Background and Significance

- Dung beetles (Family: Scarabaeidae) provide multiple ecosystem services including dung decomposition and parasite control.
- 900 billion kg of dung decomposition valued at $380 million per year in US.
- Current biodiversity crisis causing loss of biodiversity and ecosystem services.
- Over 99% of tallgrass prairie in Illinois has been lost.
- Bison - declined due to overhunting and habitat loss, but are native grazers that play a keystone role.
- Previous research has examined this ecosystem service in tallgrass prairie ecosystem.

After bison are reintroduced, will ecosystem services follow?

Methods

- Study Site: Nachusa Grasslands, Franklin Grove, IL
- Restoration began – 1986, Bison reintroduced – 2014, 600 hectares to graze
- Studied six plantings, paired by restoration age, with three bison grazed and three non-grazed sites
- Ten dung pats per planting – 5 caged and 5 exposed
- Measured dung mass weekly for six weeks and dung beetle abundance

Research Question and Hypothesis

- Research Question: How does the presence of bison and time since restoration affect dung decomposition?
- Hypothesis: Decomposition will increase with bison grazing and time since restoration.

Results

Dung decomposition increases with bison grazing and time since restoration.

More Results

Dung beetles are more abundant in bison grazed sites.

Future Directions

- Implement this project using similar methods over a full chronosequence of sites at Nachusa.
- Are larger dung beetles decomposing more dung?
  - Exclude certain taxa using different mesh
  - Use pitfall data to compare abundance and decomposition

Acknowledgements / References Cited


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