Small Mammals of Thickson's Woods

Pilot Study

2016 Report

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2016 Small Mammal Trapping Summary

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Summary

During August, September and October 2016, small mammal surveys were conducted under a MNRF Permit, at the Thickson's Woods Nature Reserve, Whitby, Ontario under the auspices of the Matt Holder Environmental Education Fund. The purpose of this study was to humanely catalogue the small mammal biodiversity within the Reserve. Our goal was to trap and release one individual of each of our target species.

The avian biodiversity of the Reserve is well known but formal surveys for small terrestrial mammals have not yet been conducted. The Matt Holder Environmental Education Fund is currently undertaking many biodiversity studies in the Reserve including snake coverboard surveys, bat acoustic surveys, vascular plant inventories and moth live-trapping.

The intention is to expand our wildlife surveys to include small, nocturnal, terrestrial mammals: mice and voles (*Cricetidae*), rats (*Muridae*), shrews (*Soricidae*) and moles (*Talpidae*).

Using Sherman live traps and pitfall traps, in each of four microhabitats: meadow, woodland, marsh and riverine over five nights a total of four of the target species were captured and identified within the Reserve. The most numerous species captured was the White-footed Mouse (*Peromyscus leucopus*), with fewer captures of Meadow Vole (*Microtus pennsylvanicus*), Northern Short-tailed Shrew (*Blarina brevicauda*) *and* Masked Shrew (*Sorex cinereus*). We incidentally captured one non-target species, an Eastern Chipmunk (*Tamias striatus*). Animals were handled and identified by Fiona Reid and Nigel Parr. Other assistance from Phill Holder and Dianne McCurdy and the surveys were photodocumented by Mike McEvoy.

Target Species

Microtus pennsylvanicus	Meadow Vole
Peromyscus maniculatus	Deer Mouse
Peromyscus leucopus	White-footed Mouse
Napaeozapus insignis	Woodland Jumping Mouse
Zapus hudsonius	Meadow Jumping Mouse
Rattus norvegicus	Norway Rat
Blarina brevicauda	Northern Short-tailed Shrew
Cryptotis parva	Least Shrew
Sorex palustris	Water Shrew
Sorex fumeus	Smoky Shrew
Sorex cinereus	Masked Shrew
Sorex hoyi	Pygmy Shrew
Scalopus aquaticus	Eastern Mole
Condylura cristata	Star-nosed Mole

We hope to continue this project in 2017 as our current dataset only provides a snapshot of the mammalian diversity at the study site, and only during the late summer. Our data can be used to draw conclusions as to the presence of species but further research is required to confirm the presence of rarer species or to assess population sizes for our target species. Therefore the data gleaned from this pilot study are neither definitive nor complete.

For more information about Thickson's Woods and the research programs of
the Matt Holder Environmental Education Fund please visit www.mattholderfund.com

Cover illustration: Masked Shrew *Sorex cinereus* (Mike McEvoy)

1. Introduction

1.1. Objectives

1.1.1. To inventory small, nocturnal, terrestrial mammal species present in the various microhabitats of Thickson's Woods Nature Reserve.

1.1.2. To capture and release at least one individual of each target species located in the Reserve.

1.2. Study Site

1.2.1. Thickson's Woods Nature Reserve is a privately-owned conservation area located on the north shore of Lake Ontario in Whitby, Ontario, on the eastern outskirts of the Greater Toronto Area (GTA). Thickson's Woods initially consisted of a 6.9 hectare old-growth, mixed-species woodlot containing pine, beech, aspen, birch, poplar, oak, and maple. The woodlot was purchased in 1983 by the Thickson's Woods Land Trust, which was formed for this purpose. The Reserve was expanded in 2001 with the purchase of an adjacent 3.2 hectare meadow to the north of the woods. A small waterway, Corbett Creek, flows into a medium-sized, open-water wetland to the east of the meadow and woodlot.

1.2.2. The close proximity of the Thickson's Woods Nature Reserve to the highly populated GTA results in relatively high numbers of visitors to the Reserve, which has multiple public trails and is a popular site with naturalists. The majority of interest in wildlife at the Reserve has focused on its avifauna, in particular the prevalence of rarer bird species travelling along the lakeshore during migration periods. At various points in the history of the Reserve, attention has also been paid to some other aspects of the flora and fauna of the woods and meadow. (Thorne, T.J., *et al.* Bats of Thickson's Woods - 2015 Report).

1.2.3. To the best of our knowledge, no particular attention has previously been paid to small, nocturnal, terrestrial mammal species in Thickson's Woods, beyond the observations of local residents, several of whom have found small mammals in or around their properties.

The Matt Holder Environmental Education Fund was established to find and encourage young people with an interest in the natural world, and is currently focused on projects within the Thickson's Woods Nature Reserve. Mammals were identified as a group on which to focus in 2016. This report summarises the methodology and results of these surveys.

Thickson’s Wood Nature Reserve

General Aerial view of Thickson’s Woods Reserve and surrounding area

2. Methods

2.1. Traplines and Trap Setup

2.1.1. Traps were set and checked by Fiona Reid and Nigel Parr on the nights of August 25th and 26th, September 8th and 9th and October 3rd.

2.1.2. Using 3" x 3.5" x 9" Sherman live traps, one 10-trap transect was set up in each of four microhabitats: meadow, woodland, marsh and riverine. On the night of October 3, an additional 10 Sherman traps were added to the meadow transect to target Meadow Jumping Mouse (*Zapus hudsonius*).

Sherman traps were set at dusk and baited with sunflower seeds and mealworms. We added a small amount of chopped apple to each trap as a source of sugar and water. Wool-blend material was added to each trap for bedding.

Transects were clearly identified with flagging tape, and the GPS coordinates recorded.

2.1.3. We constructed Pit-fall traps from 3.7L paint cans that were buried to the lip in the substrate. A 5-trap transect was dug in each of the four microhabitats: meadow, woodland, marsh and riverine. Pit-fall trapping was only conducted on August 25th, September 8th and October 3rd. Between use the traps were sealed with the paint can lids.

When in use the Pit-fall traps were opened at dusk and baited with meal worms. Each Pit-fall trap contained a circular piece of styrofoam and wool-blend material. Transects were clearly identified with flagging tape, and the GPS coordinates recorded.

2.2 Trap Checking

2.2.1 Sherman traps were set at dusk and checked at dawn on each session. Note: Sherman traps were checked every two hours on October 3 / 4 due to the cooler temperatures. Captured mammals were identified and whenever possible were weighed and measurements were taken before being released at the capture site. In some cases photographs were taken.

2.2.2. Pit-fall traps were set at dusk and checked every two hours until dawn. Mammals trapped were identified and released at the capture site.

3. Results

3.1. Surveys:

Over five survey nights a total of 60 Pit-fall traps and 200 Sherman traps were set. These are summarised by survey night in tables 1 to 5.

3.2. Data Summary:

A total of 88 mammals was trapped over the five survey nights, giving an average capture rate of 17.6 mammals per night. Two Meadow Voles, one Northern Short-tailed Shrew and a Masked Shrew were captured in Pit-fall traps. White-footed Mouse accounted for the majority of captured animals in the Sherman traps with 67. We also captured 8 Meadow Voles, 4 Northern Short-tailed Shrew and 2 Masked Shrew. Non target species captured were 3 Eastern Chipmunk. A Meadow Jumping Mouse(*Zapus hudsonius*) was observed while checking traps on August 25 / 26 but non were captured. Overall we had a capture rate of 42% in Sherman traps.

All animals were released unharmed at their capture site. There we no injuries or fatalities.

August 25 / 26	Pit-fall				Sherman			
	Meadow	Woodland	Marsh	Riverine	Meadow	Woodland	Marsh	Riverine
Meadow Vole *Microtus pennsylvanicus*	1							
White-footed Mouse *Peromyscus leucopus*					2	2	7	7
Northern Short-tailed Shrew *Blarina brevicauda*	1							
Masked Shrew *Sorex cinereus*		1						
Eastern Chipmunk *Tamias striatus.*						1		

Table 1

August 26 / 27	Sherman			
	Meadow	Woodland	Marsh	Riverine
Meadow Vole *Microtus pennsylvanicus*	1			
White-footed Mouse *Peromyscus leucopus*	3	1	1	6
Northern Short-tailed Shrew *Blarina brevicauda*				
Masked Shrew *Sorex cinereus*				
Eastern Chipmunk *Tamias striatus.*				

Table 2

Weather: Overnight temperature on August 25 / 26 was a low of 20^0C with light rain.

Overnight temperature on August 26 / 27 was a low of 17^0C cloudy and dry.

September 8 / 9	Pit-fall				Sherman			
	Meadow	Woodland	Marsh	Riverine	Meadow	Woodland	Marsh	Riverine
Meadow Vole *Microtus pennsylvanicus*	1				1			
White-footed Mouse *Peromyscus leucopus*					6	4		6
Northern Short-tailed Shrew *Blarina brevicauda*					1			
Masked Shrew *Sorex cinereus*	1							
Eastern Chipmunk *Tamias striatus.*					1			

Table 3

September 9 / 10	Sherman			
	Meadow	Woodland	Marsh	Riverine
Meadow Vole *Microtus pennsylvanicus*	2			
White-footed Mouse *Peromyscus leucopus*	6		6	
Northern Short-tailed Shrew *Blarina brevicauda*			1	
Masked Shrew *Sorex cinereus*				
Eastern Chipmunk *Tamias striatus.*			1	

Table 4

Weather: Overnight temperature on September 8 / 9 was a low of 19^{0}C with partial cloud.

Overnight temperature on September 9 / 10 was a low of 17^{0}C cloudy and dry.

October 3 / 4	Pit-fall				Sherman			
	Meadow	Woodland	Marsh	Riverine	Meadow	Woodland	Marsh	Riverine
Meadow Vole *Microtus pennsylvanicus*					1			3
White-footed Mouse *Peromyscus leucopus*					4			6
Northern Short-tailed Shrew *Blarina brevicauda*					2			
Masked Shrew *Sorex cinereus*								1
Eastern Chipmunk *Tamias striatus.*								

Table 5

Weather: Overnight temperature on October 3 / 4 was a low of 14^{0}C and overcast.

4. Species

4.1. **Meadow Vole *Microtus pennsylvanicus***

Eight individuals were trapped. The sex ratio was 50 /50.

Measurements:

	Weight	Tail Length	Hind Foot	Ear
Average	37.75g	45 mm	19.6 mm	12.2 mm
Range	26 - 49g	43 - 47 mm	18 - 21 mm	11 - 13 mm

Meadow Voles were only caught in the meadow and riverine habitats. All individuals were released in good condition and appeared healthy.

4.2 **White-footed Mouse *Peromyscus leucopus***

67 individuals were captured in Sherman traps as they could easily escape.

The sex ratio was 51% female 49% male.

Measurements:

	Weight	Tail Length	Hind Foot	Ear
Average	21.9g	81.1 mm	19.8 mm	15.6 mm
Range	14.5 - 31g	65 - 92 mm	11 - 23 mm	13 - 18 mm

During the first trapping session, August 25 -27 we captured 29 White-footed Mice and all individuals were infected with botflies(*Cuterebra* sp.). During the second session, September 8 -10 approximately 50% of the captured White-footed Mice had botfly infections. During the final session, October 3-4, no botflies were observed. One mouse had a previously damaged tail that was 50 mm long and had healed. White-footed Mouse were caught in all four habitats but were most numerous in the meadow. One individual upon release ran up a tree, jumping from branch to branch until it disapeared into the canopy approximately 10 metres high. All animals were released at the capture site in good condition apart from the botfly issues.

4.3. **Northern Short-tailed Shrew *Blarina brevicauda***

Four individuals were trapped. Only one was sexed and it was male.

Measurements:

	Weight	Tail Length	Hind Foot	Ear
Average	18.8g	24.6 mm	14 mm	NA
Range	18 - 19.5g	22 - 29 mm	12 - 16 mm	NA

Three Northern Short-tailed Shrews we caught in the meadow and one in the marsh habitat. All individuals were released at the capture site in good condition and appeared healthy.

4.4. **Masked Shrew *Sorex cinereus***

Two individuals were caught, one male and one female.

Measurements:

	Weight	Tail Length	Hind Foot	Ear
Male	4g	38 mm	11 mm	5 mm
Female	3g	37 mm	11 mm	5 mm

Both individuals were caught in Pit-fall traps and were content to eat mealworms. One was caught in the meadow and the other one was caught in the riverine habitat.They were released at the capture sites in good condition.

5. Map

Approximate locations of the Pit-fall traps are shown in red and the Sherman traps shown in white. Due to the compact area of the Reserve, traps were spaced in 20 metre lines.

20m

Location of traps: GPS coordinates:

Riverine: Pit-fall - 43.854725 - 78.895517 to 48.854373 - 78.895560
Sherman - 43.854737 - 78.895571 to 43.854973 - 78.895957

Meadow: Pit-fall - 43.854404 - 78.897186 to 43.854331 - 78.897567
Sherman - 43.854780 - 78.897470 to 43.855170 - 78.898108

Forest: Pit-fall / Sherman - 43.853437 - 78.896515 to 43.8543364 - 78.895807

Marsh: Pit-fall / Sherman - 43.853936 - 78.895147 to 43.853696 - 78.894595

6. Photographs

Pit-fall traps showing styrofoam, bedding and mealworms.

Baiting Sherman traps, showing sunflower seeds, apple and meal worms. Wool bedding was added on October 3. Each trap was labelled.

Traps were washed after each session

Removing animals from Sherman traps

Holding and identifying a White-footed Mouse

Taking measurements

Weighing animals

White-footed Mouse release

Meadow Vole *Microtus pennsylvanicus*

White-footed Mouse *Peromyscus leucopus*

Northern Short-tailed Shrew *Blarina brevicauda*

Masked Shrew *Sorex cinereus*

White-footed Mouse *Peromyscus leucopus* infected with Botflies