**The interactive effect of nutrient enrichment and habitat destruction on consumer-resource alpha and beta-diversity across habitat sizes.**

**Eric Harvey, Andrew MacDougall**

Nutrient pollution, overharvesting, and habitat fragmentation are likely to affect consumers primarily via resource-based mechanisms, especially within terrestrial systems. An important issue when predicting the effect of multiple stressors is that their effect can interact in space and across trophic levels, leading to contrasting patterns of beta-diversity. We tested these interactions in a 13 ha large-scale plant-arthropod meta-community experiment. We found an interactive response to the multiple stressors with changes in consumer diversity mainly driven by plant response. We also found that the interactive effect of stressors can change across habitat sizes with bigger patches protecting communities against producer spatial homogenization thus supporting more consumers. Our results suggest an important context-dependence nature of the effect of environmental stressors and that, within grassland ecosystems, understanding the resource-based mechanisms by which global change affects producer communities at local and regional scales might be the key to predict future changes across the whole ecosystem.