sites are increasingly clustered by biomass treatment, which reflects the carrion, dead plants, bare ground, and litter associated with cadaver islands. If this open niche space is colonized by plants with seeds that survive better with carrion decomposition, clustering may increase with more sampling. While vegetation assemblages at our sites are heterogenous among sites and homogenous within sites, if carrion biomass alters community assembly we expect to see this pattern reverse: sites with more carrion biomass will be homogenous across the landscapes and while plots within sites become more heterogenous.