

# **Riveredge Burrow Research Project**

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## **Introduction**

This semester I have been interning at the Riveredge Nature Center where I had found multiple burrows. Riveredge Nature Center was established in 1968 and has roughly 379 acres of land. Those 379 acres contain many organisms and house many types of habitats. Specifically, the Riveredge sanctuary includes several vernal ponds, a designated state natural area creek, 1.5 miles of riparian habitat, several types of deciduous forests, a conifer forest, several wet meadows, nearly 30 acres of planted prairie, a fen, and 6 ponds that are home to over 180 species of birds, nearly 600 species of plants, 26 species of mammals and 7 species of frogs. There has been very little research conducted on the mammals at Riveredge, specifically burrowing mammals. Over the last several years, staff and visitors at Riveredge have noticed the increase in abundance of burrows located in the prairies and have wondered what type of animal has been making them.

There are many kinds of animals that rely on burrows for shelter and raising their young, and many of these animals that burrow tend to be smaller mammals such as rabbits and rodents, with the exception of some larger predators such as fox and coyote (Elbroch 2003). The purpose of this project was to investigate several burrows in prairie and woodland habitats to determine what animal established the burrow and/or what animal currently inhabited them

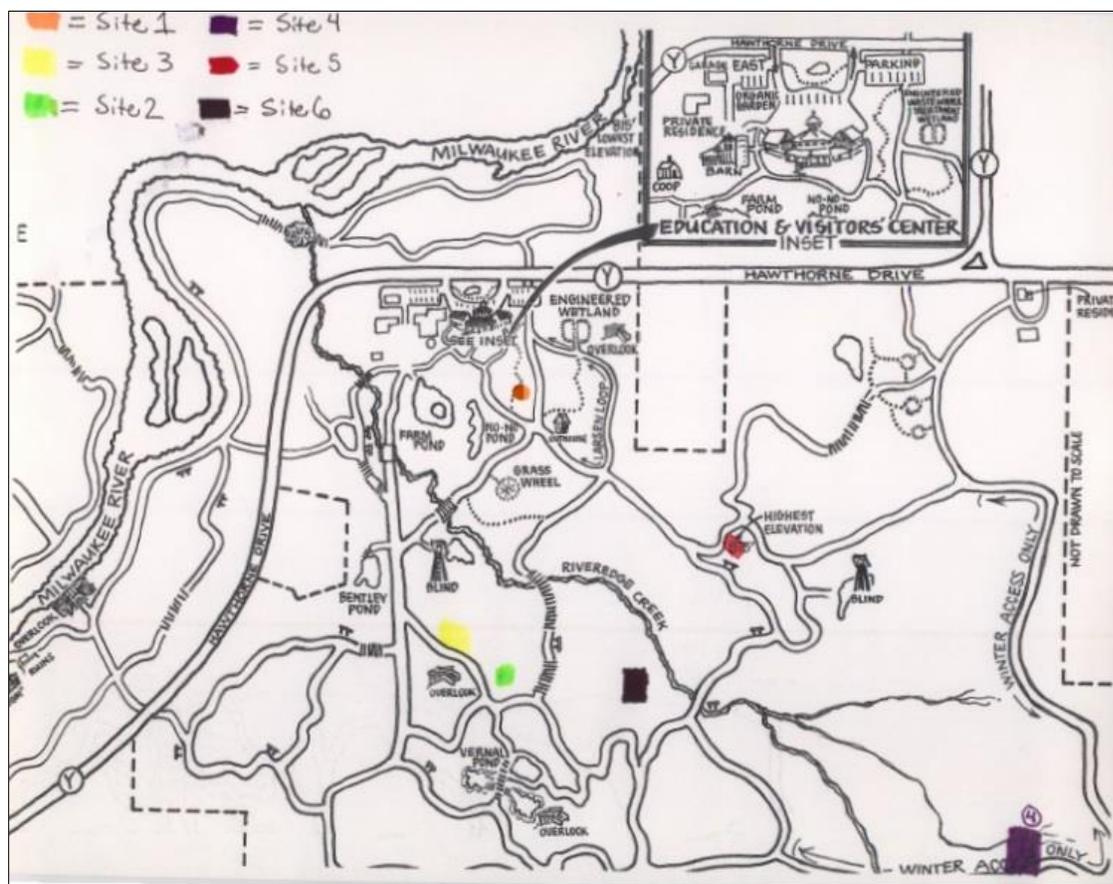
## **Methods**

### *Habitat Assessment*

Six burrow locations (see map on next page) were identified by hiking around the Riveredge sanctuary and recording burrow their locations on a trail map. All burrows were marked with a flag and given a number so that data could be recorded and analyzed. A habitat assessment, including soil texture/composition, burrow entrance measurements, air temperature outside and just inside the burrow entrance, and soil pH was recorded for each burrow. Signs of animal activity were also recorded (i.e. scat, tracks and fur). All data was from the habitat assessment was recorded and transferred into an Excel spreadsheet.

### *Trail Cameras*

One covert scouting camera was placed facing the burrow and roughly 5 feet away from the burrow entrance. Cameras were secured to either a tree or post (depending on habitat type) to collect pictures of animals that were within 10 feet of the burrows in the direction of the camera. Cameras were set to record activity from 5:00 pm-8:00 am for two weeks. Camera pictures from each burrow were analyzed for all animal activity; those animals that were identifiable and known to use burrows were recorded in the Excel database.



Map: Burrow locations throughout Riveredge Nature Center's sanctuary.

## Results

### *Habitat Assessment*

The habitats that contained the most burrows were forest and prairies. Most of the burrows were located in habitats that consisted of sandy loam soil; however, two of the six burrows were located in habitats that were dominated by silty loam soil. The average soil pH for these burrows was 7.1. The size of the burrow opening ranged from 10"x9"- 17"x15", the largest being the burrow that a fox was recorded at. The most common scat that was found near the burrows was that of raccoon and/or rabbit. The results of the habitat assessment can be found in Table 1.

### *Trail Cameras*

The trail cameras recorded several burrowing animals including raccoons, opossums, rabbits, and fox (Table 1). Raccoons appeared to be entering Burrow #2, a fox was recorded at Burrow #4, and rabbits, raccoons and opossum were recorded at several of the burrows.

Table 1: Habitat assessment measurements and animal presence at each burrow

Burrow	Habitat	Soil Type	Soil pH	Burrow Temp	Air Temp	Measurements	Scat Present	Animals Present
1	prairie	sandy loam	7.2	50	69	11 x 11	--	--
2	forested	silty loam	7	49	60	10 x 12	yes (raccoon)	raccoons, opossum
3	prairie	sandy loam	7.1	50	61	11.5 x 12	yes (rabbit)	rabbits
4	prairie	sandy loam	7.1	--	--	17 x 15	--	fox, rabbit
5	forested	sandy loam	7.2	--	--	10 x 9	yes (rabbit)	--
6	prairie	silty loam	7	--	--	11 x 13	yes (raccoon)	rabbits, opossum, raccoon

### Discussion/Conclusion

Based on the results, it was inconclusive as to what type of animal had excavated the burrows since actual excavation activities were not recorded on camera. In addition, it was difficult to verify if the animals seen on camera were actually the organisms living in the burrows; however, for sites where fox and/or rabbits were recorded, the burrow characteristics match the general burrow characteristics of these organisms.

All burrowing animals have their own distinctive traits to their specific kinds of burrows. Rabbits construct multiple tunnels and holes, foxes have larger diameter holes and typically have a musky smell to them, wood chucks usually have more well-ordered earth mounds at the beginning of their burrows and many have multiple entrances. In addition, animals such as raccoons and opossums have been known to occupy previously abandoned burrows (Elbroch 2003, Reichman and Smith 1990).

The Riveredge sanctuary consists of almost 380 acres and contains more than the six burrows that were investigated in this project. Of the six burrows investigated in this study, only one burrow presumably housed a medium-sized predatory species, a red fox (*Vulpes vulpes*). The number of fox recorded is less than originally expected, however, Richard (2006) states that foxes have very large territories that they live and hunt in. These territories can average anywhere from 17.1 to 32.1 hectares, which is 43.7 to 79.3 acres (Richard 2006). With such a big demand for territory, it would be rare to have a large abundance of fox in one area unless they are subordinate foxes or female foxes that are encompassed by an alpha male's territory.

Another reason why we might not have seen more foxes may be due to the coyote population at Riveredge. Being the largest predatory mammal at Riveredge and one that is known to have large territories, coyotes, have the ability to intimidate and influence the size of fox territories; fox found at Riveredge may have smaller territories allowing for several foxes on the property (Reichman and Smith 1990).

Riveredge Nature Center's sanctuary is home to many organisms, some of which are known to make burrows. Fox, rabbit, raccoon, and opossum are just a few of the animals that inhabit these burrows; some animals build underground burrows while others may be more opportunistic and move into pre-existing but abandoned burrows.

## **References**

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Richard, Bryan. 2006. *A Field Guide to the Wildlife of North America*. Bath, England: Parragon Pub.