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# The Effects of a Prescribed Burn on Small Mammals in an Ohio Tallgrass Prairie

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**Presenters**

Austin Bush, Randy Howell, Daniel Nordquist, Grace Revenaugh, Kortney Good, Chelsea Griffin, Abbie Belcher, and Mark A. Gathany

# The Effects of a Prescribed Burn on Small Mammals in an Ohio Tallgrass Prairie

Austin Bush, Kortney Good, Chelsea Griffin, Randy Howell, Dan Nordquist, Grace Revenaugh, Abbie Belcher & Mark Gathany

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## Introduction:

Prescribed burning is used on prairies for increased prairie health and to manage the communities of organisms that rely on the prairie's natural resources. Some of the benefits of burning are (1) to keep brush or invasive plant species at a minimum (2) to increase certain species of animals (3) and to increase production of native plants. Small mammals are affected by the burning of prairies as well. The burning can cause population decrease in the selected areas due to population migration to adjacent areas.

## Hypotheses

1. We hypothesize that once the prairie is burned, small mammal populations will decrease due to a lack of habitat and food sources.
2. We predict a significant increase in small mammal populations in the adjacent prairie (or forest) as a result of animal emigration away from the resource depleted prairie.

## Methods

### Site description

The field used for this experiment is located at the coordinates N 39.754204 W -83.809992. The restored prairie is composed of various grass and forb species. Dominant species include Indian Grass, Big Bluestem, and Goldenrod, and raspberry.

### Experimental Design

We set out 35 Sherman live traps and each was baited with a mixture of peanut butter and seeds. The traps were insulated to provide materials for trapped small mammal nesting. Each trap was geo-referenced with a handheld Garmin Dakota GPS unit. Using ArcMap we visually displayed the number of trapped small mammals.



Figure 1. The field mouse.

Trapping was done between 21 March and 13 April 2014. When the traps were set they were checked twice daily. The prescribed fire was completed on 1 April 2013.

## Results

### Pre-Burn

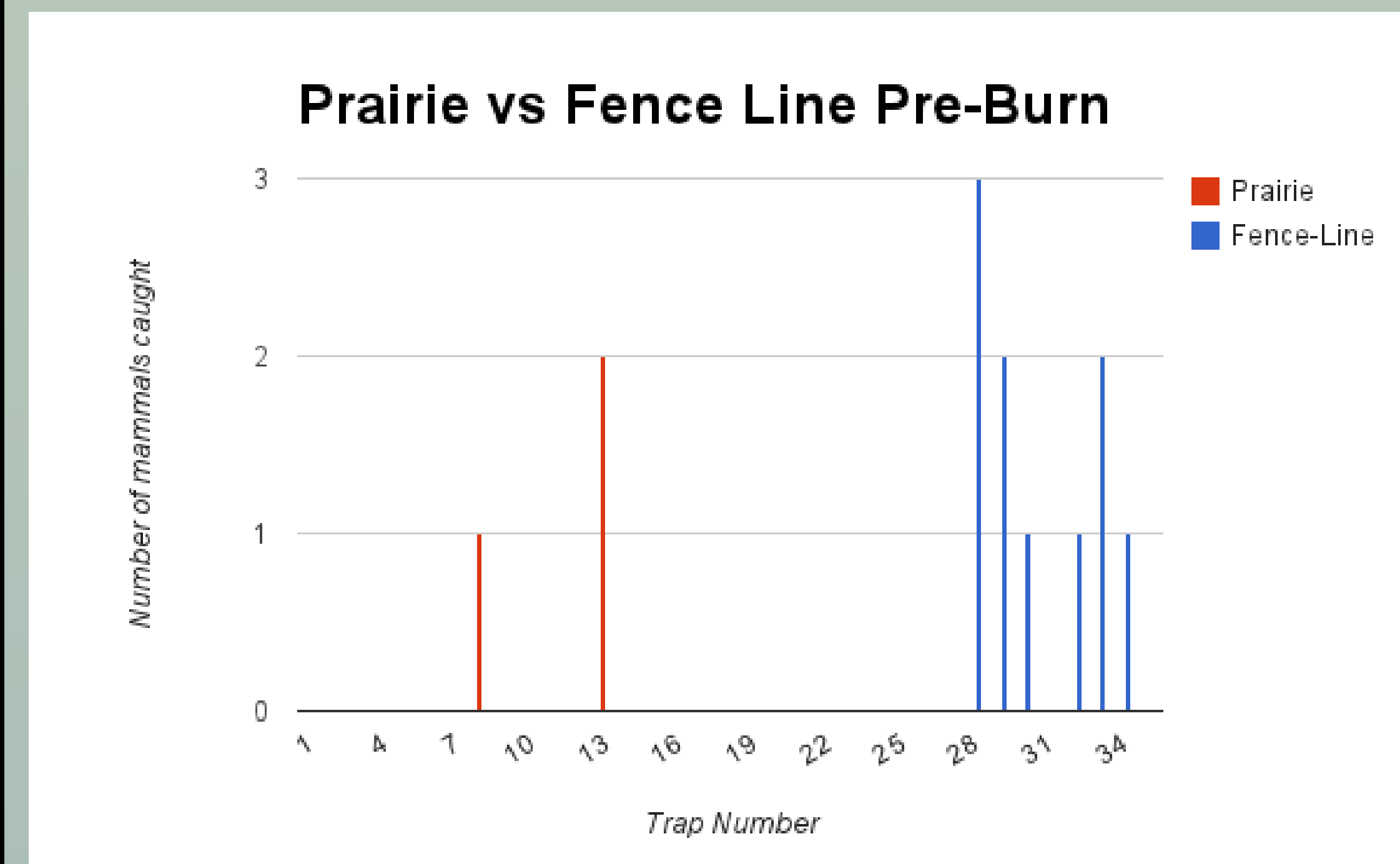


Figure 2: The prairie before the prescribed fire.

### Post-Burn

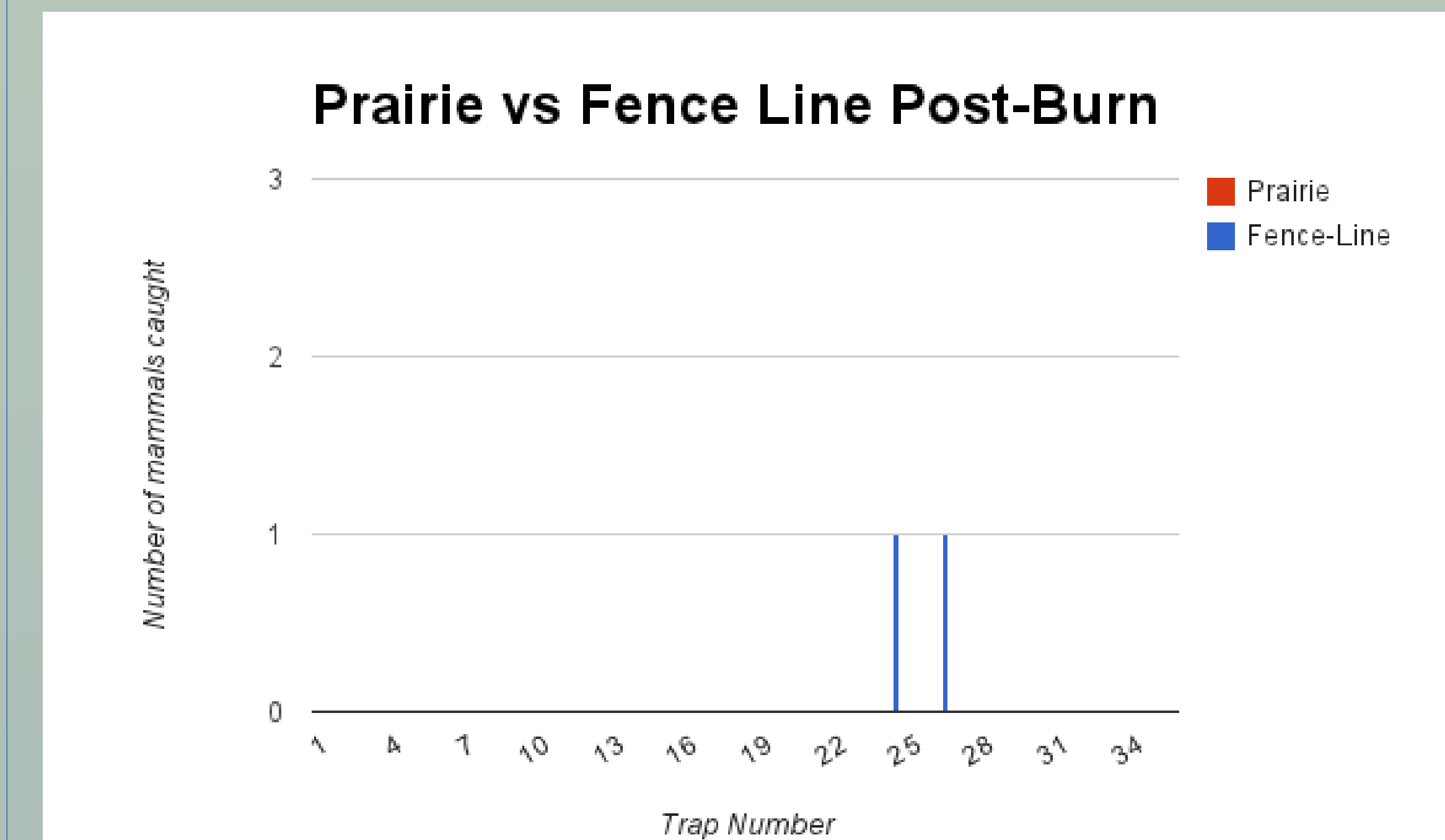


Figure 3: The prairie during the prescribed fire.

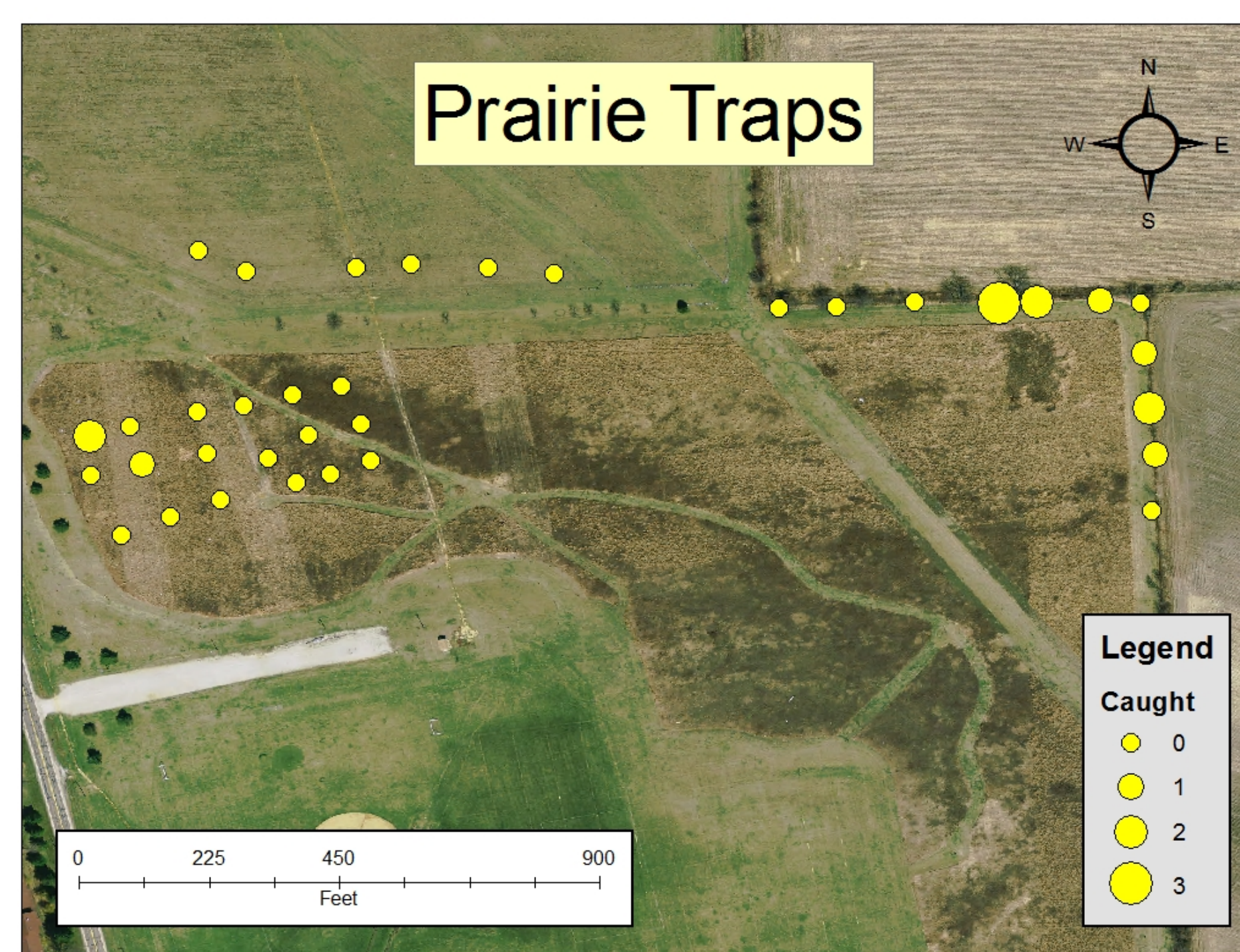


Figure 4: Map of number of small mammals trapped

### Acknowledgements

We would like to thank the Cedarville Township Fire Department, Professor Matthew Ingle for their assistance in this experiment

## Conclusions

After the prescribed burn, the total number of small mammals within the prairie environment decreased. The number of small mammals caught in the fence-line region also decreased from the number surveyed before the fire. Following the conduction of the survey, we did not feel that data collection was conclusive enough to determine if there was a significant migration of the small mammal population. Data acquisition resulted in two observed species: the Deer Mouse and Meadow Vole. With the exception of two Meadow Voles, the majority of small mammals collected were Deer Mice.

There are several factors that could have influenced our results. Following the burn, we noticed that bait appeared to have been removed from a large number of traps on a daily basis. This could indicate that an animal that was either too large or too small to set off the traps was feeding on our bait. Several days of precipitation also resulted in the flooding of portions of the prairie and fence-line environments.