

Ant species richness and abundance in Western Minnesotan prairie fragmented by large-scale agriculture



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Introduction

Offering a fine-scale, dynamic view of ecosystems, ants may be good indicators of habitat biodiversity and ecosystem health (Andersen & Majer 2004, Stadler & Dixon 2005, Styrsky & Eubanks 2007, Siquera Neves *et al.* 2011). Currently, little is known about the ant species in Western Minnesota prairie, habitat fragmented by large-scale agriculture (Trager 1998, Kittleson *et al.* 2008). Particular ant species may be associated with native prairie forbs, highlighting the importance of native forbs in prairie restoration, management, and monitoring. I hypothesize that ant species richness and abundance will differ among prairie remnants, perhaps with the smaller remnants exhibiting less richness and higher abundance.



Goals

- Determine ant species richness and abundance on each of the prairie sites
- Identify the ants associated with the prairie forb, *Echinacea angustifolia*

Study Sites

• 4 prairie fragments of varying sizes and the burned and unburned units of Staffanson prairie preserve in Douglas County, Western Minnesota



Methods

Pitfall Traps: We placed pitfall traps 5m apart in two plots on each site, with 12 traps per plot and 24 traps per site. With a minimum of 10m between plots, we placed Plot A around *E. angustifolia* and Plot B in areas without *E. angustifolia*. We filled traps ¼ of the way with propylene glycol, a drop of soap to decrease water tension, and capped the traps for one week to minimize effects from disturbance. On July 1st we uncapped the traps and collected ants on July 10th and 17th, freezing ants in Ziploc bags for later identification.



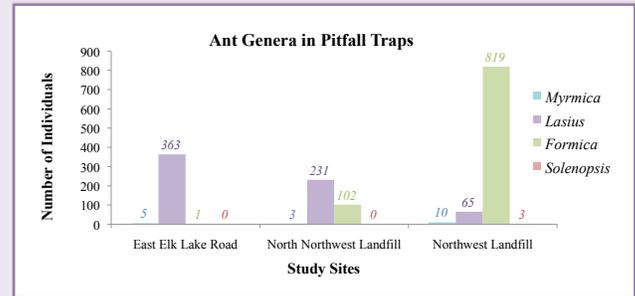
Surveying Ants on *Echinacea angustifolia*: July 5-7th and 23-25th we surveyed between 7 and 40 basal and flowering *E. angustifolia* plants at every site, collecting ants into vials of ethanol.

Identifying Ants: I am currently sorting, pinning, and identifying ants representative of each morphospecies, using online resources such as antweb.org, *The Ant Genera of Illinois*, and Carleton College's *Ants of Cowling Arboretum and McKnight Prairie* to key specimens to genus.

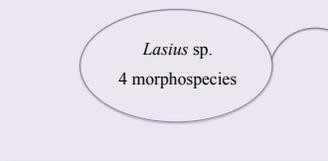


Preliminary Results

Presently, I have identified 4 genera and 13 potential morphospecies of ants. These identifications have yet to be confirmed by an entomologist.



Myrmica sp.
3 morphospecies



Lasius sp.
4 morphospecies



Formica sp.
5 morphospecies



Solenopsis sp.
1 morphospecies



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