

Comparison of Diversity of Small Mammals In and Around Itasca State Park Inside Forested and Prairie Areas

Tanner J. Kraft

Introduction:

In a series of three trap nights, we collected data from trapped small mammals in a group of eight separate grids in stands of pine, aspen, bog, oak savannah, and burned prairie. The purpose of these trappings was to determine the abundance and diversity of small mammals in each of the eight trapping stations, and then compare these data to determine which, if any, are the more diverse areas in and around Itasca State Park. Many factors could be at play with the distribution and diversity of these small mammals, including edge effect, differential trappability, and most notably, habitat. The main data I used to compare diversity were number of species, total number of mammals, and recapture percentage.

Results:

In the four densely-forested areas inside Itasca state park, we recorded *Peromyscus*, *Myodes gapperi*, and *Tamias striatus* in burnt pine, *Sorex*, *Peromyscus*, *Myodes gapperi*, *Tamias striatus*, *Zapus hudsonius*, and *Sorex* in red pine, only *Peromyscus* in aspen, and *Myodes gapperi*, *Microtus pennsylvanicus*, and *Tamiasciurus hudsonicus* in a bog, for a total of seven different species trapped. Nineteen mammals were trapped in the burnt pine, sixteen in red pine, seven in aspen, and four in a bog, for a total of 46 small mammals trapped. We found the total recapture rate to be 26%, with the highest recapture rate site being 47% in burnt pine.

In four different prairie trapping sites, we recorded *Peromyscus* and *Spermophilus*

tridecemlineatus in the burned site near the road, *Peromyscus*, *Spermophilus tridecemlineatus*, and *Zapus hudsonius* in aspen, *Peromyscus* and *Spermophilus tridecemlineatus* in the burned area not near the road, and *Peromyscus* and *Myodes gapperi* in the oak savannah, for a total of five different species. Twelve mammals were trapped in the area near the road, thirteen in the aspen stand, five in the area not near the road, and six in the oak savannah. We found the total recapture rate to be 27%, with the highest recapture rate site being 42% in the area near the road.

Discussion:

There is an obvious abundance in species in forested areas compared to prairie sites. We caught 22% more species in the forested areas, and saw 29% more species. The bog of the forested areas was the least productive, capturing only four animals, while the burnt pine stand was the most productive, capturing nineteen animals. There is an obvious trend in the abundance and distribution of *Peromyscus*. This species was captured many times in every site except the bog. Most surprising, in the burnt pine grid seven of the eight *Peromyscus* caught were recaptures. This shows a clear deviation from the equal trappability assumption we must use in this study, but most other animals trapped did not show much deviation. *Myodes gapperi*, *Zapus hudsonius*, and *Microtus pennsylvanicus* were also seen at both sites, but in much fewer numbers.

To this difference in diversity I attribute habitat selection and edge effect. One study has shown that *Peromyscus* shows now affinity for forest-edge habitat, and *Myodes gapperi* shows a great affinity for it (Pasitschniak-Arts and Messier, 1998). Likewise, it has been

observed by myself and others in the Itasca field mammology class of 2008 that the thirteen-lined ground squirrel (*S. tridecemlineatus*) is mainly seen in prairies near forest edges, and the eastern chipmunk (*T. striatus*) is mainly found in forested areas but also forest edges. With the capture of four similar species in both locations it is evident that habitat isn't the most important factor, so food supply and population density may also contribute to diversity, exemplified by the stout abundance of *Peromyscus* in both locations.

Works Cited

Pasitschniak-Arts, Maria; Messier, Francois. *Effects of edges and habitats on small mammals in a prairie ecosystem*. Canadian Journal of Zoology 76(11): 2020-2025. 1998.