Beaver (*Castor canadensis*) and Deer (*Odocoileus virginianus*) Impacts on Regenerating Stump Sprouts

By: Gabriella Weeks
Yorktown High School
Grade 10

Introduction

Beaver Ecology

http://njphotographs.photoshelter.com/image/I0000PMtRJkITYJs

- Beavers inhabit freshwater streams and lakes.
- Ecologists nickname beavers “Ecological Engineers” because they alter habitats by cutting down trees, digging canals, building lodges, and constructing dams. This also helps species richness by cutting down trees so new, different trees can emerge
- Beavers construct a lodge with multiple entrances,
- They also begin construction once they hear running water.

Beaver ecology

- Population size unknown
- 3 colonies, 1 per lake
- 2 parents, yearlings (kits from previous years), kits from current year (potentially 10 beavers per colony
- Arrived at Teatown in 2013

Beaver Food Preference

- Beavers prefer leaves, bark, and twigs of Aspen, Willow, and Red Maple trees.
- They prefer trees in smaller diameter.
- They may shift to eat water lilies and Rhizomes.
- Beavers collect and store their food items underwater near the entrance of their lodge.

Stump Sprouting

- Stump sprouting is a form of asexual reproduction that occurs when a tree is cut down and the stump of the tree regenerates multiple saplings from its stump. This allows the dead tree to grow back.
- Trees also regenerate by the roots or their seeds.

Deer Impacts (vegetation)

- Deer are overpopulated, which causes problems with plant life.
- Since deer are overpopulated, this causes more stump sprouts to be destroyed.
- If stump sprouts are being eaten, then less trees are growing back.
- Population size 50/80 deer/mi^2

Edges + Plant Regeneration

- Trees at the lake’s edge grow towards the lake because there is more sun is by the lake’s edge.
- There are usually more saplings at the edge.

Objective

- Observe all the tree stumps made by beavers, and count all the sprouts.

Purpose

- To make sure trees grow back and we don’t lose all our forests.

Hypothesis

- Stumps that sprout farther away from the lake shore will more likely to be browsed.

Methods

1) Identify species that is stump sprouting

2) Count # of sprouts

3) Counts # sprouts that have been browsed (if applicable)

4) Measure height of tallest sprout from ground level

5) Measure canopy cover

Sites: Teatown Lake
Vernay Lake
Shadow Lake

Equipment

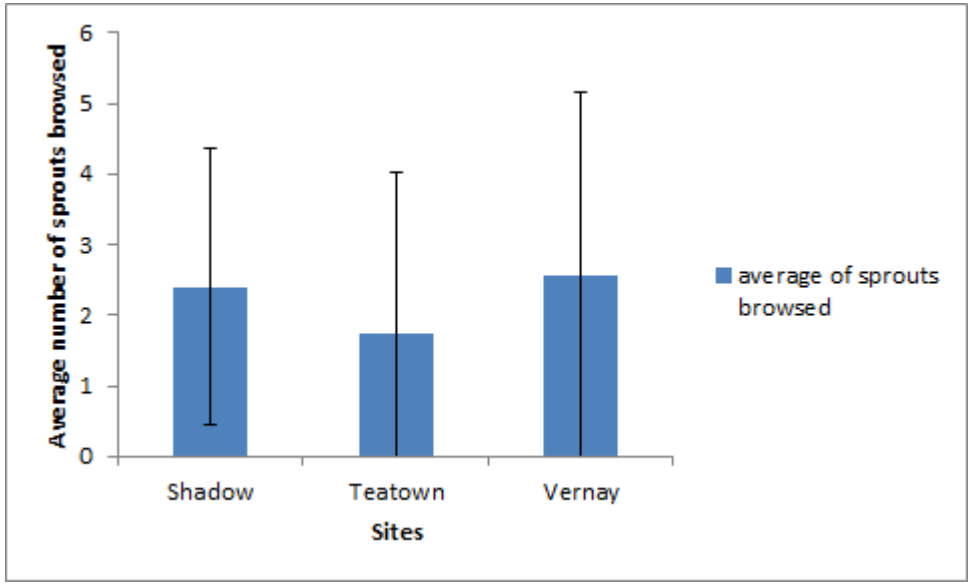
- Tree ID

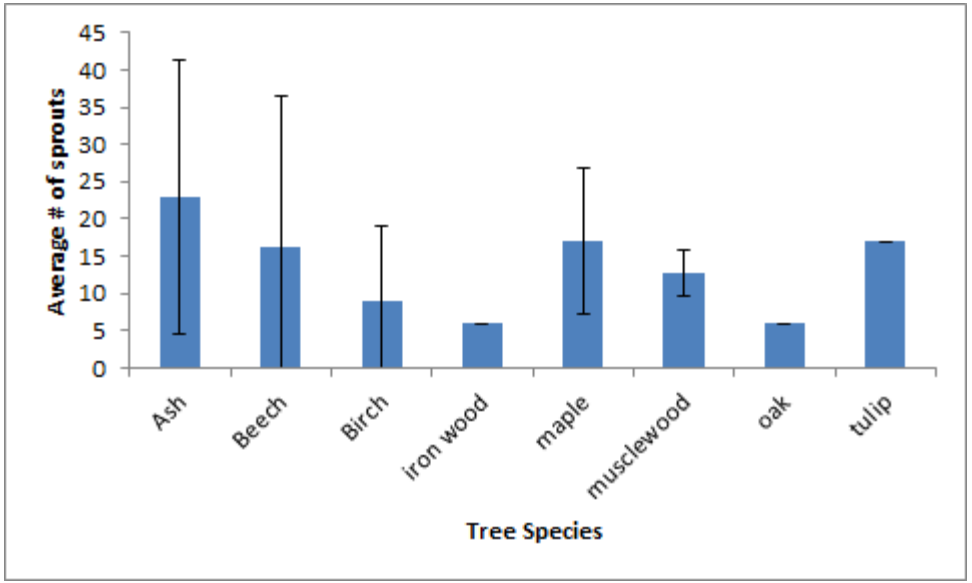
- Measuring Tape

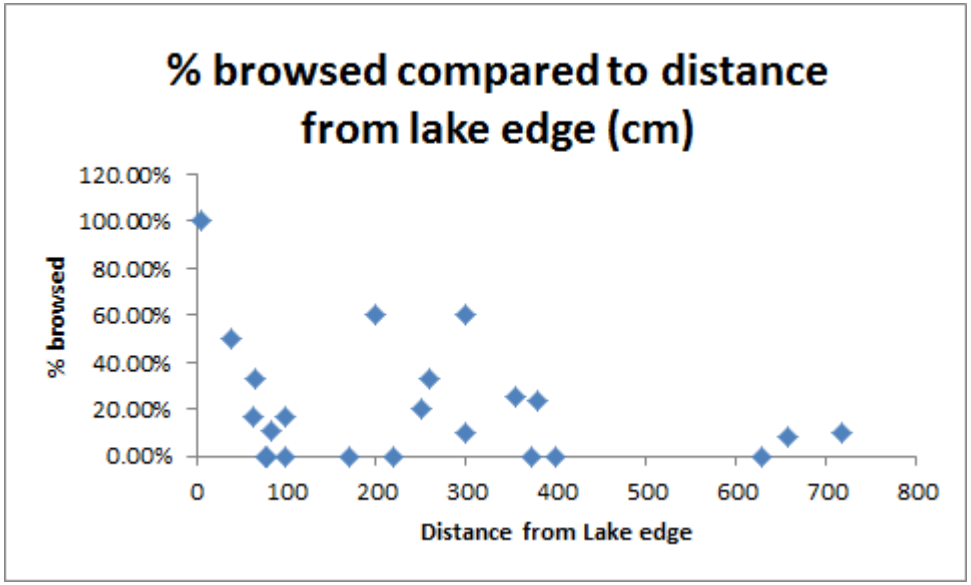
- Densiometer

Results

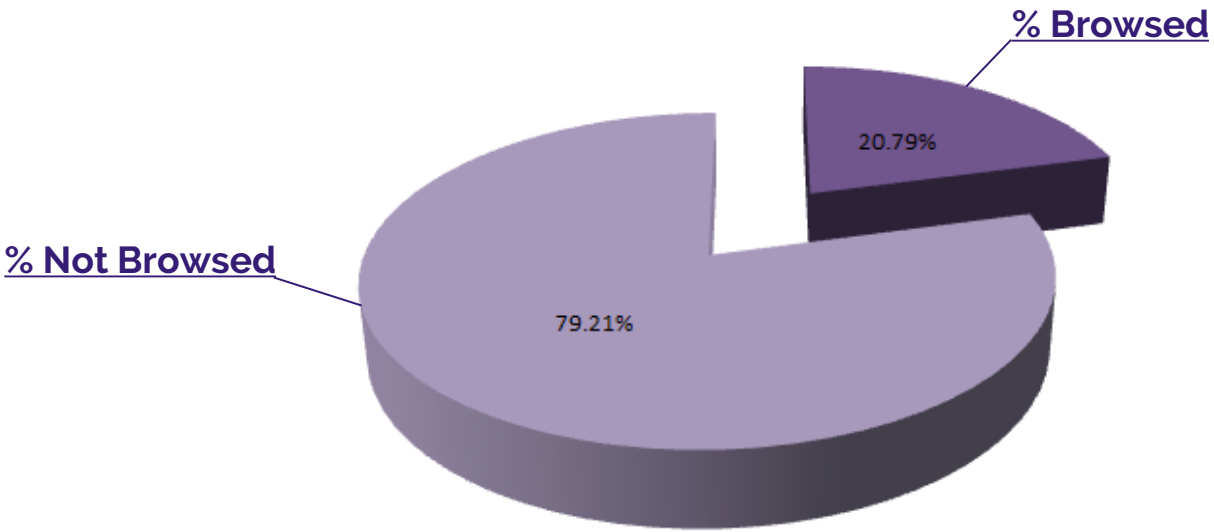
Average Number of Sprouts Browsed at Each Lake



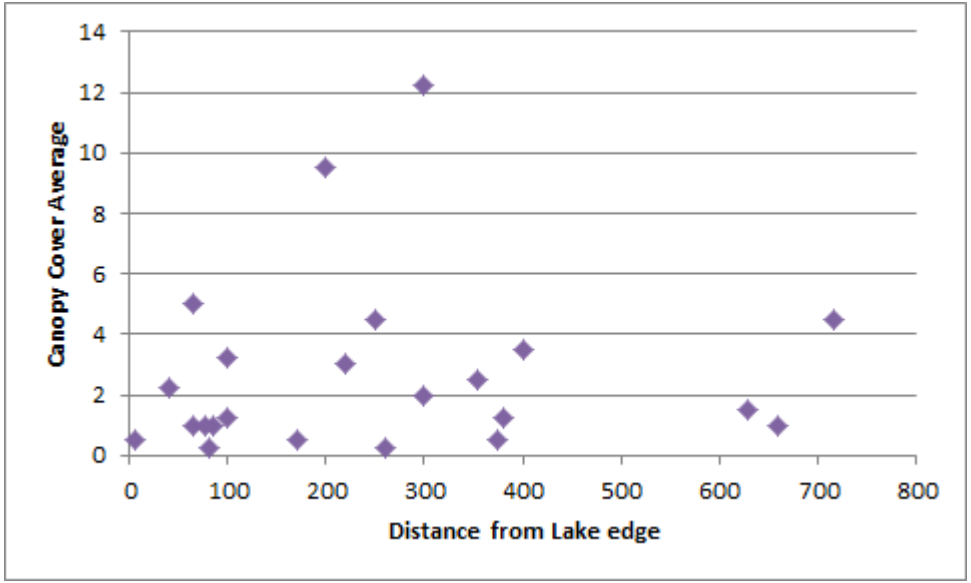

45
40
35
30
25
20
15
10
5
0
Average # of sprouts
Ash
Beech
Birch
iron wood
maple
musclewood
oak
tulip
Tree Species


% browsed compared to distance from lake edge (cm)
120.00%
100.00%
80.00%
60.00%
40.00%
20.00%
0.00%
% browsed
0
100
200
300
400
500
600
700
800
Distance from Lake edge

Average Percentage of Sprouts Browsed to Not Browsed

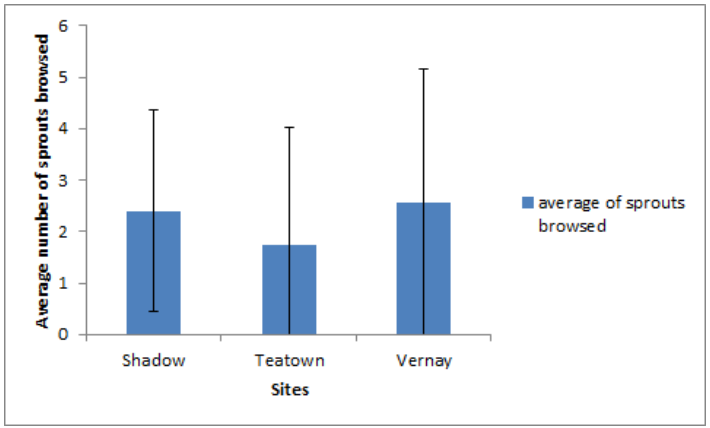


Distance from the lake edge compared to Canopy Cover

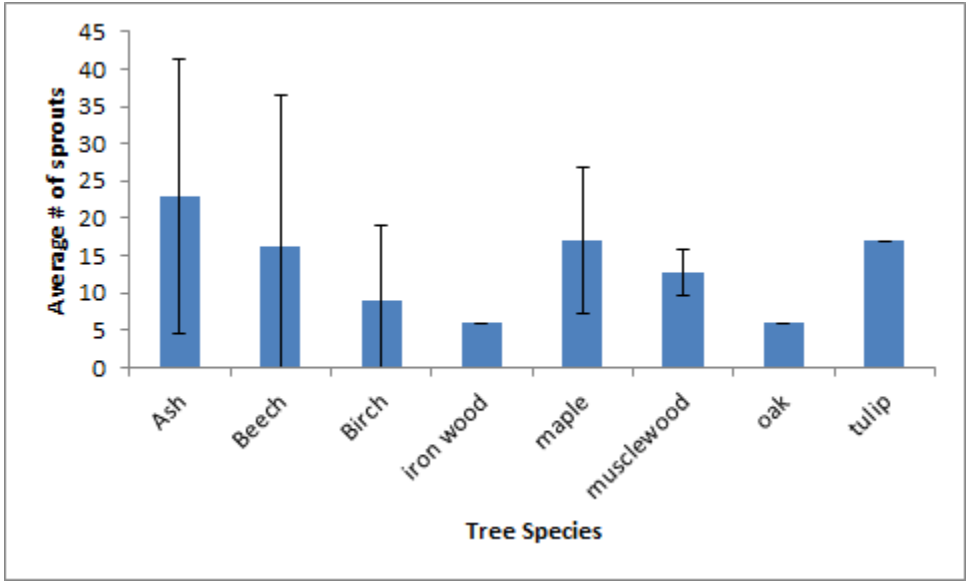


Discussion

Deer pop. concentration areas



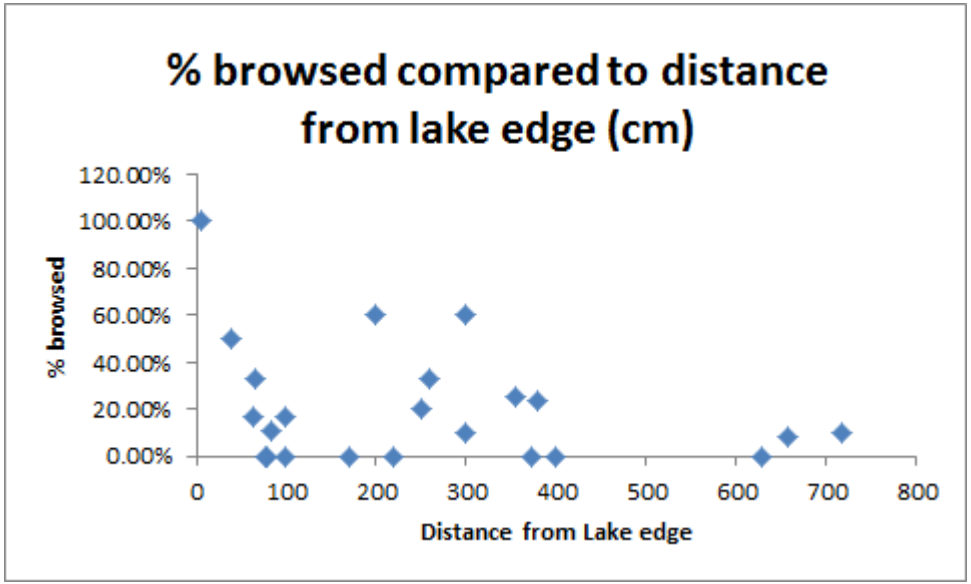
Discussion



Beaver diet

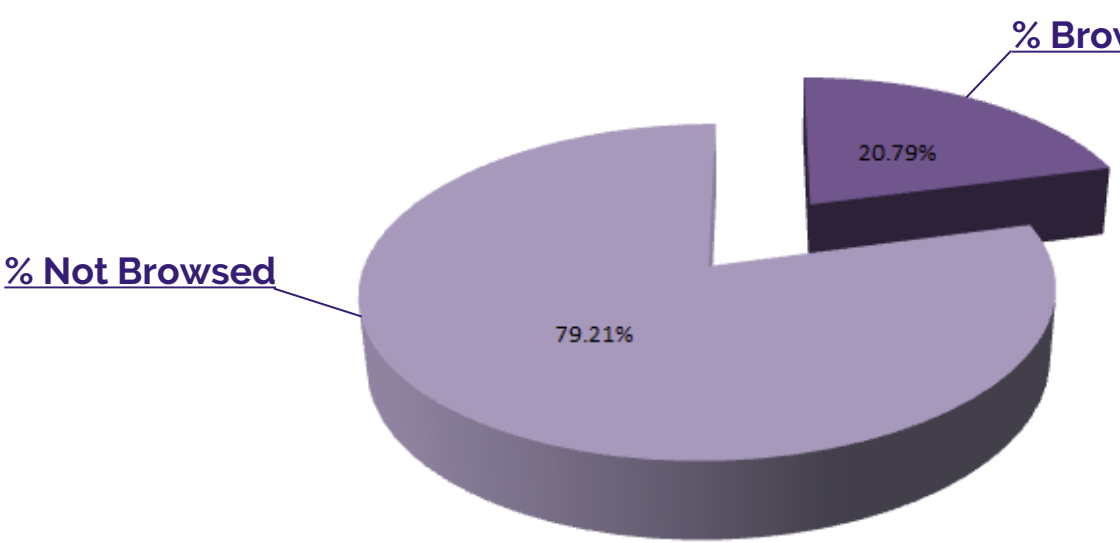
The different trees that sprout

Discussion



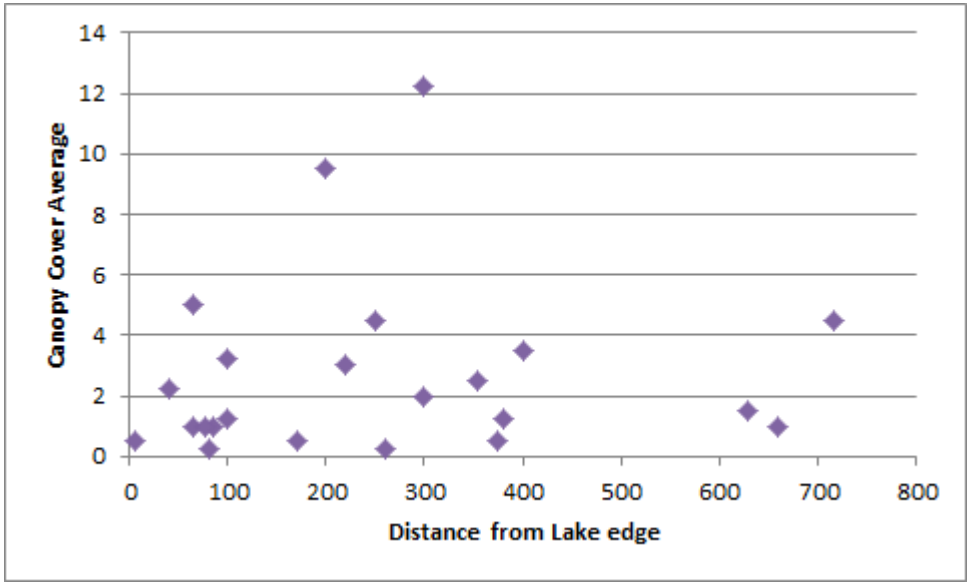
Deer roaming

Discussion



Deer preference

Discussion



Amount of Canopy cover

Importance

See what deer prefer closer to the lake edge or farther away.

Problems

Bark

Freshly cut trees, no sprouts

Many shrub stumps eaten by beavers

Lack of time

Conclusion

- No major trend
- Deer don’t browse a lot on stump sprouts

Further Research

Go where beaver are more populated

Acknowledgements

My parents, Jeannie Yamazaki, and everyone at TESA!

http://www.ecology.info/beaver-ecology.htm

http://www.deerandforests.org/resources/impacts-of-white-tailed-deer-on-forest-regeneration.pdf

http://dendro.cnre.vt.edu/forbioeco/htmltext/chapter2.htm

http://ucanr.edu/sites/oak_range/Oak_Articles_On_Line/Oak_Regeneration_Restoration/Stump_Sprouting__An_Alternative_Regeneration_Approach/