Small mammal survey of Greenwoods Conservancy: Sites A and B, summer 1998

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INTRODUCTION

In the Town of Burlington, Otsego County, New York, lies a preserve of approximately one thousand acres known as Greenwoods Conservancy. This preserve is protected under a conservation easement through the Otsego Land Trust and is valued as a resource for education and scientific research (Taylor, 1994). During the summer of 1998, a preliminary study of the small mammal populations was conducted in two meadow locations at Greenwoods. The purpose of this study is to estimate the abundance and distribution of small mammal populations using live trapping techniques and by means of the Mark-Recapture Model (Schemnitz, 1980). Being the first of its kind to be conducted at Greenwoods, this survey will serve as a basis for reference and comparison for similar studies that will be conducted in the future. An accurate population estimate allows for the evaluation of changes in populations and their distributions.

METHODS AND MATERIALS

Mammals were captured at two meadow sites: Site A is located in Broad Meadow and Site B in Boondocks (Figure 1,). Twenty-five traps were set at each site using a modified Osenni protocol (Osenni, 1984). Trapping was accomplished with the use of pitfalls (empty plastic mayonnaise jugs) instead of one-catch traps (Figure 2). This would allow for more than one specimen to be caught in one trap, thus avoiding trapper bias. The jugs were placed in holes dug in the Osenni pattern, partially buried and camouflaged. Sunflower seeds were placed in the surrounding area to serve as an incentive. Seeds were also placed inside the traps in attempts to sustain the mammals caught.

Traps were checked once daily and closed over the weekends. When pitfalls became filled with water, they were dumped and/or sponged dry. Specimens caught alive were identified according to Whitaker (1997), measured, gendered, marked with bright green spray paint, and then released. According to the Mark-Recapture Model, the ratio of recaptured mammals to captured mammals can be used to estimate the population with this equation (Schemnitz, 1980):

$$N = \frac{M(n)}{m}$$

N = Estimated population
M = Total mammals marked and released
n = Total mammals captured
m = Marked mammals recaptured

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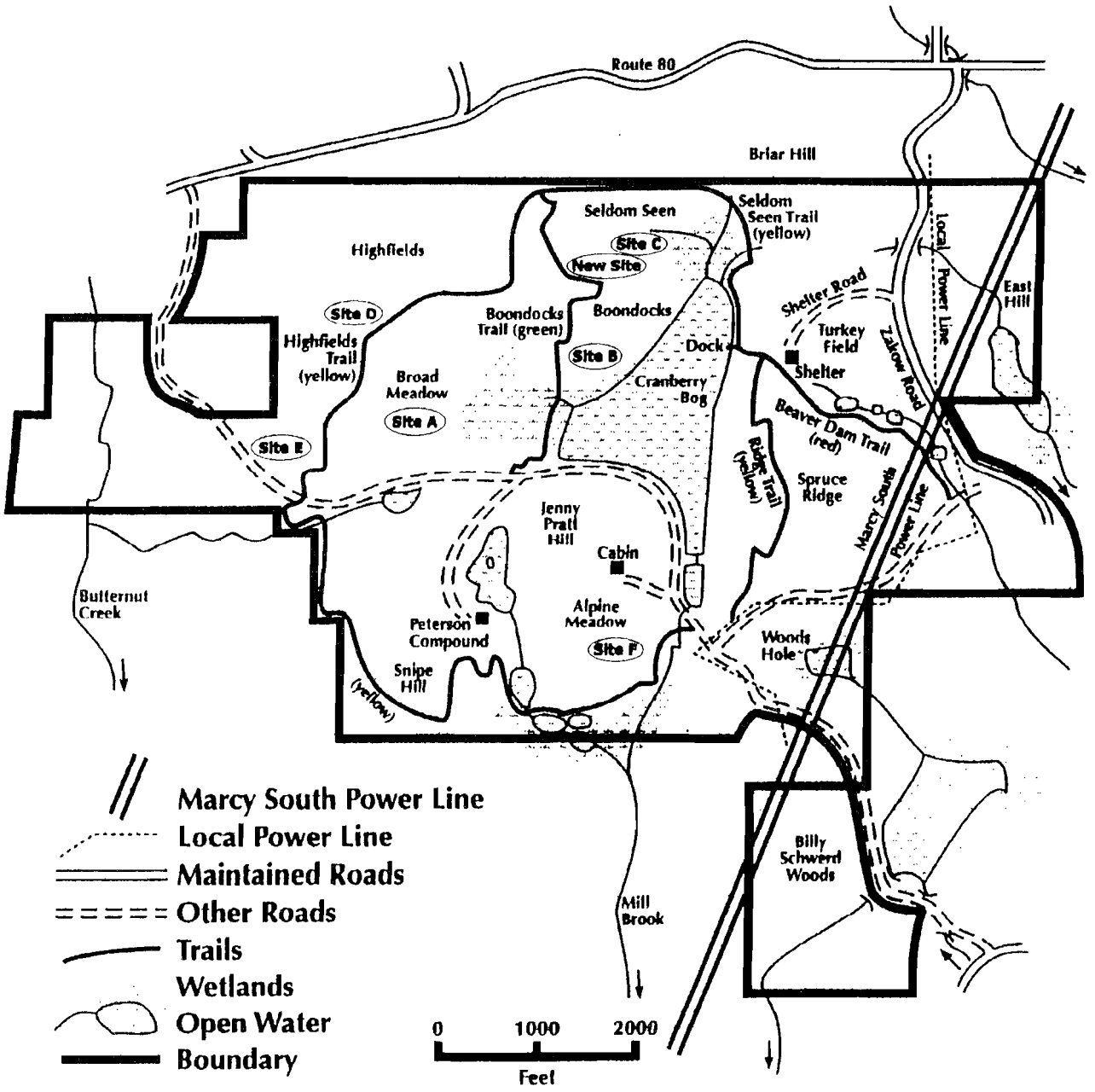

Figure 1. Map showing site locations at Greenwoods Conservancy (From Villanella, 1999).

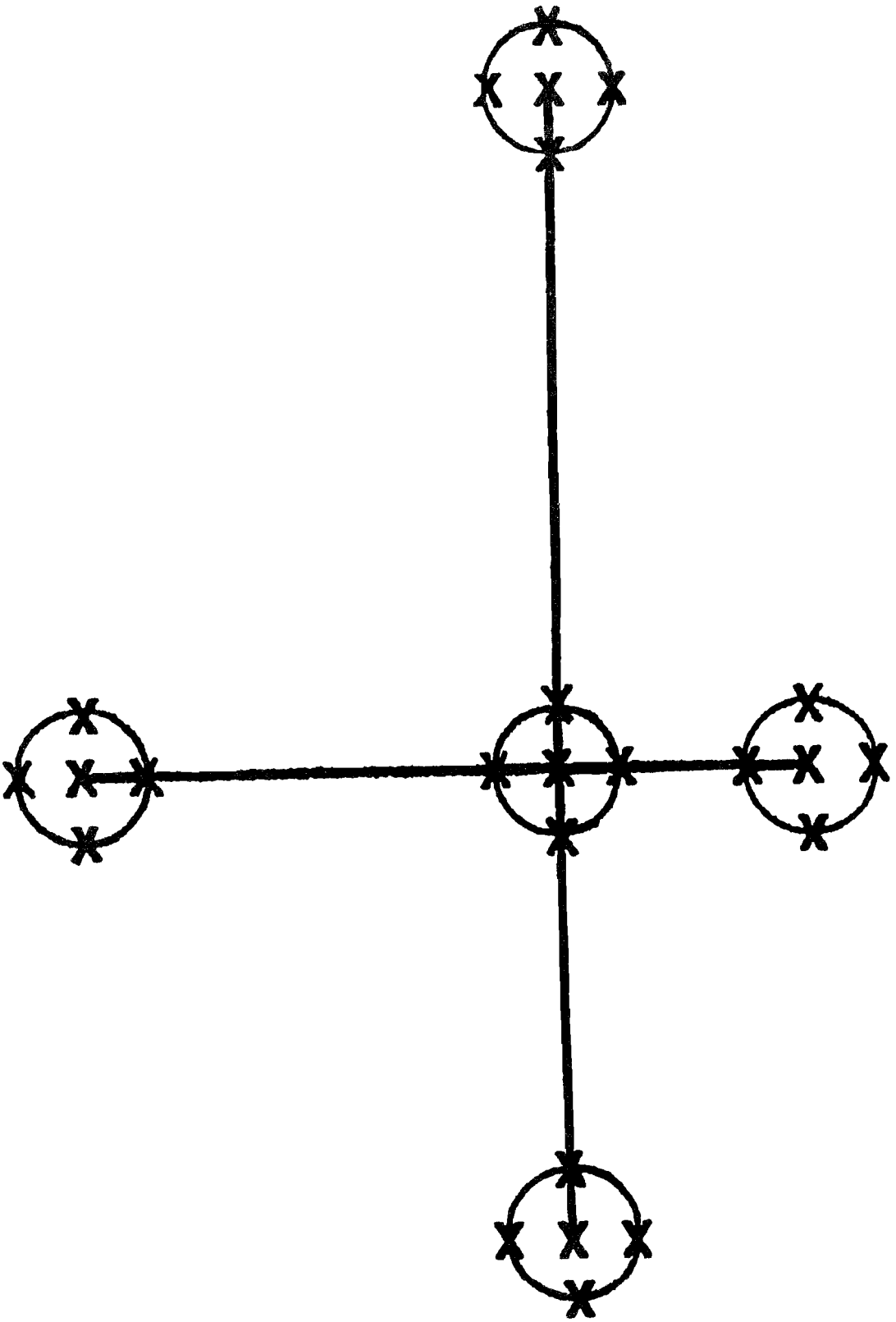

Figure 2. Sample plot arrangement (Osenni, 1984). One central plot of 20 meter radius, four outer plots on perpendicular lines 45-60 meters from the center. Each X represents a trap location (From Villanella, 1999).

Specimens found dead were collected, measured, gendered, and some were prepared as study skins for future reference. Skins were dried and preserved using boric acid.

RESULTS AND DISCUSSION

Table 1 provides a list of the small mammals captured during this study. Some specimens were too decomposed for any measurements or sex to be determined. Three different species were identified: *Microtus pennsylvanicus* (meadow vole), *Sorex cinereus* (masked shrew), and *Blarina brevicauda* (short-tailed shrew). The meadow in Seldom Seen (Site B) exhibited a greater abundance and diversity than Broad Meadow (Site A). The table also indicates that a large percentage of captured mammals died in the traps and the number of mammals marked and released was low. It was assumed that the mammals were usually more active at night, so traps were checked only once daily during the morning hours. This proved to be an error. Many unnecessary deaths occurred that may have been avoided had the traps been checked several times a day. Many specimens seemed to have died from hypothermia in wet traps, and others may have drowned. Some specimens may have died from insufficient amounts of food. The metabolisms of small mammals are high, and therefore they probably require an almost constant supply of energy.

The remains of eaten seeds were observed inside empty traps on several occasions. It is possible that another animal, such as the meadow jumper, fell into the traps, ate the seeds, and was able to escape or that a predator may have been raiding the traps.

Few mammals were caught and released alive and no marked mammals were recaptured. Therefore, the Mark- Recapture equation cannot be applied and no valid population estimate can be calculated. Intensive trapping and release of a higher percentage of specimens would allow accurate population estimates to be made in the future.

REFERENCES

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Table 1. Taxonomic list of small mammals collected during this study.

Date	Site	Specimen	Sex	Length	Girth	Marked and Released
7/7/98	A	*Microtus pennsylvanicus*	M	115	75	N
	A	*Microtus pennsylvanicus*	M	90	55	N
	B	*Microtus pennsylvanicus*	M	130	70	N
	B	*Microtus pennsylvanicus*	M	130	80	Y
7/8/98	A	*Microtus pennsylvanicus*	F	155	90	Y
	A	*Microtus pennsylvanicus*	M	145	90	Y
	A	*Microtus pennsylvanicus*	M	140	75	Y
	A	*Microtus pennsylvanicus*	M	135	70	Y
	A	*Microtus pennsylvanicus*	F	110	80	Y
7/13/98	A	*Microtus pennsylvanicus*				N
	A	*Microtus pennsylvanicus*				N
7/14/98	A	*Microtus pennsylvanicus*	F	140	75	Y
7/15/98	A	*Microtus pennsylvanicus*	M	130	85	N
7/16/98	A	*Microtus pennsylvanicus*	M	110	80	N
7/21/98	A	*Sorex cinereus*	F	90	45	N
7/22/98	A	*Sorex cinereus*				N
7/23/98	A	*Microtus pennsylvanicus*	M	130		N
	A	*Microtus pennsylvanicus*	M	120	85	N
	B	*Sorex cinereus*				N
7/24/98	A	*Microtus pennsylvanicus*	F	105	75	Y
	A	*Blarina brevicauda*	F	115	70	N
	A	*Sorex cinereus*	F	95	40	N
8/3/98	A	*Sorex cinereus*	F	80	50	N
8/5/98	B	*Microtus pennsylvanicus*				N
	B	*Microtus pennsylvanicus*				N
	B	*Microtus pennsylvanicus*				N
	B	*Microtus pennsylvanicus*				N
	B	*Microtus pennsylvanicus*	M	145	75	N
	B	*Microtus pennsylvanicus*	M	135	70	N
	B	*Microtus pennsylvanicus*	M	160	75	N
	B	*Microtus pennsylvanicus*	M	160	80	N
	B	*Sorex cinereus*	M	108	43	N
	B	*Sorex cinereus*	F	93	45	N
8/6/98	B	*Microtus pennsylvanicus*	M	132	82	N
8/7/98	A	*Microtus pennsylvanicus*	M	130	70	Y
	B	*Blarina brevicauda*	F	110	90	N
8/10/98	B	*Sorex cinereus*				N
8/11/98	B	*Microtus pennsylvanicus*	M	162	91	N
	B	*Blarina brevicauda*	F	110	65	N
	B	*Sorex cinereus*	M	90	50	N
8/13/98	B	*Microtus pennsylvanicus*	M	160	90	N

	B	*Microtus pennsylvanicus*	F	135	70	N
	B	*Sorex cinereus*	F	80	50	N
8/14/98	B	*Blarina brevicauda*	F	105	95	Y
	B	*Blarina brevicauda*	F	120	75	Y
	B	*Blarina brevicauda*	M	120	95	Y
	B	*Blarina brevicauda*	M	100	75	N
	B	*Microtus pennsylvanicus*	M	112	65	N
	B	*Sorex cinereus*	F	85	45	N
	B	*Sorex cinereus*	M	70	50	N