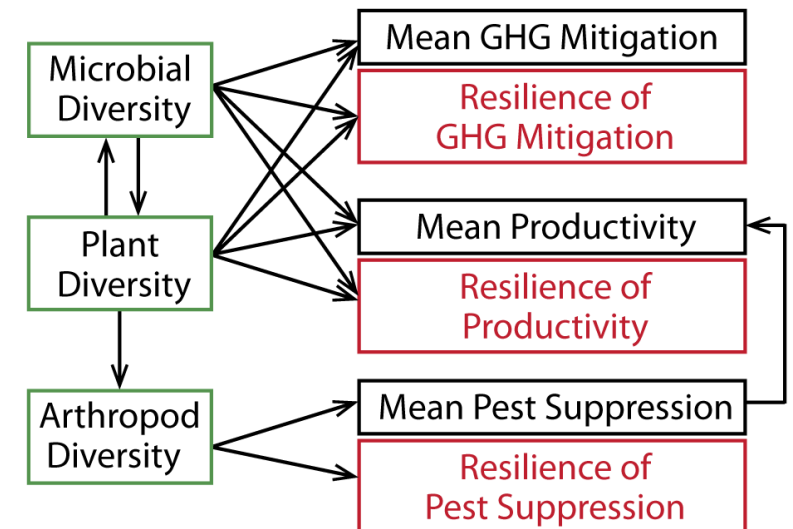
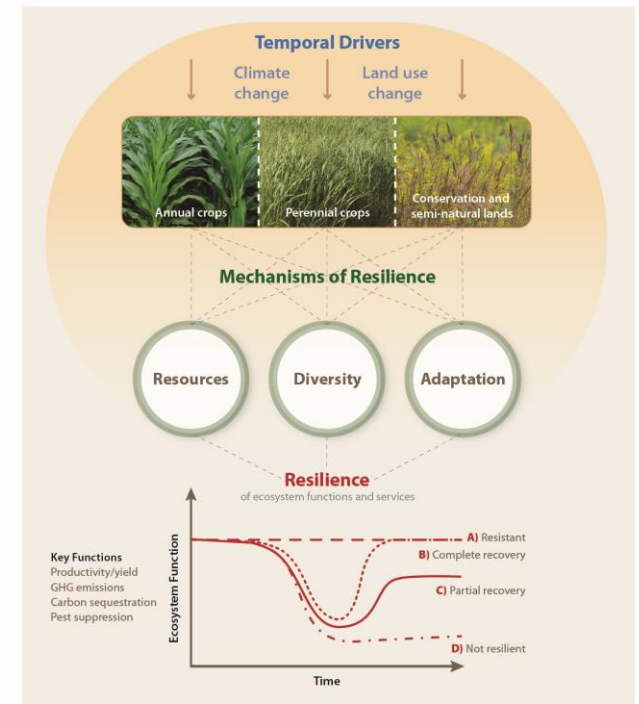
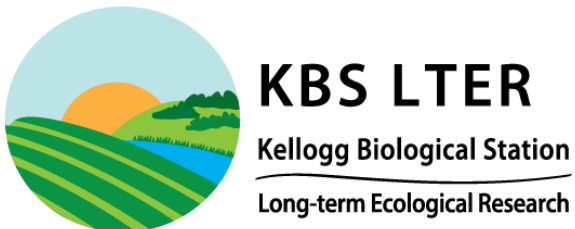


Diversity

- Sarah Evans, Nick Haddad, Jen Lau, Scott Swinton, Doug Landis
- Taxa of importance to ecosystem functions in agriculture
 - Microbes, Plants, Arthropods
- Diversity in evolutionary and human responses



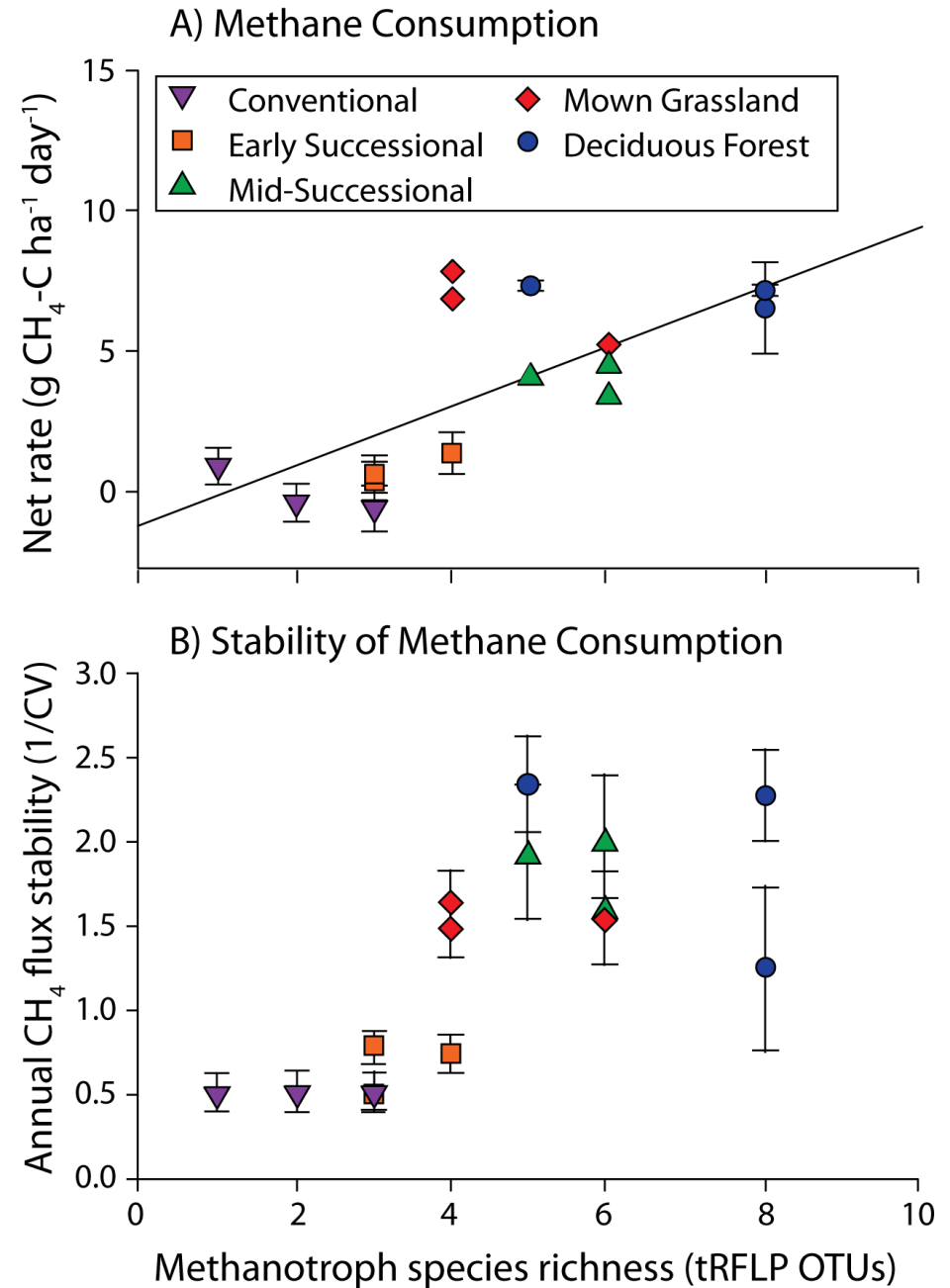
Issue

- Agricultural intensification
 - Increased reliance on high-yielding crop varieties, fertilization, irrigation, and pesticides (Matson et al. 1997)
- Landscape simplification
 - Leads to a loss biodiversity and ecosystem functions/services at multiple scales (Landis 2017)
 - Local
 - Landscape
 - Regional
- Unintended consequences
 - GHG emissions
 - Cyanobacterial blooms
 - Loss of pest suppression services, increased insecticide use



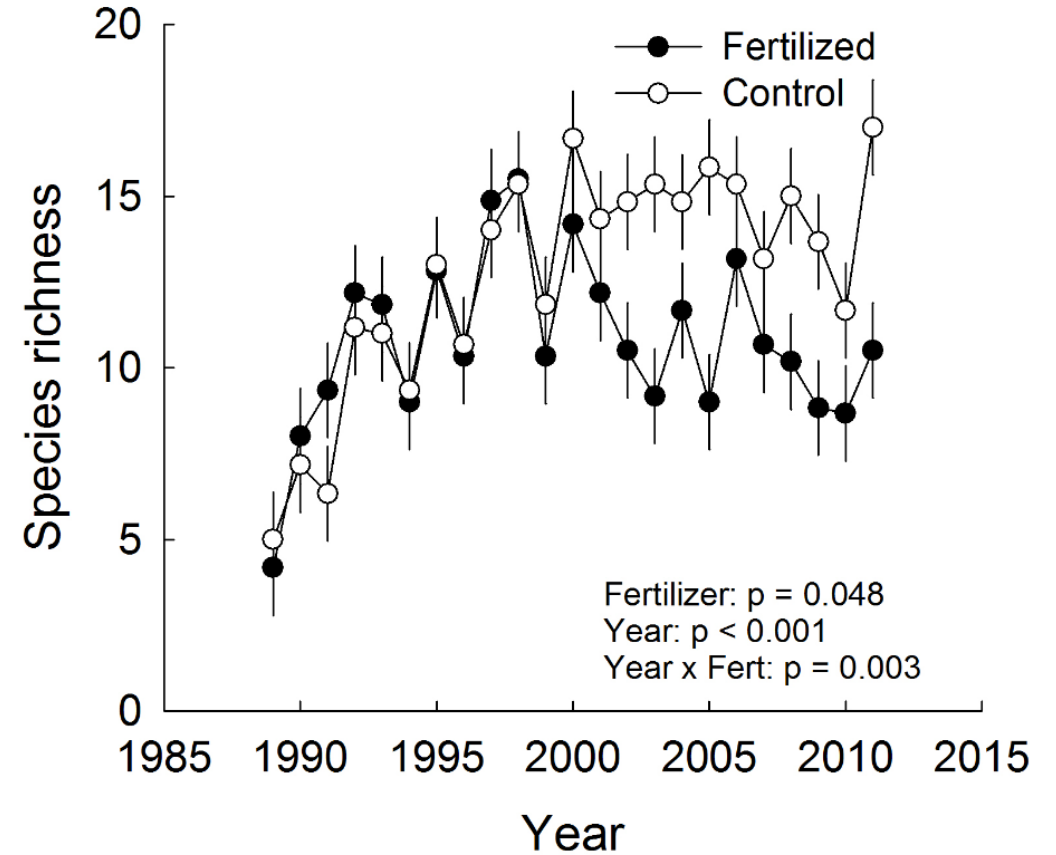
Past Results

- Methanotrophs and methane consumption
 - Levine et al. 2011



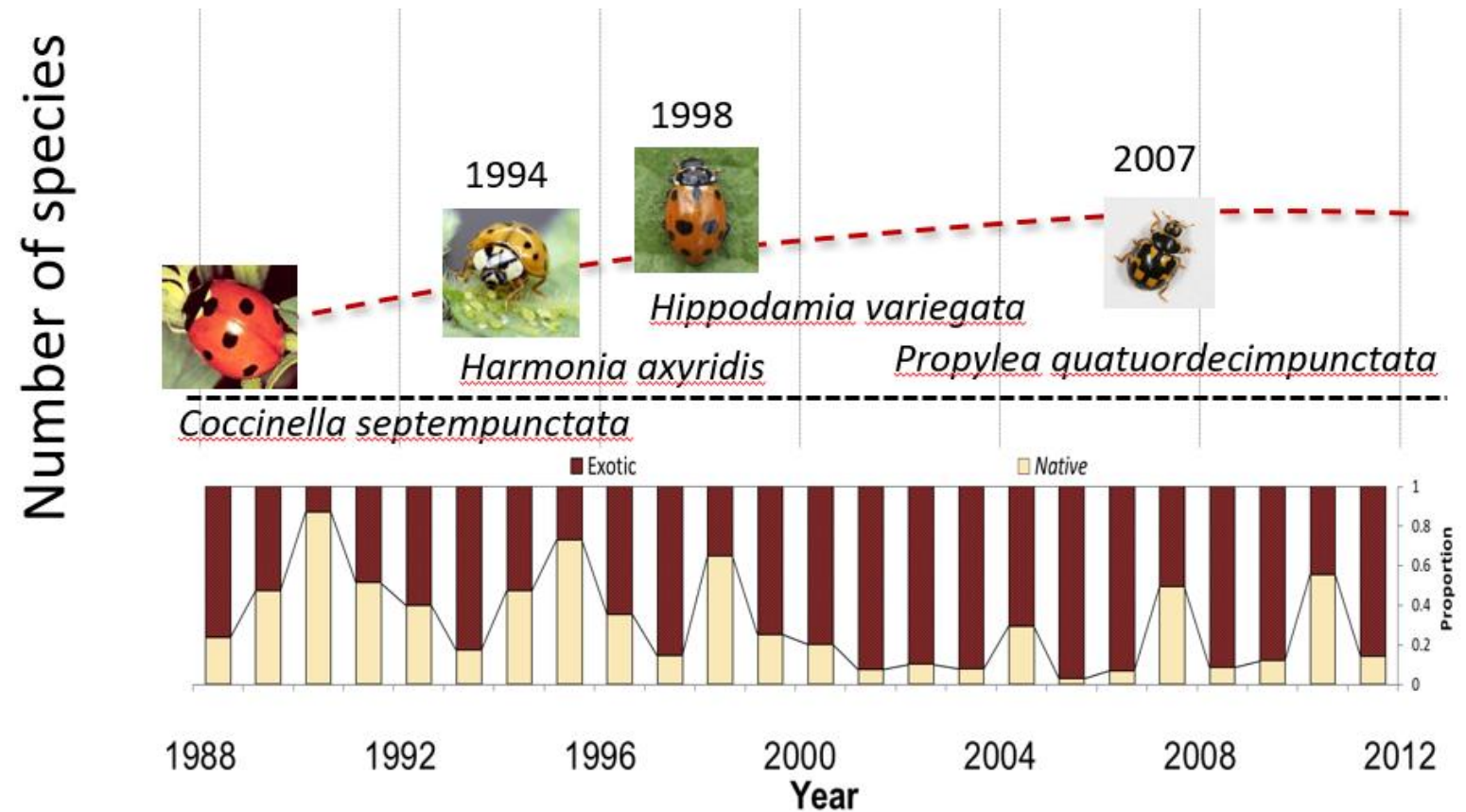
Past Results

- Plant diversity and productivity
 - Dickson and Gross 2013



Past Results

- Coccinellid diversity and pest suppression
 - Bahlai et al. 2013, 2014



New Questions

- How do taxonomic, functional, and intraspecific diversity affect resilience of ecosystem functions, and how do these effects vary across land use?
- Can higher diversity created by restoration or management produce more resilient ecosystems?
- When are adaptive evolutionary and technological responses likely, and how do they increase resilience?

Approaches

- Manipulate precipitation
 - Microbial and plant responses
- Manipulate diversity
 - Microbial diversity (inoculations & resources)
 - Prairie strips
- Assess farmer practices
 - *Farmer Panel Survey:*



Kurt Stepnitz Photography



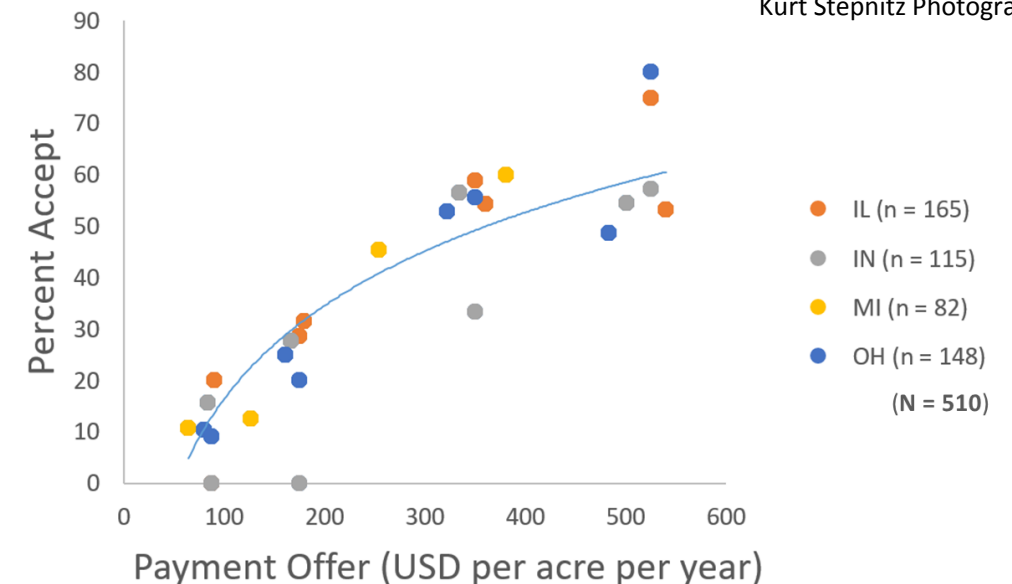
Tallgrass Prairie Center

Initial Results

- Baseline sampling underway
 - Soil microbes
 - Soil microarthropods (collembola, mites)
 - Ants, carabids
 - Pollinators, butterflies, coccinellids
 - Birds
- Willingness to adopt prairie strips
 - Zachary Luther, Scott Swinton, Braeden Van Deynze

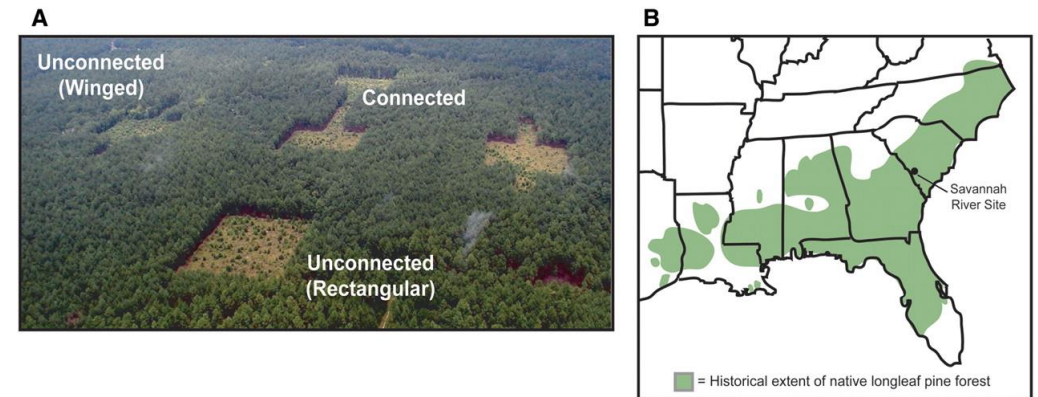


Kurt Stepnitz Photography



Collaboration Opportunities

- ISU Prairie STRIPS Project
 - Design
 - Microbial diversity
- USFS Savannah River Corridor Project
 - Haddad and Brudvig labs
- USDA Long-Term Agroecosystem Research
 - “Aspirational Treatment” to include native vegetation strips
- Other LTER’s
 - Cedar Creek, Konza Prairie, Sevilleta, Jornada Basin...



MAP OF 18 LTER SITES

