

Species Diversity among Small Mammals in Itasca State Park and Agassi Sand Dunes of Minnesota

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Abstract

This study compared species caught in Itasca State Park and the Agassi Sand Dunes of Northern Minnesota. Traps were set for 1320 and caught 61 unique individuals of eight distinct species.

We found four species living in both the forest and prairie.

Introduction

Live trapping can be an effective way to begin a small mammal species census in a large area. A large trap grid can capture a variety of species from the same small area. A large number of unique small mammal species are known to live in and around Itasca State Park and the Agassi Sand Dunes of Northern Minnesota. (Hazard 1982) The intent of this study was to compare the species variation between the wooded habitats of Itasca State Park and the prairie habitats of Agassi. The four habitats of Itasca State Park that were surveyed are; burnt pine, red pine, aspen, and bog. The four habitats of the Agassi Sand Dunes are, burnt both near the road and away from the road, aspen prairie, and oak savanna. Prairie and forest are very different habitats supporting different species. (Hazard 1982) Species caught in the forest are not expected to be found in the prairie and vice versa.

Methods

For the project two locations were selected, Itasca State park in Clearwater and Hubbard Counties, MN, and Agassi Sand Dunes, Norman County, MN. In each location four habitats were selected to be sampled. The class was divided into four groups. Each group was assigned a habitat in each of the two locations to set up grids. Traps were arranged in grids of five columns

spread 10m apart and 10 trap stations in each column placed 10 m apart to form a rectangular grid 50m x 100m. Nine trap stations in each column were occupied by Sherman traps baited with sunflower seeds. One randomly selected station in each column was occupied by both a Russian and Longworth trap baited with moist cat food. Grids were checked daily for three days. Mammals caught were measured, identified, marked and released.

Results

Our study spanned a total of 1320 trap nights (3 nights * 55 traps * 2 locations * 4 habitats). A total of 34 mammals were caught in the forest (Itasca State Park) and 27 were caught in the prairie (Agassiz Sand Dunes). A total of 8.4% (111 traps) were found either disturbed or closed (False alarm). Thirty-six percent of all animals caught were *Peromyscus spp.* Other species caught in both locations include; *Microtus pennsylvanicus*, *Myodes gapperi*, and *Zapus hudsonius*. Species caught exclusively in the forest were; *Sorex spp.*, *Tamias striatus*, and *Tamiasciurus hudsonicus*. The only species caught exclusively in the prairie was *Spermophilus tridecemlineatus*.

Table 1. Live trapping records from Itasca State Park, Clearwater and Hubbard Counties, MN

	Burnt Pine	Red Pine	Aspen	Bog
Disturbed	5	1	14	9
False Alarm	6	7	11	1
<i>Microtus pennsylvanicus</i>				2
<i>Myodes gapperi</i>	4	4		1

<i>Peromyscus spp.</i>	3	3	6	
<i>Sorex spp.</i>		1		
<i>Tamias striatus</i>	5	3		
<i>Tamiasciurus husonicus</i>				1
<i>Zapus hudsonius</i>		1		

Table 2. Live trapping records from Agassi Sand Dunes, Norman County, MN

	Burnt by Road	Aspen Prairie	Burnt not by Road	Oak Savanna
Disturbed	1		7	15
False Alarm	9	9	6	10
<i>Microtus pennsylvanicus</i>	1			
<i>Myodes gapperi</i>				3
<i>Peromyscus spp.</i>	3	4	2	1
<i>Spermophilus tridecemlineatus</i>	4	7	1	
<i>Zapus hudsonius</i>		1		

Conclusion

The results of the survey were surprising. Of the eight species caught four were caught in both the forest and prairie. There are three distinct species of *Peromyscus spp.* in Minnesota; *P.*

maniculatus bairdii, *P. maniculatus gracilis*, and *P. leucopus* field identification is unreliable so enzymatic analysis of saliva is required for identification. The varieties of the species *Peromyscus spp.* can be found in either wooded or grassy habitats. *Zapus hudsonius* prefers semi-open and wooded areas which would allow it to live in both locations easily because both had dense grasses and some hardwood cover. Two species were found in locations that are rather unusual *Microtus pennsylvanicus* was caught in the burnt prairie which is the open habitat they are expected to be in but two were also caught in the bog, far from any open grasslands. Similarly *Myodes gapperi* normally live in coniferous forests but we caught three in the oak savanna.(Hazard 1982) The results of our survey were not consistent with what would be expected, we found species where they would not be expected and didn't get a good sample from the trapping. There was only a 4.6% catch rate in 2008 compared to 6% in 2007, there was also one less species caught in 2008 compared to 2007.(Musser et al. 2007) One possible reason for the low mammal turnout is poor weather on the nights traps were set. The poor weather may have encouraged the animals to stay close to the nest. One other possible reason is that traps were only set for three nights at each grid, if they were set for more nights more species may have been caught. To expand this study further it should be continued next term and could be expanded by trapping again in the fall.

Literature Cited

Hazard, E. 1982. Mammals of Minnesota. James Ford Bell Museum of Natural History, Minneapolis, MN.

Musser, J., S. Said, and A, Sonnek. 2007. Diversity In Small Mammal Communities of Forested Sites Around Itasca State Park and Nearby Prairie Sites. University of Minnesota, Itasca Biological Station.