

Remarketing Rauscher Farm to the Community of Clinton, MA



An Interactive Qualifying Project
submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfilment of the requirements for
the degree of Bachelor of Science

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Project Sponsor: Rauscher Farm Management Subcommittee

Submitted to:
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This report represents the work of three WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review. For more information about the projects program at WPI, please see

<http://www.wpi.edu/Academics/Projects>

Abstract

In a compact town like Clinton, MA, every effort should be made to preserve open space for recreation, environmental land conservation, and protecting the wildlife living on the land. This is exactly what the town achieved when purchasing Rauscher Farm in 2008. A group of residents in town had led the campaign to take advantage of the extraordinary opportunity to preserve the last remaining large open space within the community.

Over a decade later we devoted our efforts in this project to examine all aspects of the relationship between Rauscher Farm and the people of Clinton. We have provided a set of recommended action items that the Rauscher Farm Management Subcommittee can pursue to elevate the experience of the farm's visitors as well as continue protecting the environment and thriving ecosystems on the land. We hope that our comprehensive investigation, analysis, and recommendations may all help to serve the best interest of the Rauscher Farm Management Subcommittee, the people of Clinton, and Rauscher Farm itself.

Acknowledgements

Our team would like to offer our sincerest gratitude to the following individuals who guided us through this project and made it possible to achieve our results:

- Professor David Spanagel, our project advisor, for providing us with his best insight throughout the duration of the project.
- Gloria Parkinson, for her enthusiasm and support during the project as well as reaching out to WPI to create this project
- Jim Webster, for sharing his knowledge of managing Rauscher Farm and giving us his time for an interview
- The rest of the Rauscher Farm Management Subcommittee, for doing the public service of caring for Rauscher Farm and ensuring it remains a special place for the public to enjoy for many generations.
- Patty O'Connor, for offering her time and knowledge of the Sherburne Nature Center and the many comparable management techniques used make open space as appealing as possible to the public.

Executive Summary

This project began when the Rauscher Farm Management Subcommittee reached out to Worcester Polytechnic Institute looking for students to complete a research project that could benefit Rauscher Farm in some capacity. During the campaign to purchase the farm over a decade ago, there was a large grassroots movement spreading through the town. Rauscher Farm was a popular subject of debate among the local people, who were left to determine if the town should purchase the land for conservation. Eventually the campaign was a success and the land was purchased by the town to be preserved as open space forever. Since that time, Rauscher Farm has gradually receded from the forefront of public attention, leaving the Rauscher Farm Management Subcommittee looking for ways to rekindle the fire that started the whole movement for a better environment.

The physical appearance of New England has undergone remarkable changes since the nineteenth century. Up until around 1850, most of the land in the area was cleared for farming and agriculture. The agriculture industry began to spread west for the provisions of larger areas of land containing better soil for growing crops as well as the construction of railways allowing the transportation of goods across large distances. As the farming business moved out of rural New England towns, factories began to be built bringing in more jobs and people. The rise of industry is how Clinton became incorporated, home to the large Bigelow textile mills. The mills shaped the town of Clinton into what is seen there today, a densely packed community with very minimal open land or farms. As the 21st century opened, the real possibility loomed that Clinton's Rauscher Farm might be sold to a national housing developer for 2.6 million dollars. Some individuals in the town mobilized around their shared concern that this single remaining parcel of open land should not be turned into yet another dense neighborhood. After 3 years of rallying, and a handful of town elections, the town secured the land to be preserved as open space for the community to enjoy.

We began the project collecting background research on conservation land, how open space affects surrounding communities, and the history of land use in Clinton and New England. We also toured Rauscher Farm to see what the property was like and gather our personal opinions of the farm as outsiders. From this preliminary research, we were able to formulate a list of recommendations and areas of further research and presented them to the Rauscher Farm Management Subcommittee. We gathered a measurable amount of data through various methods. These methods included the creation and distribution of a public survey with approval from the WPI Institutional Review Board, analysis of trail camera photos, analysis of property values surrounding Rauscher Farm, interviewing individuals involved with Rauscher Farm and other land conservation areas in Massachusetts, and a look into social media management by other comparable environmental conservation organizations. From this more technical research we have been able to create graphs and charts comparing and drawing conclusions from the data.

The WPI student team was able to generate meaningful results from the research methods described earlier. The trail camera data results showed us the most popular day of the week for visitors was Saturday and most visitors come to the farm in the late afternoon. The data also gave us a better understanding of what activities people use the farm for. The real estate evaluations did show a correlation between property values and the relative proximity to Rauscher Farm; we were also able to pull a subset of data to compare homes located close to two housing developments with all the homes in the data set. The public survey was a surprising success and generated some interesting feedback about what people like about the farm, and what they feel is most important about the farm and environmental conservation. The interviews provided an inside look at the operations of Rauscher Farm as well as another open space organization. The people we spoke to have a plethora of information about the environment, conservation land, running nonprofit organizations, and managing public open spaces. The social media research introduced us to how other environmental organizations manage their online presence as well as some strategies that could be used by the RFMSC.

The research findings pointed our recommendations to the RFMSC to topics more meaningful to the visitors of Rauscher Farm. In addition, we were able to suggest a sequence according to which the recommendations could be executed based on resources available and the expected outcome of each recommendation. We divided our recommendations into four categories, management of resources (physical and human), infrastructure (built and natural), educational programs, and marketing strategies. Our solutions for the RFMSC are listed as follows:

- Develop a mobile application to assist visitors
- Create a social media strategy
- Furnish temporary bathroom facilities
- Host a tick and mosquito awareness program
- Continue seasonal activities
- Calendar photo contest
- Improved signage within and beyond the property
- Examine options for creating a nature center
- Enhance Rauscher Farm's research capacity
- Explore alternate structures for volunteer oversight
- Tracking the number of people visiting the farm
- Exploring "hands off" land management practices

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1. Introduction

The Rauscher Farm Management Subcommittee (RFMSC) contacted Worcester Polytechnic Institute (WPI) in hopes that a research team could be assembled and tasked with a project that could benefit their farm in some way. In August 2019, just a week before the beginning of classes for the new academic year, three students managed to come together and form an interactive qualifying project (IQP) team. The students met with Gloria Parkinson, a member of the RFMSC, who shared a generous amount of information about the farm, including, among other things, the history of how it came to be “town owned” conservation land, the various landscapes of the farm, what community programs have been done there, and how the farm is managed day to day. From this conversation we learned the town of Clinton has a detailed history with Rauscher Farm, however even though its transformation to public space happened not too long ago, interest from the public has seemed to slowly wither away over the years. After visiting the farm, Ms. Parkinson’s description and its vision became clear. Rauscher Farm is an important example of land conservation and open space and it deserves to be enjoyed and protected by the community.

To analyze the current relationship between Rauscher Farm and the community the IQP students agreed to conduct a variety of investigations that would enable them to prepare and provide a comprehensive list of recommendations for the RFMSC to pursue. Over the course of the project we have become familiar with the committee who runs the farm, how the public views Rauscher Farm, and how the farm has given back to the community. We have enlisted our own talents to the fullest of our capacity to generate valuable information and frame recommendations that will serve Rauscher Farm, the people of Clinton, and the many people who visit and enjoy the farm and all it has to offer.

1.1 Personal Accounts

1.1.1 Jacob Marshall

I first learned about this Rauscher Farm project when reading it on the WPI project website. I thought this would be an interesting project because it involved protecting the environment, which I believe is an overlooked topic in our society, as well as the opportunity to work on a project that benefits a local community. After meeting with Gloria Parkinson, and hearing what she had to say about Rauscher Farm, how the farm started and what it offers to the community of Clinton, I knew this was an opportunity to work on something that would have a meaningful impact for Clinton, and the environment at the least. Gloria's description of the farm was cemented after visiting Rauscher Farm for the first time. I immediately felt that the farm was a special place and it had a lot of potential for improvements. One of my most memorable moments during my first visit to Rauscher Farm was standing in the fields in the beginning of September. It was very hot and there were hundreds of bees hovering over the golden rod in the field. The more I looked around, the more bees I saw. It wasn't until I looked closely that I realized I was observing a bustling ecosystem right in front of my eyes. It was an immersive experience that I reflect upon whenever I think of Rauscher Farm.

1.1.2 Jesse Kablik

After learning about the project I wanted to go and visit Rauscher Farm on my own and explore it myself. I plugged Rauscher Farm into my GPS and was on my way. When I was close to getting there I wasn't sure if I was going the right way or if my GPS was taking me to the wrong spot because Rauscher Farm is tucked away behind a neighborhood. When my GPS told me I was there I wasn't certain where to park so I ended up parking at the auto shop just before the property. Someone saw that I was a little confused about where I was and came out and directed me to keep driving down Clamshell Rd and told me where to park on the farm. Once I arrived I walked around the grassy fields first. I had a map of the property with

me but was a little confused as to which field I was in and didn't know where the edges of the property were so I stayed on trails that I knew were part of Rauscher Farm. It was the end of the summer and the leaves were changing. I sat on a bench at the entrance of the biggest grass field and was able to really enjoy the peaceful scene around me. I then explored to the other side of the property which went along Clamshell Pond and had the trails that went through the woods. Again I had the map with me but I got a little worried I was going to take the wrong turn and end up on different property but I was able to follow the trail around the woods. Overall I thought it was a beautiful piece of land and really enjoyed the different types of ecosystems that were on the property.

1.1.3 David Houbre

When I first heard about the Rauscher Farm Interactive Qualifying Project, I jumped at the opportunity to join the team. I have a passion for the great outdoors and have been looking for an opportunity to do my part in preserving it. After meeting with Professor Spanagel and Gloria Parkinson I knew that this was going to be my chance to make an impact in the environmental conservation community. My girlfriend and I love to go on hikes all over New England and were excited to learn we had a new location to explore. One day we packed up some items to have a picnic, got in the car and drove to Rauscher Farm. Finding the farm was difficult and there were several times where we thought that we had gone the wrong way due to the farm's tricky location. We found the farm nonetheless and set out to have a picnic in the much talked about "open space". Unfortunately, at the time the large field had not been mowed so we were unable to have the classic picnic experience and instead decided to eat on the picnic tables. One of the tables was covered in bird droppings so we settled with a different table that wasn't so dirty. While eating we had an unexpected visitor in the form of a caterpillar that had extraordinary colors. It was at this moment that I realized the diverse species of wildlife that occupied Rauscher Farm. After eating we ventured into the thick wooded area for our hike. We were captivated by the beauty of Clamshell Pond and the abundance of plants/ trees on the main trail. During our hike I

realized the potential of Rauscher Farm and I knew I wanted to do all I can to help Gloria achieve her goal of increasing awareness to the general public of all that the farm has to offer.

2 Background

2.1 History of Land Use in New England

The landscape of New England has gone through many transformations over the past few hundred years. European settlement began on the eastern border of Massachusetts in the seventeenth century and slowly spread across the state and into other parts of the region (Hall, *et al.*, 2002, pg. 1323; Russell, 1976, pg. 3-5). Settlement was made popular due to the region's fertile soil and abundance of freshwater wetlands. European settlers first struggled to produce effective crop yields, but they learned how to manage the unfamiliar land from the Native Americans (Russell, 1976, pg. 12-13). Use of the land for agriculture purposes was relevant up until the mid-nineteenth century where it reached its peak. Roughly 50% of the land in Massachusetts was used for pasture, hay, or tilling, compared to about 7% today (Hall, *et al.*, 2002, pg. 1324). Industry in New England underwent a significant shift during this period. The four main reasons for the transition were: 1) advancements in long distance transportation, 2) adoption of widespread education, 3) invention of new tools and equipment, and 4) the proliferation of industry and people in the region (Russell, 1976, pg. 326).

“Prior to the early twentieth century, forest history was intimately linked to agricultural activity and the amount of these land-cover types was negatively correlated” (Hall, *et al.*, 2002, pg. 1324). New industry was booming throughout New England in the mid 1800's, with many factories relying on water and charcoal to power their equipment. Charcoal was also used to run steam engines and fuel the production of metal manufacturing. Timber was used for shipbuilding and burned for heat in the winter. Due to the wide use of wood products, New England consisted of mostly cleared land during this time period, and even worried a few forward thinking individuals, like Sylvester Judd, a New York agricultural writer who stated “we understand exhausting land much better than improving it...” which, unfortunately still holds true today (Judd, 1894; as quoted by Russell, 1976, pg. 391). As agriculture migrated to western plains, tillable land remained relevant in New England up until the 1950's. The area's fruitful valleys were able to contribute more than double the product of tilled land in nearby regions, as well as

convenience by avoiding importation of perishable items over long distances (Hall, *et al.*, 2002, pg.1324). The remaining farms of New England switched to mostly dairy, poultry, and fruits and vegetables in the summer months. The abandoned farms slowly withered away, with barns and farmhouses surrendering back to nature (Russell, 1976, pg. 519). The enduring reminders of these farms are the miles of stonewalls that crisscross New England and the occasional cellar holes of previous farmhouses and barns now surrounded by forest.



Figure 2.1 Height of Forest Clearing and Agriculture c. 1830. (Guernsey and Pitman, 1931-41).

From the 1950's through today forest coverage has been on the decline again, mostly due to housing development and the introduction of exotic species to the region (Hall, *et al.*, 2002, pg. 1324; Orwig, *et al.*, 2002, pg. 1481). After World War II there was an explosion in housing demand, which resulted in a fundamental change in how new housing was developed, establishing patterns of land use that continues today. Large plots of land were purchased by developers and subdivided where mass market or “cookie cutter” homes were built and then marketed and sold to buyers as ready to move in immediately (Friedman, 1995, pg. 133). This method dramatically sped up the home building process and as a result, also increased the amount of land clearing.

The introduction of exotic species in the “mid twentieth” century also attributed to the decline of forestry in New England. One example of an invasive pest is the hemlock woolly adelgid (*Adetges*

tsugae), a Japanese native species partially responsible for the decline of the eastern hemlock tree species on the east coast of the United States. (Orwig, *et al.*, 2002, pg. 1476). Invasive species can wreak havoc on ecosystems and even drive some natural species to extinction. It can be challenging to manage these species because they typically spread very rapidly and can withstand severe conditions. There are many methods used to eradicate invasive species. Chemical pesticides are effective against some nuisances, however they can do much more harm than good, and in large open spaces, chemicals can easily spread to unwanted areas, killing all organisms indiscriminately, not just the invasive species. Another method is physically removing the plants by cutting the stems or unrooting them all together. Manually removing invasive plants is a very time consuming and physically demanding process, however it is very precise and is more friendly to the surrounding environment. Another unconventional approach to managing invasive species is minimizing human intervention and letting nature do most of the work.

One farm in the United Kingdom began employing this “hands off” approach with what they call “rewilding” in the early 2000's. The owners of the farm studied what the landscape of the UK looked like before extensive human development and found that introducing a select few species resulted in a chain effect of shifts in the ecosystem on their land. The owners introduced English Longhorn cattle, Exmoor ponies, and Tamworth pigs to their environment, grazers that were specifically chosen for their similarities to the Aurochs, wild horses, and wild boars that roamed the land previously but are now extinct. The new animals began to interact with the existing ecosystem, pigs boring in the soil, uprooting nutrients and microorganisms, that then attract birds, ponies and cattle grazing land, reducing tall grass from taking over, and providing nutrients to the earth through their digestive systems (Tree, 2018, pg. 97-116). In 2008 and 2009 the farm was seeing an outbreak of a common invasive species, Creeping Thistle (*Cirsium arvense*). It was one of the worst years for the invasive species, however that same year the UK also saw its largest seasonal migration of the Painted Lady butterfly (*Vanessa cardui*). This butterfly introduced a new generation of caterpillars that summer, who thrived on the Creeping Thistle species, using it to feed and nest for their transformations. When autumn came around, the caterpillars blossomed

into butterflies and left the invasive Creeping Thistle in complete shambles and unable to survive the next season (Tree, 2018, pg. 150-166). The owners of the farm have observed remarkable shifts in the natural ecosystems of their land, and have seen the return of certain species, like the turtle dove, that has been virtually extinct from the UK for many decades. This radical approach to land management offers an intriguing alternative to traditional methods of preventing invasive species from overpowering the natural ecosystem.

2.2 History of Clinton, MA

Clinton Massachusetts was incorporated on March 14, 1850. Located about 45 miles west of Boston, it was originally a settlement within the town of Lancaster, Mass. known as Clintonville (Ford, 1896, pg. 280-283). The residents of Clintonville wanted to separate from Lancaster mainly because of the two villages splitting into different industries, and the distance between them making it difficult to travel for town meetings. While Lancaster maintained farming and agriculture, Clintonville was rising to be a manufacturing center with the help of the Bigelow brother's bustling textile mills. Erastus and Horatio Bigelow were able to propel Clintonville's role in the textile industry with Erastus' invention of the power loom for manufacturing coach lace, counterpane cloths and gingham plaids and Horatio's marketing savvy (Town of Clinton, 2019). The mills in Clintonville brought many immigrants who were young and ready to work, while the people of Lancaster remained conservative and held traditional viewpoints (Bigelow, 1997). Another important factor in the citizen's desire to separate from Lancaster was the location of Clintonville. Located a few miles from the center of Lancaster, the people of the village found it difficult to participate in town meetings or utilize the town's resources (Ford, 1896, pg. 276). The 19th century chronicler expressed that eventually the cultural divide between the two groups made it clear both populations would benefit from being separate entities. In 1850 the people of Lancaster voted almost unanimously that Clintonville separate into its own entity, under the condition that the new village pay Lancaster a fee of ten thousand dollars (Ford, 1896, pg. 280). From this point on, "Clinton"

remained a manufacturing center. Although the Bigelow brothers and their businesses are long gone, the original buildings are still in use today by new businesses and their owners (Town of Clinton, 2019).



Figure 2.2: The Bigelow Carpet Company in the early 1900's (Bigelow, 1997).

2.3 Recent History of Rauscher Farm

In 2006 Rauscher Farm was slated to be sold to Pulte Homes, a national housing developer based in the Midwest. The town of Clinton had the right of first refusal for the sale of the farm, according to the Massachusetts general law 61A farmland protection statute (Nugent, 2007a). While the statute allowed the town the chance to buy the land from the owner, they had to match the price offered by the housing developer competing for the land. The town voted to approve a \$200,000 deposit on the land in June of 2006, leaving supporters of the purchase until December 2008 to come up with \$2.6 million to cover the rest of the cost. The high cost of the farm sparked many debates among town selectmen and residents, some arguing the cost was just too impractical, while others championed the town's last chance to save conservation land.

Soon after the initial vote for deposit was passed, the Friends of Rauscher Farm committee was created, led by Gloria Parkinson. The committee's first task was to come up with the rest of the money. Members of the committee went door to door in Clinton, created many signs and flyers to support a vote that would allow the town to purchase the land through a debt exclusion override. This override meant the average homeowner would have to pay an extra \$40 per year, or about ten cents a day for 20 years until the bond was repaid. The projected costs were the foundation of the "dime a day" slogan that was successfully promoted during this time. On June 20th, 2007 the funds for purchasing Rauscher Farm were approved by a vote of 479 to 50 (Nugent, 2007b). This vote was followed by a special ballot vote to ratify the debt exclusion override. The results came back 1,160 to 888 in favor of the override (Nugent, 2007d). A year later, on 30 June, 2008, after many setbacks and uncertainty, the purchase of the farm by the town of Clinton became official (Nugent, 2008).

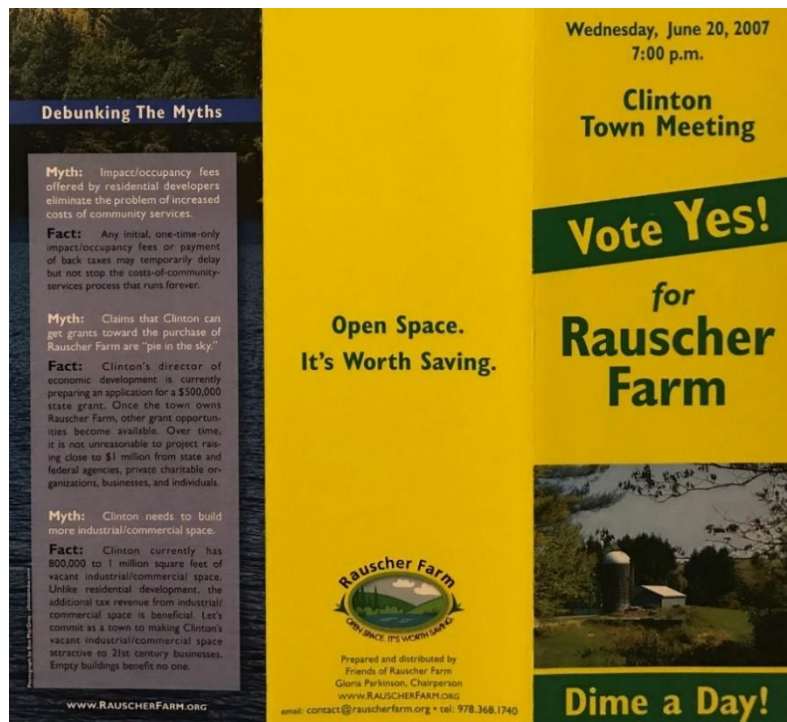



Figure 2.3: Front of the pamphlet promoting the vote for the purchase of Rauscher Farm.

A Call to Vote!



Attend Clinton's Town Meeting on June 20, 2007, and vote to buy Rauscher Farm, the last large piece of open space in Clinton. If we don't purchase the 62-acre farm now it will be lost forever to residential development.

Whatever its fate, Rauscher Farm will cost us. So what is the better deal — town purchase or residential development?

Buying Rauscher Farm would:

PROVIDE YEAR-ROUND RECREATIONAL OPPORTUNITIES FOR EVERYONE

These include walking, biking, birding, fishing, kite flying, cross-country skiing, observing Nature's beauty and biodiversity, family activities, and more...

CURB RESIDENTIAL SPRAWL

Clinton has 2,355 people per square mile which is greater than almost all Massachusetts communities other than major cities. There are 400 more permitted residential units already in the pipeline and another 300 proposed, *excluding* the planned development of Rauscher Farm.

SAFEGUARD LAND OF HISTORICAL & ECOLOGICAL SIGNIFICANCE

Rauscher Farm is rich in Native American history and archaeology. The farm's wetlands and woodlands are also home to a diversity of flora and fauna.

BE COST EFFECTIVE

Compare a *dime a day*, the cost of a 20-year, fixed cost \$2.5 million bond for the average taxpayer household, with the increased costs of servicing yet another residential development forever.

PREVENT FUTURE COSTS OF COMMUNITY SERVICES

Increased costs of community services will exceed additional residential tax revenue by 15% to 50%.

Your vote to buy Rauscher Farm for the people of Clinton to enjoy today and in the years to come is the fiscally responsible choice.

Debunking The Myths

Myth: The population of Clinton has remained the same for years.


Fact: From 1985-2005 the population of Clinton increased by 1,104 — a growth of 8.56%. Our town budget increased from \$10.7 million to \$30.9 million—an increase of approximately 60% in inflation adjusted dollars. This year's budget is expected to be more than \$35 million or about \$96,000 per day.

Myth: Additional tax revenue from residential development will benefit the town.

Fact: Residential developments cost towns more in costs of community services than they deliver in additional tax revenue. More than 70 studies have shown that for every \$1 in additional tax revenue, costs of community services run \$1.15 to \$1.50, or an increase of 15% to 50%.

Myth: Increased residential costs of community services don't apply to Clinton.

Fact: Costs of community services can only be analyzed after a residential development has been built. But Clinton's population density and recent growth are consistent with factors in more than 70 costs-of-community-services studies. In every instance, the studies showed that costs of community services did apply to more densely populated communities, including those that initially said the costs wouldn't apply to them.



WWW.RAUSCHERFARM.ORG

Figure 2.4: Inside of the pamphlet promoting the vote for the purchase of Rauscher Farm.

Rauscher Farm. For Everyone. Forever.

Will we have access to the jewel that is Clamshell Pond?


Yes. Part of Rauscher Farm borders Clamshell Pond (see map). This access allows pond-wide recreational activities including fishing, canoeing, skating, et cetera.

What about maintenance and liability issues?

Some of the proposed bond money has been allocated to manage part of the land; other money will be raised to develop and manage recreational activities (walking and biking trails, for example); and some income will come from limited agricultural use. Once the town acquires Rauscher Farm, it will be covered under the town's insurance and liability policies after it is added to the schedule of values with the insurance company as directed by the Board of Selectmen.

Walking Ice Skating
 Biking Snow Shoeing
 Kite Flying Photography
 Yoga Nature's Classroom
 Geocaching Jogging
 Nature Watching Frisbee
 Sketching Tai Chi
 Family Picnics Stedding
 Bird Watching Canoeing
 Kickball Painting
 Star Gazing Hiking
 Fishing Botanical Studies
 Cross-Country Skiing

Where is Rauscher Farm?




Photos by Christine Luzzi, David Notaro, and Heidi Notaro

WWW.RAUSCHERFARM.ORG

Wednesday
September 12, 2007

SPECIAL ELECTION
Question #1



Yes!
to purchase
Rauscher Farm



Enjoy it Forever!

Clinton Town Hall
7:00 a.m. - 8:00 p.m.

**Open Space.
It's Worth Saving.**

Prepared by Friends of Rauscher Farm
 Gloria Parkinson, Chairperson • tel: 978.368.1740
 c/o P.O. Box 683 • Clinton, MA 01510
WWW.RAUSCHERFARM.ORG
 email: contact@rauscherfarm.org
 Printing generously donated by Duett & Company

Figure 2.5: Front of the pamphlet promoting the vote for the debt exclusion override.

Your vote on September 12 will decide if the Town of Clinton buys Rauscher Farm on Clamshell Road as open space to be enjoyed forever.

Your "YES" vote for Question #1 on the September 12 ballot will mean Rauscher Farm will become a town amenity that will improve the quality of our lives and enhance the charm of our town. A "NO" vote will mean the last large parcel of land in Clinton will be available for residential development. This is an important decision for our town. We hope this brochure, researched by the Friends of Rauscher Farm, helps you make an informed decision.

Why do Clintonians need to vote for Rauscher Farm on September 12?

The town purchase of Rauscher Farm is a two-step process:

Part 1: At this year's town meeting on June 20, a packed town-hall auditorium voted overwhelmingly in support of the town buying Rauscher Farm. (A "no" vote would have allowed extensive residential development of the property.) This enthusiastic support for warrant Article 10 resulted in a vote to appropriate up to \$2,675,000 for the purchase of Rauscher Farm, known as the Clamshell Road.

Part 2: This appropriation entails acquiring a bond, financed by a Proposition 2½ debt exclusion override which requires a special election.

What is a Proposition 2½ debt exclusion override?

A debt exclusion override means that the cost of the override, in the form of a small tax increase for each taxpayer household, exists **only for the life of the bond**. Once the bond has been repaid, the cost associated with the bond goes away. In contrast, a plain override means the tax increase goes on forever. The cost to taxpayer households of purchasing Rauscher Farm is therefore finite—lasting the duration of the fixed-cost bond only.

Could the \$2,675,000 amount be reduced?

Yes. An active fundraising campaign is already underway. On July 31, 2007, the town submitted an application to the Commonwealth of Massachusetts for a Self-Help Grant of up to \$500,000. And on July 5, Congressman James McGovern, Ian A. Bowles, Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs, and State Representative Harold P. Naughton, Jr. visited Rauscher Farm and expressed support for the town purchase of the land. Also, the Friends of Rauscher Farm has researched funding organizations and will continue its fundraising activities after the vote on September 12.

What will the override cost me?

Three factors will influence the cost to taxpayer households of the Rauscher Farm Proposition 2½ debt exclusion override:

- How much grant money is raised to lower the Rauscher Farm bond before the town purchases the bond.
- Bond interest rates at the time the town purchases the bond. (Rates fluctuate. They were 4.25% on August 7, 2007.)
- The assessed taxable value of your home.

Here are two examples:

A Fixed-Cost, 20-Year Bond at 4.25%*				
Single-Family Home Assessment Value	Bond Amount	Cost Per Year	Cost Per Day	
\$258,000	\$2,675,000	\$38.70	11 cents	
\$258,000	\$2,175,000	\$30.96	9 cents	

*Amounts do not include fees associated with purchasing the bond.

Is Clinton paying above market value for Rauscher Farm?

No, for two reasons:

1. The town was able to exercise its one-time right of first refusal only if it met the bona fide offer of the developer as represented in the 2005 agreement between the owner of Rauscher Farm and the development company.
2. In July 2007, the two independent professional appraisals required for the state Self-Help Grant application appraised Rauscher Farm's current market value as \$2,600,000 and \$2,320,000. These appraisals show that even in a cool housing market, the value of Rauscher Farm has not dropped appreciably. Based on these 2007 appraisals, the town is paying a fair market price for the property.

Figure 2.6: Inside of the pamphlet promoting the vote for the debt exclusion override.

After the purchase of the farm, the Clinton Conservation Committee created the Rauscher Farm Management Subcommittee to take care of the newest addition of conservation land. The primary responsibilities appointed to the new committee were to maintain the character of the farm and protect its habitats. When the subcommittee formed, they had a vision for the people of Clinton, Mass. to reconnect with nature and uphold the importance of conservation. They work to “promote nature education program, expand conservation activities, contribute to the planned universal access *Path to the Clamshell Pond*, develop and maintain walking trails” (Clinton Greenway Conservation Trust, 2019b). This work is currently primarily supported by the fundraising efforts of the Clinton Greenway Conservation Trust, Inc.

2.4 How Conservation Benefits the Public

Conservation land carries many benefits for the people who visit the area or live nearby. Preserved open space areas bring health benefits to the people who visit, in addition there is an

educational value to having conservation land within a community. Neighborhoods with access to attractive open spaces can enjoy economic benefits and enhance proliferation of community involvement and service. Preserving natural land has many more benefits beyond just reducing the area's carbon footprint.

Conservation space can even offer some health and well-being benefits. In the mid 1900's Edward Wilson theorized the biophilia hypothesis, the idea that humans have special and long-standing connections with nature and being outdoors. Biophilia is described as the, "innate tendency to focus on life and lifelike processes" (Krcmarova, 2009). In other studies, a quantifiable relationship between happiness in humans and the amount of time they spend in nature has been established. The results showed a correlation between happiness and people who feel more integrated with nature (Capaldi, 2014). Early conservationists also felt this connection with nature and believed it was important in order to understand the truths of life. Upon leaving for his two year journey for living in the woods, Henry David Thoreau wrote, "I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach" (Thoreau, 1854/1981, pg. 100-01).

This feeling of having an innate well-being around nature can stem from the health benefits that nature can provide. Ergonomics researchers have shown a strong correlation between people's perceived health and their availability to green spaces (Richardson, *et. al.*, 2016). Many plants give off an organic compound called phytoncides that have been shown to reduce blood pressure and to help with one's immune system (Kuo, 2016). Walks in nature reduce levels of inflammatory cytokines, which relate to diabetes and cardiovascular diseases (Kuo, 2016). Researchers also found a "relationship between the presence and the quality of green spaces in the neighborhood and lower hypertension rates among residents" (Richardson, *et. al.*, 2016). All these studies confirm that having a strong relationship with nature leads to many different physical and mental health benefits.

Educational value is another feature that accompanies land conservation efforts. A study done by (Taylor, *et al.* 2001) showed the effects of attention deficit disorder in children to be reduced after doing

outdoor activities in green spaces. Children with other social and behavioral problems can also benefit from being in outdoor environments, resulting in improved behavior and less agitation (Fiskum and Jacobsen, 2012). Learning in an open space environment combines traditional teaching methods with practical, hands on experience. The additional aspect of being outdoors improves students' understanding of teaching concepts and shows on their test scores (Dismore and Richard, 2005). These studies also recognized outdoor learning space as a catalyst for social interaction, further improving educational effectiveness and personal development for the students.

When discussing land allocation planning, the idea of residential development carrying the highest economic benefits is a common misconception. Residential land development includes more costs than most people think. Turning any area of land into housing development will generate tax revenue, but the added costs associated with public services and infrastructure will cause a net tax increase for the residents of that community (Crompton, 2007). For every dollar collected in taxes, residential development costs between \$1.04 and \$1.67 (ANJEC, 2002). A 2007 Trust for Public Land study showed that every dollar raised by taxes would cost \$0.35 to maintain open space land (Crompton, 2007, pg. 10). The study cited data from Wayland Massachusetts, which showed that developing a large piece of land would cause the overall tax rate to rise by \$7.25, but if the town had purchased the land for conservation the tax rate would only rise \$4.25 (Crompton, 2007, pg. 11).

When a town adds a park or open space into the community, it raises the values of the homes that are located nearby. The benefit of expanding open space can be explained by the Proximate Principle. This principle states that "the market values of properties located near a park or open space frequently are higher than those of comparable properties located elsewhere" (Crompton, 2007, pg. 1). In addition, the most beneficial feature within 400 meters of a home in terms of property value is open space (Ready and Abdalla, 2003). Typically, the landowners in the community must pay higher property taxes to help the city pay for a new park or open space. The increments of tax return attributable by the park can be used to retire the bond or it can be used for maintenance of the park. In 1873, when Central Park was being

constructed in New York City, the city was paying an annual debt charge of \$830,000 but received a net profit of \$4.4 million from the tax revenues attributable to the park (Crompton, 2007).

Lastly, open spaces within urban environments provide opportunities for outdoor recreation and facilitate social interaction (Zhou & Rana, 2012). In two Chicago public housing developments, residents were observed to be much more social and physically active in green spaces with trees and other natural features opposed to areas lacking natural scenery (Coley, *et. al.*, 1997). Conservation land also offers opportunities for people to come together for education programs or community cleanup days. These community events allow people to network and spread ideas about environmental conservation, starting conversation about what the community can do collectively to help preserve the environment.

The landscape of New England has undergone significant changes over the past few hundred years. Most recently, forests and the ecosystems intertwined with them have been eradicated for residential development as the human population grows every year. Combining the expansion of the population with the industrial revolution has left the environment in a deteriorating state for decades. We need to recognize the destruction humans have caused to our planet and more importantly take action to reverse these damages. The town of Clinton was no stranger to the rapid development of industry in the 1800's, creating a small and densely populated community. Clinton was fortunate enough to save its last large undeveloped piece of property, Rauscher Farm, from housing development in the mid 2000's, opting to instead preserve it as open space and conservation land. The land is a prime example of how open space effects the community surrounding it, offering economic, health, social, and educational benefits. The goal of this research project was to assess and develop an understanding of the current relationship between Rauscher Farm and the people of Clinton. From this assessment, recommendations have been provided to the RFMSC to improve Rauscher Farm in the most meaningful way for its public users.

3 Methodology

3.1 Introduction

In order to assess community involvement with Rauscher Farm, the WPI student team organized several research areas to investigate and generate meaningful data. The areas of research include 1) an analysis of trail camera photos provided to us by Jim Webster, 2) A study of residential real estate near Rauscher Farm, 3) A survey created by the students and distributed to the public, 4) interviews with individuals involved in conservation land and open space, and 5) an analysis of the effectiveness of social media for land conservation organizations. The methods for investigating each of these areas are outlined within this section.

3.2 Trail Cameras

The RFMSC had set up a trail camera in December of 2016 to try and capture different wildlife that could be seen on the property. Photos of people that the trail cam had recorded were also stored so the Rauscher Farm sub-committee could see what people had come to the farm to do. When hearing the WPI students were interested to see how many people are going to the farm, Jim Webster offered to share the photos of people that he had stored, and he so kindly sent them to the students for analysis.

The WPI students received over 200 pictures to examine and log. Each picture had a time stamp on the bottom giving the date and the time. The dates ranged from December of 2016 to August of 2019. The time was based on a 24-hour clock; this format is reflected in the analysis. The students were also given a map of Rauscher Farm that showed where the trail cam was placed and labeled for how long it stayed in that position.

After receiving all the photos, the students first step was to log all the pictures on Microsoft excel. When going through the pictures there were instances where the same person or group of people would be

captured twice in the same day. In these instances, only the first picture was logged due to the second picture being redundant for the data. In total, there were 197 photos to log. The first sets of data taken from the pictures were the date, time, number of people in each photo and, based on the picture, what activities the people were assumed to be doing. The activities were split into three categories, people either seemed to be walking their dog, going for a hike, or walking with fishing equipment to go fishing. After each of the pictures were logged, the map at the bottom of the data was photocopied and color coded to easily see where each picture was taken.

The next step was to go through the logged data and extract any other interesting points that could be of use. The dates on the photos were compared to a calendar to determine what day of the week each photo was taken. The data was also used to determine the number of people visiting each day, week and month. Finally, different time frames were set up so pictures could be grouped based on the time of day. The time frames used were from 6:00 to 9:00, 9:00 to 12:00, 12:00 to 15:00, 15:00 to 18:00 and anything past 18:00.

After all the data was sorted and refined, some of the groups were made into pie charts. The first pie chart showed which day of the week was most visited. To get the totals from the data, the "countIf" function in excel was used to analyze a range of data and add a tally for each cell that followed a certain parameter. Excel would not count the actual names of days so a number key that corresponds with each day of the week was created, allowing excel to read and count the days. Next, the time frames were formed into a pie chart to see what time of day Rauscher Farm was most visited. Then a pie chart was made of what activity was assumed to be done. Several keys for both pie charts were created much like for day of the week. The last pie chart was of group size to see what the sizes of groups were visiting Rauscher Farm. A number key wasn't needed since the number of people in each photo was already recorded. This entire data set can be seen in Appendix E.

The group decided it would be beneficial to go through the pictures again with a more observant eye to try and see if any more activities that were being done on the farm could be found. This data set

can be seen in Appendix F. The months of June 2018 through August 2018 were also considered more closely because this position had the highest number of pictures and a close time frame this data set can be seen in Appendix G.

3.3 Real Estate Evaluation

During the initial vote for Clinton to buy Rauscher Farm, many townspeople were persuaded that the land purchase cost would far outweigh the anticipated costs associated with municipal infrastructure and education services for the proposed housing development. The WPI students decided to further investigate the economic impact of the purchase on town revenues by analyzing property values near Rauscher Farm and how they have changed since the Farm was purchased. This analysis was initiated by using online GIS maps and overlaying circular lines at a scaled distance from the barn at Rauscher Farm. The lines were drawn at 1/4 mile, 3/8 mile, and 1/2 mile radii.

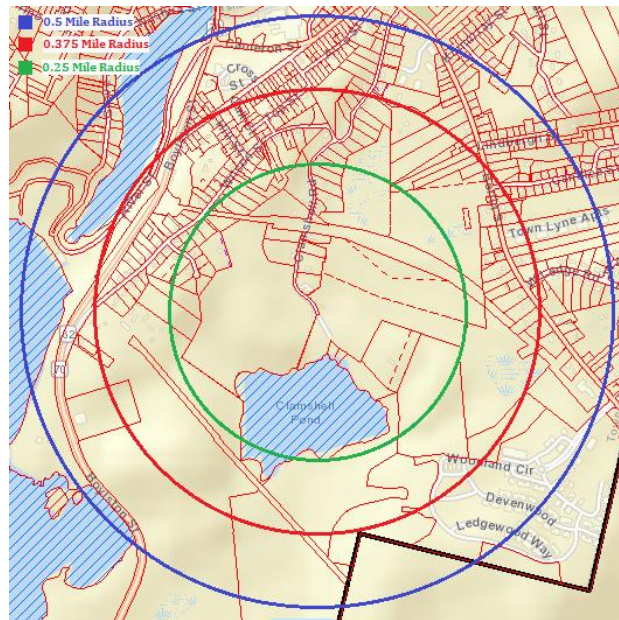


Figure 3.1: Picture of the zoning map created for evaluating real estate values.

From the online GIS map, we were able to obtain the address of each parcel. Each parcel was then searched for on Zillow.com to obtain tax assessment values from 2004 and 2019. Zillow.com also provided the tax paid for each property in each of those years. The address, tax assessment values and tax paid values were catalogued into a Google spreadsheet and the percent increase was calculated for the property assessed value and the tax paid on that property between 2004 and 2019. Some parcels were split between two zones, in this case the parcel was assigned to the zone where most of its land area resided. Some parcels did not have complete tax assessment records and were excluded from the aggregate calculations. Other parcels were town owned or commercially zoned and were also excluded from the calculations. The entire data set can be found in Appendix H.

3.4 Public Survey

Among its proposed lines of inquiry, the IQP team worked with the members of the RMFSC to assess current public opinion by designing and administering a brief survey. The goal of the survey was to gather information from the people who use Rauscher Farm and use this data to make strategic recommendations to the RMFSC to make the open space more enjoyable for its public users. This exercise would give the public the opportunity to express their concerns and opinions to the RMFSC directly, allowing the committee to have an accurate representation of how the public feels about Rauscher Farm now that it has been operated under its current leadership for more than a decade.

The WPI student team first drafted a list of questions to put on the survey. The list of questions was developed in a way to extract a few key data points that would be useful for creating recommendations for the RMFSC to implement. The desired data points included questions such as: where the Rauscher Farm visitors lived?; are they familiar with Rauscher Farm and its mission to preserve open space?; do the participants value conservation of land, animals, or plant life?; what keeps the participants coming back to Rauscher Farm?; and what would help bring the participants back more

often? Before beginning the distribution of the questionnaire, we submitted our survey to the WPI Institutional Review Board for their approval.

The first draft of the survey questions was submitted to the RFMSC for their review and approval. A few committee members made useful editorial suggestions to the questions including adding the question “Are you familiar with Clinton’s Rauscher Farm, and its 62 acres of preserved open space?” This question was added because the name of Rauscher Farm is often misinterpreted and portrays the image of an operating farm into the minds of individuals unfamiliar with the mission statement of the organization. The question was placed towards the beginning of the survey to give respondents an idea of the purpose of Rauscher Farm if they were unfamiliar with it and to support the purpose of the following questions. In addition, the first question of the survey was changed from “Do you live in Clinton, Massachusetts?” to “Please let us know what town you are from.” per Mr. Webster’s input. The change was made to prevent confusion of Rauscher Farm only being available to the residents of Clinton. The question was reworded to be more open ended, the new wording also allowed for more detail of where respondents are located, instead of the answers being restricted to inside or outside of Clinton. Another notable edit was the addition of the question “How often do you visit Rauscher Farm?” This question was added as an alternative means to gather data on how many people are visiting the farm and was mentioned by Christine Latini.

The survey was formatted to fit on one side of standard letter size paper (see Appendix A) to reduce the amount of paper and ink needed for each copy, as well as to not make the survey appear intimidating or tedious to complete. To compliment the physical paper copies of the survey, an online version was also created using Google Forms. The questions on both the physical and digital versions of the survey were identical, allowing the data to be merged from both sources for analysis. Google Forms was chosen as a platform for the online survey because it is free to use, simple, and automatically outputs the responses to a spreadsheet. To gain access to the online survey, a QR code was created that, when scanned by any smartphone, would open the webpage for the survey.

A flyer was also created as a means to advertise the survey to the public. The flyer included the QR code linked to the online website containing the survey as well as a very brief description of the purpose of the survey and the project. A second version of this flyer was created specifically to be posted on social media pages. The social media version did not have the QR code, as the link to the survey was included in the caption of the social media posts. The RFMSC generously used their Facebook page, as well as their email subscriber list to distribute the online survey. Several physical copies of the flyer were also printed and distributed by the WPI students to local businesses in Clinton for display.



Figure 3.2: The survey flyer created and distributed to local businesses in Clinton, MA.

3.5 Social Media Investigation

Over a decade ago, the Rauscher Farm Subcommittee underwent a rigorous marketing campaign that was crucial for the purchase of the farm by the town of Clinton. Raising awareness to the public of all that Rauscher Farm had to offer was the main goal of the subcommittee at the time. This need to attract people's notice remains a top priority even a decade later. The subcommittee understands that the world has changed since the last marketing campaign and that a much more efficient way to reach people today is through social media. To achieve this goal the WPI students began researching what the best marketing strategies are for social media.

The students broke down this task into three main categories. The first step was to research what types of social media people like to use. The second step was to find comparable examples of other conservation land accounts on social media and evaluate which social media strategies and tools worked best for them. The last step was to find sources that give guidance on social media marketing practices for conservation land. Many strategies were adapted from comparable material because finding information dedicated specifically to conservation land proved challenging. The team used their findings to produce a list of recommendations for the RFMSC to pursue going forward.

3.6 Videography

The WPI students recorded their visits to Rauscher Farm in order to have source material to look back on while writing the recommendations for the RFMSC. To produce visual records one of the students brought video recording equipment with them whenever they would visit. Over time the student was able to walk through and record most of the trails and land that Rauscher Farm has to offer. The students also felt that this documentation could be edited in such a way that the result could be used as a form of advertisement. The RFMSC will be able to use the video in their social media marketing campaign that will be on the list of recommendations put together by the students. The software used to edit the video was iMovie. This process can be difficult to learn and time-consuming so additional

research will be done by the students to see if this method of gaining publicity will be worth further investigation by the RFMSC.

3.7 Interviews

The IQP group felt that it would be very beneficial to conduct several in-person interviews in order to get a better understanding of Rauscher Farm's current management and what were some motivations for people to get out and be involved with nature. The first step was to come up with a list of people that were of interest to interview. The list included people from Rauscher Farm Management Sub Committee, people of the Clinton Conservation Commission, and people who were involved in other open space areas in Massachusetts. The group had tried to set up the interviews at the end of 2019. However, the end of the year is a busy time for everyone, and the group ran into a hard time scheduling. After the new year and things had calmed down for most people the group had made efforts again to get the interviews done. Due to time constraints and different availability the group was able to set up three different interviews. We had felt that it would be really important to interview Gloria Parkinson and Jim Webster from the RFMSC due to their extensive involvement with the property. We had also found a piece of open space in Tyngsboro Massachusetts called the Sherburne Nature Center. Sherburne Nature Center is 80 acres of open space that was donated to the town. The land is taken care of the Trails Committee in Tyngsboro which is responsible for four different trails in the town. This piece of land was chosen because had resembled parts of Rauscher Farm in that it had three distinct parts of land (i.e., the grassy fields, a wooded area with trails, and a pond). The group was able to interview Patty O'Connor who is on the Trails Committee in Tyngsboro and works with the parcel.

Questions for the RFMSC were developed in a way that would give us an idea of each subject's overall view of the current standing of the farm and how they saw it in the future. The group had also put in some more specific questions depending on who we were interviewing. For example, when talking with Jim Webster the group knew that he was in charge of the trail cameras, so we had asked him about

how that technology was implemented. Because Mr. Webster had already expressed a particular interest in the management of invasive species, his interview also featured some more probing questions about that aspect of Rauscher Farm's situation. Alternatively, the group asked Patty O'Connor questions about the management of Sherburne Nature Center and what were some ways that they were able to attract visitors.

The IQP team recorded each one of the interviews and then transcribed them into text. These written out transcripts were seen to be very beneficial. This way the group could easily read through each interview and pull out important information for making recommendations. The group also felt that these oral histories might also be very useful for future readers in general. The complete interview transcripts can be found in Appendices B, C, and D.

4 Findings

4.1 Introduction

After collecting our data from the various research methods described above, we organized the results into meaningful patterns to formulate our recommendations for the RFMSC. From our research we have been able to obtain data for the most popular times and days of the week people visit the farm, what activities visitors come to the farm to do, and how the farm's preservation has affected surrounding property values. In addition, through the public survey we have been able to ask the public of their opinions about Rauscher Farm and what they feel is important about environmental conservation. Lastly, research was done to discover efficient uses of social media for environmental and nonprofit publicity.

4.2 Trail Camera Results



Figure 4.1: Trail Camera Positions and Time Frame on Rauscher Farm

The first thing the IQP team noticed when analyzing the trail camera data was that the positioning of the trail cam had a great effect on how many people walked by it. The positions of the trail camera can be seen in Figure 4.1. Over the short period in which Rauscher Farm Management Sub Committee owned the camera they had placed it in 5 different spots. Two of the spots corresponded to the wooded area of Rauscher Farm and the other three spots were in the grassy fields. When the trail camera was placed in the wooded area from July/ August of 2018 (labeled from July to August but includes pictures from June 2018) it took 150 pictures that were logged. That is around three quarters of our data set. We believe that most of the pictures were captured from this location at this time because it was during the summer months which is presumably the time of the year that Rauscher Farm is most visited. The location of the camera is also very close to the DCR property line and the trails coming in from the DCR which is another known entrance to Rauscher Farm. We believe that the camera is also close enough to the main entrance that it caught people walking along the trail walking past Clamshell Pond.

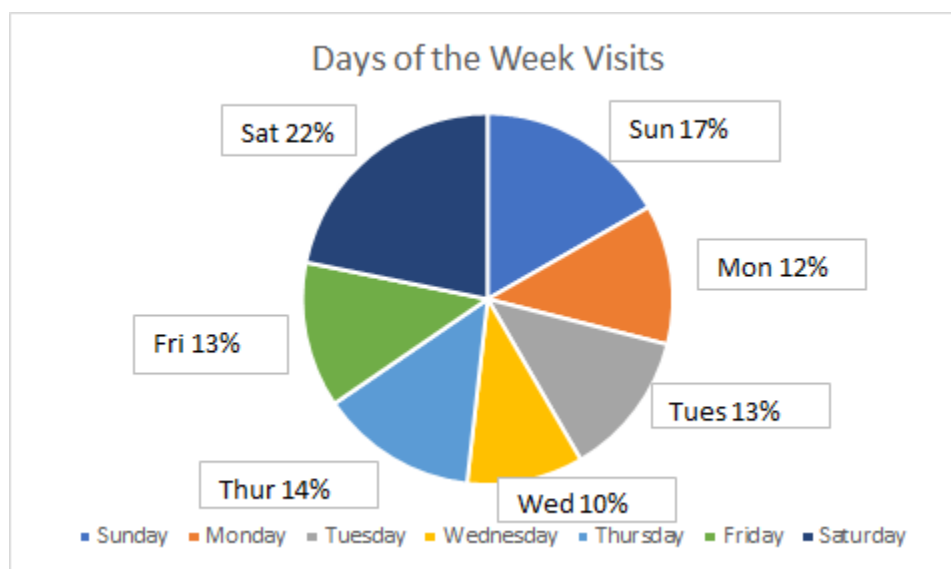


Figure 4.2: Percent Each Day of the Week was Visited

Figure 4.2 shows the percent of pictures logged that were taken on each day of the week. By looking at this data we can assess what days of the week Rauscher Farm was visited most. The graph shows the most visited day was Saturday and the least visited day was a Wednesday. The graph also

shows that on the weekend (Friday through Sunday) that 52% of the data was taken. Before we had analyzed the data, we predicted that this number would come out to be larger. We had thought that a much greater amount of people would be showing up to the Rauscher Farm on the weekends because more people have the weekend off from work. Our data could have come out this way because most of the data had come from the summer of 2018 when kids are off from school and people who do work are taking more vacations. We tried to analyze the logged trail camera footage without the months of June, July and August of 2018 however the group believed that the limited data set would not leave us with enough evidence to establish a pattern.

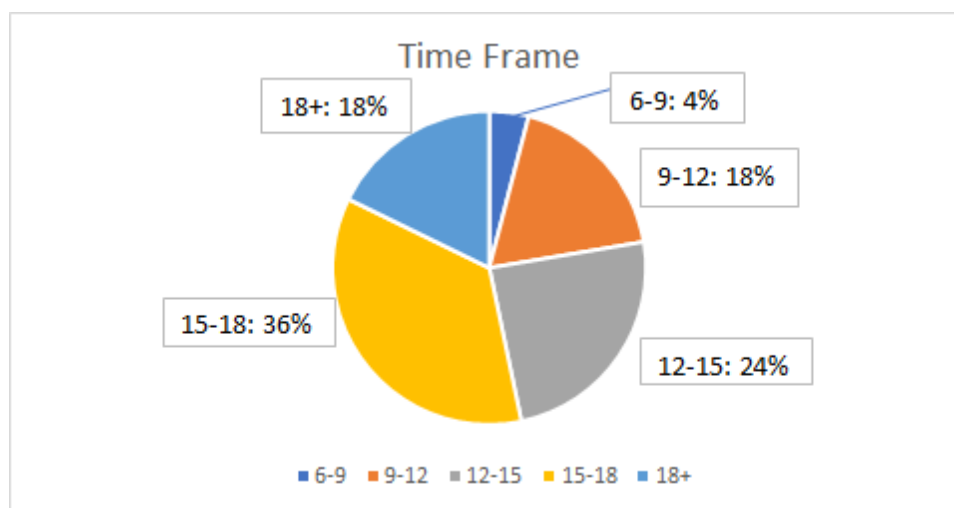


Figure 4.3: Pie Graph of the Time Frames People Come to Rauscher Farm

The IQP group also decided to analyze what periods of the day people were showing up in. Figure 4.3 shows the percentage of people who showed up to Rauscher Farm based on the time of day. The chart shows that 60% of the people captured on the Trail Camera had visited Rauscher Farm from 12:00 to 18:00 (12PM to 6PM). We believe that this number is accurate. With our theory that slightly more people show up on the weekends, it makes sense that most people go to Rauscher Farm any time between the early afternoon until dusk. The group does believe that if there was more data of people on Rauscher Farm throughout the years it would show that the percent of people showing up from the hours of 12:00 to 15:00 would go down but the percentage of people showing up between 15:00 to 18:00 would

go up. Data points from the summer months of 2018 support the trend of more visitors coming to the farm later in the afternoon, most likely because people have more opportunities to visit the farm during warmer seasons.

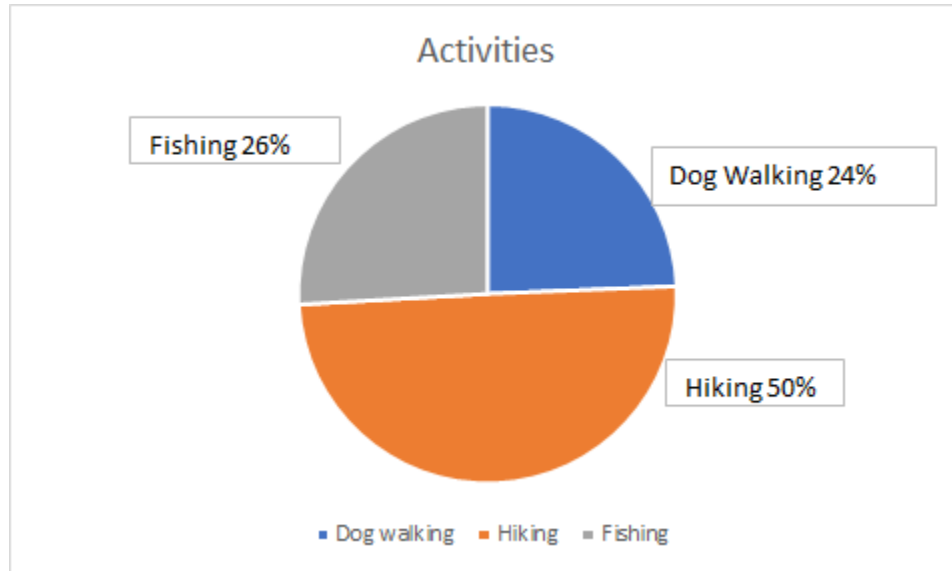


Figure 4.4: Activities being done on Rauscher Farm

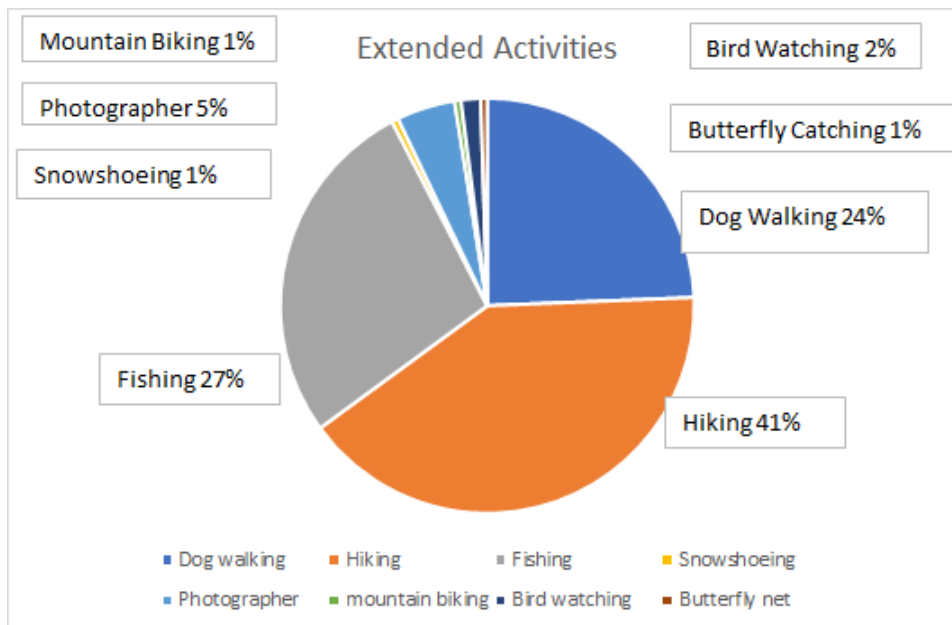


Figure 4.5: Extended Activities being done on Rauscher Farm

When analyzing our data for the first time we roughly categorized the activities into three different sections. We either labeled them as hiking, walking their dog, or fishing (Figure 4.4). Hiking was used as a general category because it was very easy to tell in the pictures by the trail camera if someone was walking a dog or fishing. Since hiking was used as a very broad term, we predicted that the data would show hiking taking over most of the pie chart. However, 50% of the people showing up to Rauscher farm are either there to fish or are walking their dog. We decided to look over the pictures again and tried to see if we could further differentiate the hiking category. This pie chart can be seen in Figure 4.5. Upon further review we found that some of the people caught on camera were carrying something over their shoulder or around their neck. Upon zooming in we saw that these people either had cameras, in which we labeled them as photographers, or carrying binoculars in which we labeled them as bird watchers. Going through out the data we found that one person was snowshoeing, one person was mountain biking and one person was carrying around a large butterfly net. The data set with the expanded breakdown of activities can be seen in Appendix F. People who were labeled with binoculars were only spotted when the trail cam was placed in the large grassy field, because most of our data corresponds to the trail cam when it was positioned in the woods we believe that this number can be higher than what our data shows. We think the amount of people snowshoeing on Rauscher Farm can also be higher than what the data shows because we only have a handful of pictures taken in the winter.

The IQP group decided it would be beneficial to look at the data set only between June of 2018 to August of 2018. We assumed summer to be the busiest time of the year, and the trail camera was set up in a heavily trafficked spot by people so we had a lot of data from this period. This data set can be seen in Appendix G. The pie charts created from this data are very similar to the entire data set because most of the photos captured were taken from these months in the position that the camera was in. The group felt that we would be able to use this data to take the average amount of people visiting Rauscher Farm each day, week and month. We found that there was 3 people visiting per day, about 17 people visiting per week and 75 people visiting each month. The IQP group recognizes that these numbers aren't entirely

accurate because there was only one trail cam being used and it's not a guarantee that every one that visited the farm walked past the camera. Based on the number of pictures that we got from this position and the fact that the camera didn't get nearly as many pictures from the other position we can say that this camera was able to catch most of the people showing up to Rauscher Farm in this time frame and that these numbers give us a good idea on how many people are visiting the farm in a busy time of year.

4.3 Real Estate Evaluation

According to Zillow.com, the average home value in Clinton MA in 2019 was \$299,000. Zillow.com only shows average home values in Clinton from 2010 to the present. In 2010 the average was \$224,000. To match the rest of the data obtained from 2004, the Zillow.com averages were interpolated, resulting with an average home value in 2004 of \$174,000. These values result in a town wide increase of 71.84 percent between 2004 and 2019. The residential tax rate in Clinton in 2004 was \$13.52 per \$1,000 of assessed property. Using this figure and the average home value from 2004 we obtain an average tax paid of \$2,352. The 2019 tax rate was \$15.93 per \$1,000 of assessed property value, resulting in an average tax paid of \$4,763, an increase of 102.47 percent over 2004.

Location	Parcels	2004 average tax valuation	2019 average tax valuation	Tax valuation percent increase	Average property tax paid 2004	Average property tax paid 2019	Average tax revenue percent increase
Town Wide		\$174,000	\$299,000	71.84%	\$2,352	\$4,763	102.47%
Zone A	39	\$193,819	\$271,708	42.13%	\$2,607	\$4,294	67.38%
Zone B	123	\$181,296	\$253,402	44.88%	\$2,443	\$4,018	70.57%
Zone C	182	\$158,873	\$222,139	42.74%	\$2,148	\$3,532	68.15%

Table 4.1: Results of property evaluations around Rauscher Farm

Table 4.1 displays the results of an investigation of property values around Rauscher Farm. The data is divided into three zones, Zone A contains properties where a majority of the land is within a 1/4 mile radius of Rauscher Farm, Zone B contains properties within a 3/8 mile radius of Rauscher Farm, and Zone C contains properties within a 1/2 mile radius. There were 39 properties recorded in Zone A, from

which 13 were excluded due to lack of data, leaving 26 left for consideration in calculations. Zone B had a total of 123 properties, 21 were excluded, leaving 102 properties for calculation. Zone C contained 182 properties, 45 were excluded from study, leaving 178 left for evaluation.

The town wide tax valuation increase is shown to be much greater than any of the zones studied around Rauscher Farm. The large town wide value increase can be explained by a few different factors. The first being the 2004 town wide average home value was estimated from interpolating the 2010 town wide average and the 2019 town wide average. In addition, homes are usually reassessed every time they change ownership. Properties closer to the center of town could have possibly been sold more frequently than the homes studied near Rauscher Farm, thus having more frequently updated tax assessments and a relatively larger percent increase in value over the 15-year period. Unfortunately, the length of ownership was not recorded in this study. Overall, the data obtained is inconclusive for testing the general applicability of John Crompton's claim that preserving open space can result in a lower net cost to townspeople through their property taxes. (Crompton, 2007, pg. 9-11) A different approach of testing this hypothesis could involve comparing Clinton to a similar community that experienced more residential development over the last 15 years; focusing on the tax burden brought upon the people of each town over this period.

4.4 Public Survey

The Rauscher Farm public survey opened to the public on November 19th 2019 and the results from the survey were taken on February 23rd 2020. In total there were 89 respondents, the online portion of the survey received 85 submissions and there were four hardcopy submissions left in the collection box posted at Rauscher Farm. The survey had 13 questions in four different formats, 1) yes or no, 2) rate your answer from 1 to 5, 3) check off all that apply, and 4) open ended. The rate of responses coming into the google forms webpage was tracked through automated email messages. We did not receive any replies for the first few weeks the survey was live. Gloria Parkinson was generous enough to post an announcement

for the survey on the Rauscher Farm Facebook page, as well as send out a mass email to Rauscher Farm subscribers. We saw 19 responses to the survey after the first Facebook post on December 6, 2019. A similar burst of responses came in after the mass email was sent and after subsequent Facebook posts. The pattern of survey responses indicates to us that most respondents were already following the Rauscher Farm Facebook page or were close with somebody who may follow the page and discovered the post through Facebook's advertisement algorithm. We have concluded the results in our data are skewed towards individuals who are supporters of the farm and visit semi frequently as well as people interested in nature on a general scale.

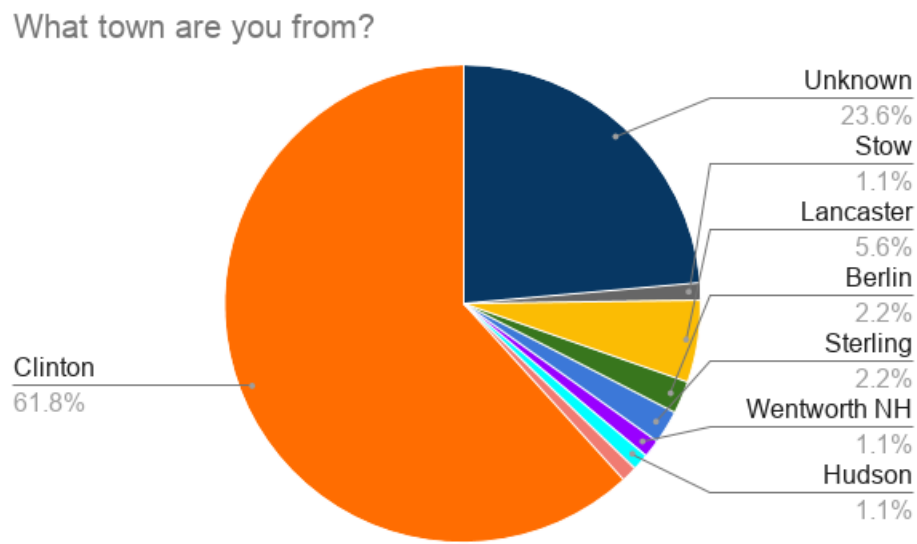


Figure 4.6: Pie graph of where survey respondents live

The first question on the survey asked what town the responder was from. Many users of the survey were reluctant to answer, but almost two thirds of the respondents were Clinton residents, and many of the other towns that showed on the survey are near Clinton.

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
The preservation of open space for recreational use is important.	93%	2%	3%	1%	-
The preservation of bird and animal species is important.	92%	6%	1%	1%	-
The preservation of native insect species is important.	73%	14%	9%	1%	3%
The preservation of native plant and fungi species is important.	89%	2%	7%	1%	1%

Table 4.2: Survey results for rating the importance of preservation across multiple sections

As shown in Table 4.2, people are more supportive of the preservation of land for recreational use and bird and animal species compared to insects, plants, and fungi species. This feedback supports the general theory that people like to look at birds and animals in nature, however many do not like bugs or insects. The insect section had the highest percentage of disagreement, leading us to believe many people are not familiar with how important insect species are to ecosystems.

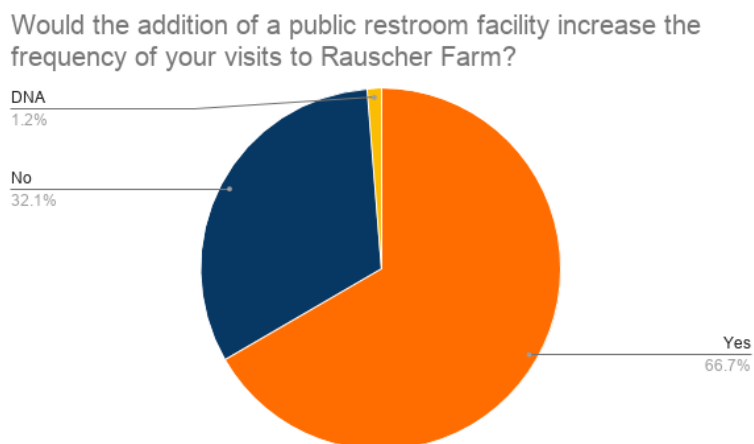


Figure 4.7: Pie graph showing responses to the question of adding a restroom facility increasing visits to Rauscher Farm

Would the addition of handicapped accessible trails increase the frequency of your visits to Rauscher Farm?

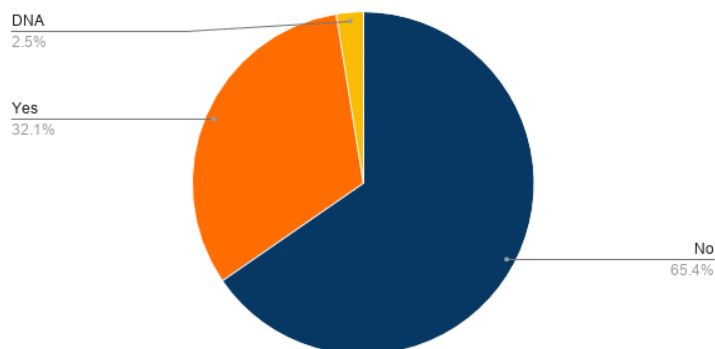


Figure 4.8: Pie graph showing responses to the question of adding handicapped accessible trails increasing visits to Rauscher Farm

Since the beginning of the project the WPI students had been informed about two proposed infrastructure improvement projects under consideration; bathroom facilities on Rauscher Farm property, and a wheelchair accessible trail leading to the lookout on Clamshell Pond. Due to the importance of these two issues, they were included on the survey on individual questions. About two thirds of the survey respondents said the addition of a bathroom facility would increase their visit frequency, indicating restrooms to be a high value feature for Rauscher Farm. For the wheelchair accessible trail, only 32% of people indicated it would increase the frequency of their visits. This data makes sense given the fact that everyone uses restrooms, whereas only a small portion of the population may require wheelchair accessible trails.

Hiking/Walking	66%
Wildlife Observation	42%
Photography	35%
Plant Life Observation	29%
Dog Walking	28%
Nature Programs/Events	18%
Fishing	10%
Stargazing	9%
Boating	4%
Mountain Biking	2%

Table 4.3: Survey responses for activities people like to do at Rauscher Farm

The most popular activity among the respondents to the survey was hiking and walking, with wildlife observation the second most popular. Dog walking, photography, and plant life observation were also seen consistently through responses. The data indicates Rauscher Farm is most frequently visited for its trails and the many varieties of wildlife that live there. Some of the less frequently mentioned activities were stargazing, mountain biking, fishing, and boating. We suspect a lack of awareness that mountain biking is allowed on the property and acknowledge that the lack of a dock makes it difficult to go fishing or boating.

Risk of tick and mosquito bites	33%
Lack of a dock on Clamshell Pond	11%
Inadequate Trail mapping	10%
Lack of trail indicators	8%
Inadequate Trail conditions	7%
Lack of a restroom	7%

Table 4.4: Survey responses for reasons to not visit Rauscher Farm

The table above presents the survey results for the reasons people may choose not to visit Rauscher Farm. Risk of tick and mosquito bites ranked at the top of the list of potential obstacles that discourage more visits. These results indicate that many people are worried about tick and mosquito bites and are unaware of the proper preventative measures that should be taken when walking in outdoor areas. Other notable concerns were the lack of a dock on Clamshell Pond and issues with trail mapping. The dock responses indicated to us that there are people interested in using Clamshell Pond, but do not because it can be difficult to access. There are maps of Rauscher Farm trails posted at the parking area of the farm as well as online, however the trails on the map may not be completely accurate, and none of the trails are named, making it difficult to find them.

4.5 Interview Findings

After each one of the interviews were transcribed the IQP team was able to pull out important themes that had come up. The interviews provided by Gloria Parkinson and Jim Webster were done with

similar questions and themes were taken in a way that can be applied to both. Both interviewees shared the idea that proper management of Rauscher Farm will both enrich the nature and human experiences. “I think it’s like a two way, you have open space on one side and you have got the community on the other.” (Parkinson, 2020, pg. 72). Throughout Gloria Parkinson’s interview, she showed more of a desire to be working with the community and their experience with Rauscher Farm. She told us that, “I have my passion that Rauscher Farm can provide something for everybody else.” (Parkinson, 2020, pg. 79). Gloria recognizes that conservation land and open spaces have positive effects on the surrounding community and has looked into studies that are similar to ones that we had laid out in Section 2.4. She understands the importance of conserving nature and that the betterment of nature will help the community grow a better relationship with nature. When talking about conservation of land she talks about how it is really expanding the nature that is on the property and that this, “expanding internally which in turn increases the experience for the community...” (Parkinson, 2020, pg. 73). This increased experience with nature can build upon people's relationships with nature and Gloria believes this relationship is, “... really important because without this sort of relationship with nature there can be no appreciation about what to do about climate change. In that sense, for me personally, Rauscher Farm is almost like a nursery...” (Parkinson, 2020, pg. 74).

Jim Webster focused on conservation land and the enrichment of nature. When asked about the most promising assets of Rauscher Farm Jim told us, “From my point of view I mean there is the whole thing about public access and events and all the rest. Personally, to me that’s secondary. I look at it as conservation land and conservation land that ties together with adjacent parcels...” Jim’s main attention is to, “...push back the invasive plants, [to] turn it more into what it should or used to be.” (Webster, 2020, pg. 82-83). Jim recognizes that removing invasive species is a never-ending task and the farm will always need someone to manage the plants and push them back. He believes that the conservation of land is a need for the planet that can help things such as producing more greenery that takes out carbon dioxide from the atmosphere or help maintain bee colonies that help pollinate the planet. As a group we believe

that this dual way of thinking for management of Rauscher Farm is extremely beneficial. These are both very important ways of thinking and having Gloria and Jim working on the same team at the same time makes it so that one way of thinking isn't favored over the other.

The interview with Patty O'Connor brought out the theme that the community wants to be in open space and benefits from doing so. When talking about Sherburne Nature Center & Trails, Mrs. O'Connor told us "That's kind of why we bought this house. It was kind of a fix up cape, not really a house. It wasn't very expensive, but we wanted to live next to open space." (O'Connor, 2020, pg. 99). Earlier in the interview she had also mentioned that after the Sherburne Property was donated to the town that, "... everybody wanted our house." (O'Connor, 2020, pg. 94). When talking about the volunteer community for Sherburne Nature Center, Patty talked about how it was hard to get people to commit over a long period of time, so they set up multiple volunteer days a year to get projects done. The management of the Sherburne Nature Center explained by Patty O'Connor during her interview differs from the interviews of Gloria Parkinson and Jim Webster because Sherburne Nature Center has much less of a nature management plan. Sherburne Nature Center is only one of four different trails that are under the trail committee's watch. The committee had set up the trails in a way so that management of the trails would be very minimal and that they can now focus on how to get the community involved.

4.6 Social Media Analysis

Facebook is by far the most used social media platform in the US and worldwide. It has a monthly active user rate of approximately 248 million in the US with 75% of people visiting the site once per day (Gramlich 2019). According to sproutsocial, the breakdown of people in the US who use Facebook is as follows: 51% of 13–17 year olds, 76% of 18–24 year olds, 84% of 25–30 year olds, 79% of 30–49 year olds, 68% of 50–64 year olds and 46% of 65+ year olds. Twitter has approximately 48 million active monthly users in the US, 80% of which are millennials and 42% of users are on the site daily (Omnicores 2020). Instagram has roughly 120 million monthly users in the US and 63% of them use

the site daily. 72% of teens in the US use Instagram and 73% of them say it is the best way for brands to reach them about products or promotions (Omnicores 2020). Instagram could be the most effective way for the RFMSC to reach young people on social media. Despite Twitter and Instagram being a good way to reach people 35 and younger, Facebook marketing is the more effective way to reach more people overall.

According to a guide written by Nate Lotze of the Pennsylvania Land Trust Association, a staff member or members, should expect to dedicate a minimum of one to two hours per week on social media. This time is spent on just one social media platform and is used to maintain a consistent presence on the site that can build a following. Another 30-60 minutes should be spent on each additional social media platform to adapt and post the same content as was posted on the first platform. Spending less time can hurt an organizations effort to gain a positive image on any platform. “If you decide that your land trust truly does not have the necessary time to devote to social media, it is better to have no accounts than to have poorly managed ones. Having no accounts makes an organization less visible but having poorly managed accounts could actually hurt your image.” (Lotze, 2018) Although Lotze does not specify how this could hurt your image, we think it is because a profile that has little to no activity can become outdated very quickly and most people are interested in current or future events.

Figuring out what to post can be a challenge, but luckily there are many other conservation land trusts on social media that provide examples to consider. We found that Facebook is by far the most widely used social media platform by conservation land organizations. Surprisingly we found very little activity by these types of organizations on Twitter or Instagram. Some belong to a larger entity like the Mass Audubon society that has its own Twitter and Instagram profiles encompassing all its conservation land. Despite falling under the Mass Audubon umbrella, these lands all have their own individual Facebook profiles. Many of the profiles we found tend to post things belonging to four main categories. These are events, pictures/ videos, ways to help preservation efforts, and their organizations community outreach programs. Much of what they post relates to upcoming events which is a great way to spread awareness. They also all have an “upcoming events” section on their profiles. Posts containing pictures or

videos of the wildlife/ nature that the land has to offer tend to generate the most “likes” and “shares”. For instance, the Mass Audubon Broadmeadow Brook page posted a simple 30 second video of the babbling brook that got more than 30 likes, 3 shares and has over 350 views. For context, over the last 20 non wildlife/nature posts, they averaged 8 likes and 0 shares per post. People tend to engage with posts that are depicting the wildlife and nature of the land. Much of what is found on the Broadmeadow Brook page is adapted and posted on the Mass Audubon Twitter and Instagram pages. Most of the events posts are posted on Twitter, and many of the pictures taken are posted on Instagram. Most of what organizations post on Twitter are of current or future events, which is a great way to inform young people of what’s going at Rauscher Farm soon. It is simple to adapt pictures that have already been posted on Facebook to Instagram as well, making it easy to show the next generation of nature lovers what Rauscher Farm has to offer.

Consistent posting on social media can also be a good way to recruit new volunteers. By having a continuous online presence, an organization can begin to build relationships with its followers. When people see consistent activity that they are interested in, they are more apt to become engaged with the activities of that organization. “The key is using the right content for your organization to engage your audience, inform them about your mission, and then recruit them once you’ve built a relationship” (Collier). According to Azure Collier of Constant Contact Marketing, there are three components to gain new volunteers on social media. The first is to engage your audience with compelling content. Captivating your audience can be done by regularly posting multimedia content and asking questions about what people enjoy about Rauscher Farm. The second is to keep your followers informed by sharing news relating to Rauscher Farm and its efforts to preserve wildlife. Keeping visitors up to date means making sure to post about upcoming events and educating the community on methods used to keep the land well suited for wildlife. Finally, after maintaining a presence on social media, an organization can begin to recruit new volunteers by posting volunteer opportunities.

4.7 Summary of Findings

From the research conducted over the course of this project, we were able to obtain a lot of meaningful data and draw conclusions from this data to better understand the public interactions with Rauscher Farm. We now know when most people visit the farm, what they go there to do, and some factors that constrain them from visiting. The research also provided information about the public's general opinions about environmental conservation, and what the RFMSC could do to make the farm even more enjoyable. We have learned that analysis of the economic impacts of preserving open space (to increase localized real estate values, while also reducing pressure to raise the rate of town wide tax rates), is a very complicated dynamic to disentangle. Lastly, we learned how effective social media marketing can be for other nonprofit environmental organizations. This research has given us more knowledge about environmental conservation and how it plays a role in the Clinton community.

5 Discussion and Recommendations

5.1 Introduction

In an effort to provide the RFMSC a comprehensive snapshot of options, alternatives, and advice, the WPI student team generated a list of recommendations for the RFMSC in several key areas based upon the collection and analysis of research data over the course of the project. We have sorted our recommendations into the following categories: 1) Management, 2) Infrastructure 3) Educational Programs and 4) Marketing. Each recommendation within these categories is ranked in a prioritized order of importance based on the resources required to perform the recommendation, and the potential value its implementation would provide to Rauscher Farm or the community.

5.2 Management of Resources (Physical and Human)

Management of Rauscher Farm plays a vital role in keeping the farm safe and accessible for its visitors. Management activities include mowing and maintaining fields and trails, controlling invasive species growth, ensuring proper signage is in place around the property, and repair of any buildings, fences, or other features, as well as many other tasks. Jim Webster oversees most of the management of Rauscher Farm with a few other members of the RFMSC and some public volunteers as well.

5.2.1 Improved Signage Within and Beyond the Property

None of the WPI students had been to Rauscher Farm before the start of this project and one of the first things we all commented on after our initial visit was the secluded location of the farm. The location of Rauscher Farm is what gives it a very peaceful and remote feeling, however it makes it difficult for new visitors, or people just passing through to find the farm. The issue of easily finding the farm was supported by a few respondents to the survey saying they had no idea Rauscher Farm was there.

We recommend that more signage could be posted on a few of the main roads entering Clinton and along some of the roads leading to the farm. One strategic location for signage or advertisement of the farm would be the Wachusett Dam. The dam is a popular spot for tourists to stop and explore the area, and the people who stop at the dam are more likely to be interested in nature and discovering new places. We believe if Rauscher Farm was advertised at this location, visitors of the dam would be inclined to see the farm for themselves. Permission to post signs anywhere other than on Rauscher Farm property would need to be granted before pursuing this recommendation.



Figure 5.1: An example of trail indicators at Sherburne Nature Center in Tyngsboro, MA.

In addition to improving navigation to the farm, we also believe improvements could be made in trail indicators and markers. 8 percent of the survey respondents said trail indicators could be improved. Although the trails at Rauscher Farm are not very long, it would be helpful to display the distance of each trail as well as color code the different trails and use corresponding markers along them. The Sherburne

Nature Center in Tyngsboro, MA used painted steel disks mounted to trees to mark their trails. Steel disks were used to prevent visitors from removing or stealing the markers. We believe better trail markers and trail maps including trail names will increase the confidence of visitors who may otherwise be concerned about getting lost or not being familiar with the property. Assigning names to trails or simply adding trail markers will be a relatively low-cost solution to improve the experience of the farm's visitors. We are ranking this recommendation as the most important of the management section due to its direct impact on the visitors of the farm, and the relative ease of implementation.

5.2.2 Enhance Rauscher Farm's Research Capacity

Rauscher Farm has a lot of research potential. This idea was first mentioned to the WPI students by Gloria Parkinson, who explained in a meeting early into this project, the interesting changes the RFMSC has seen in the environment of the farm over the past 15 years. Mrs. Parkinson added that an individual, or team of students could visit Rauscher Farm and simply record their observations to compile a data collection documenting how the farm has changed over its history. The WPI students are convinced that expanding the organization's capacity to host and promote local place-based scientific research on climate change impacts, wildlife habitats, and ecosystem health will be beneficial to the farm as well as the community, and the RFMSC should try to find local students or individuals interested in nature to provide this work. We suggest the RFMSC collaborate with local high schools, specifically the Honor Society departments to locate students who need community service merits to meet qualifications in their educational goals. In addition, local chapters of the boy scouts, girl scouts, and 4H clubs also have kids looking for project opportunities to satisfy community service requirements, as well as youth who have interests in the outdoors and the environment. Projects for these young people will need to be planned (and in some instances supervised) through collaborations between the RFMSC and the corresponding group, however, there seems to be no shortage of research potential at Rauscher Farm. This recommendation is ranked second because it does not substantially augment the flow of public visitors to

the farm, but it does make good use of the educational potential of the farm and is a great example of the services Rauscher Farm can give back to the community.

5.2.3 Explore Alternate Structures for Volunteer Oversight

Since the beginning of the IQP work, RFMSC members expressed concerns about attracting and maintaining volunteers, and potentially exploring alternative ways to give Rauscher Farm some extra manpower for its daunting maintenance needs. Attracting long term volunteers is a very difficult task, as Mrs. O'Connor expressed during her interview; people like the idea of helping, but they only want to show up for a day, do their part, and then go about their normal lives. Jim Webster also mentioned in his interview that successful volunteer recruitment entails its own management consequences; if finding new volunteers was easy, they would still need to be trained to use tools and equipment, as well as trained on what invasive species to remove, and how to clear the trails without impacting the environment negatively. To add another difficulty, a member of the RFMSC would need to supervise any work done by volunteers on the property.

We recommend, if possible, for the RFMSC to set up a new official title: Volunteer Land Steward. Ideally, these individuals would be properly trained to manage the land on the farm and have access to the facilities, however, would not need to be supervised by a committee member. In addition, the committee should consider hosting more volunteer or clean up days to remove the workload from the long-term Rauscher Farm volunteers. Another consideration for the volunteer days is to invite local vendors to set up at Rauscher Farm to sell or market their products. During her interview, Mrs. O'Connor mentioned the Sherburne Nature Center has had success with their community volunteer days, where vendors are encouraged to attend. This recommendation is ranked third in the management section because it will take more planning and require permission from other parties to put into action. The WPI student team still recognizes improvements can be made in volunteer management and it is an important part of maintaining Rauscher Farm.

5.2.4 Tracking the Number of People Visiting the Farm

The group agrees that the best indirect way to track the number of people coming to Rauscher Farm would be by having trail cameras placed at every entrance to the property and managed weekly. This wouldn't be a hard job for someone but it is very time consuming to manage and log all of the pictures. While it is possible to obtain and process some data from trail cameras, the human labor costs involved place this effort far lower on the scale of desirable investments of time and energy.

5.3 Infrastructure (Built and Natural)

The infrastructure on Rauscher Farm includes any buildings, trails, or other physical facilities as well as the natural features such as trees, rocks, plants, and animals that make up the environment at Rauscher Farm. Infrastructure is what draws people to the farm and persuades them to return in the future. For Rauscher Farm, making the infrastructure as appealing to visitors as possible as well as retaining the environmental integrity of the property are both essential to the overall success of the farm.

5.3.1 Furnish Temporary Bathroom Facilities

One of the most discernible needs of Rauscher Farm is public restroom access. Having a restroom facility on the property has been a goal of the RFMSC since the farm opened to the public. Some of the obstacles for installing a bathroom are the cost, and ensuring it is handicapped-accessible. The results from the public survey illustrate the importance of a bathroom facility from the public's view with 67% of people saying it would increase the frequency of their visits to Rauscher Farm. Jim Webster, and Gloria Parkinson both expressed the importance of a restroom facility in their interviews, and there was also mention of having temporary facilities put onto the farm this year. After reviewing the survey results, the WPI students believe this to be an excellent temporary solution for bathroom facilities. Having temporary

restrooms put onto the property would indicate to visitors that the RFMSC is listening to the wants of the public and should have an overall positive effect on the number of visitors going to the farm. Another alternative that could be explored would be installation of a composting toilet. These toilets are friendlier to the environment by avoiding the use of harsh chemicals to treat waste, instead using microorganisms to breakdown waste and eliminate pathogens (“Using Composting Toilets and Greywater Systems in Massachusetts”, 2005). Although temporary restroom facilities are a great addition to Rauscher Farm, we believe that permanent bathrooms should still be pursued by the RFMSC as a longer term goal. We have given this recommendation the first ranking of importance in the infrastructure section because it is a need expressed directly from the public and its implementation would be a notable milestone in the development of Rauscher Farm.

5.3.2 Examine Options for Creating a Nature Center

Another area for improvement in infrastructure is the addition of a nature center, or other indoor facility to host events, meetings, and program presentations. On our initial visit to Rauscher Farm, Jim Webster had pointed out that the existing house on the property would need extensive rehabilitation to be brought up to code for use as a public facility or nature center. We did not have a chance to investigate the feasibility of creating a nature center for Rauscher Farm, however, we believe a nature center or similar structure would be a beneficial improvement for the farm. Creating a space where visitors could seek shelter during bad weather and have a location for nature and educational programs in an indoor setting is a great way to improve the usability of the property. If converting the existing house into a nature center is not feasible, alternative methods should be explored by the RFMSC, such as prefabricated structures, or an open walled pavilion. Creating a nature center is one of the most expensive recommendations on our list, and for this reason we have left it second on our infrastructure category. In addition, we did not see any compelling demands from the public that a nature center should be created, however, a structure could also provide permanent restroom facilities, which was a need outwardly expressed by the public.

5.3.3 Exploring “Hands Off” Land Management Practices

The WPI students were surprised to learn how much time and effort is spent on removal of invasive species from the Rauscher Farm property. The idea of “wilding” was discussed in the background section (see page 9), a concept put into action on a farm in the United Kingdom where land management is taken in a minimal and selective manner. We believe Rauscher Farm could benefit from a smaller scale version of what Isabella Tree and her husband did on their farm. We are suggesting that a limited area of Rauscher Farm be managed in a very selective way, leaving most of the management up to nature, and observe what kinds of changes take place over a handful of years. Part of the wilding project in the UK was introducing select species of animals to integrate with the ecosystem. Although sequestering a patch of land for a full scale wilding experiment would be a large challenge on Rauscher Farm, it would certainly bring a unique experience for visitors and may have potential to reduce land maintenance. A project of this nature could still be beneficial without the introduction of animals to the farm but may not be as effective compared to having live animals involved in the project. The idea of wilding limits human intervention with the environment including the animals. At the farm in the UK, none of the animals are human-fed; they are solely dependent on the land itself. We have chosen this to be the last recommendation due to its radical approach and the amount of effort needed to secure community support needed to implement this plan would be much greater than the other recommendations in this section.

5.4 Educational Programs

Rauscher Farm can give back to the community in many ways, one of which is providing educational value. Rauscher Farm is an open classroom with an infinite amount of learning opportunities. Over the years Rauscher Farm has sponsored many educational programs for children, and social events

for all ages. Some of the programs included topics about bees, birds, butterflies, geology, mushrooms, and other insects and plants. These educational programs provide an important service to the community and teach the value of the environment and its importance to the next generation.

5.4.1 Develop a mobile application to assist visitors

An original idea first suggested by Gloria Parkinson at our initial meeting was to develop a mobile phone application for Rauscher Farm. Ms. Parkinson explained to us that many people come to Rauscher Farm on their own free time to enjoy its features. With the addition of a Rauscher Farm app, visitors could get more out of their personal experience with Rauscher Farm. The application could be loaded with trail maps, points of interest on the property, and a guide to spot different plants, animals, and birds. The application would enhance the experience of Rauscher Farm for visitors who come any time of day. We feel that this project would be a valuable service for Rauscher Farm to provide to its visitors. The idea of an app addresses some visitors concerns of not being familiar with trails, and ties in an individual learning experience for visitors. For these reasons we have placed this recommendation first among the education program recommendations.

5.4.2 Host a Tick and Mosquito Awareness Program

Risk of tick and mosquito bites was the most common response on our survey to the question of “what are your primary reasons for not visiting Rauscher Farm?” Concerns about tick bites are very real and should not be taken lightly, however, we believe most people are not aware of the proper precautions that should be taken to avoid tick and mosquito bites. With the right gear and proper knowledge, people should not be afraid to visit Rauscher Farm and enjoy the outdoors. The WPI students believe it would be worthwhile for Rauscher Farm to host a seminar on how to protect yourself from insects including ticks and mosquitos. Some preventative measures may seem obvious, but there may be people who are not

familiar with the outdoors and can learn from an informative program about insect protection. We have chosen to rank this recommendation first in the educational programs section because it is a low-cost suggestion which appears to be a high interest topic based upon our survey results.

5.4.3 Continue Seasonal Activities

As mentioned earlier, Rauscher Farm has hosted an array of educational programs and seminars and we believe these programs are a vital component to the success of Rauscher Farm. Our recommendation is to maintain these programs and potentially create seasonal activities that could become annual events depending on the success of the program. Any interaction with the public will promote Rauscher Farm and its message for preserving open space and the environment. Even if a program is not successful, we see it as an important contribution to the community and new themes and ideas should be actively pursued.

5.5 Marketing Strategies

Marketing is important for any organization who wants to achieve overall growth of its “user” base. The RFMSC understood the importance of marketing when they launched their own campaign a decade ago to get the town to vote for the buying of Rauscher Farm. These types of campaigns are crucial for the overall awareness of Rauscher Farm’s existence. The IQP members found it important to do research on how to use modern marketing techniques to aid the RFMSC in their everlasting goal of increasing public awareness of Rauscher Farm.

5.5.1 Social Media Strategy

The IQP group believes it is essential for the RFMSC to gain a consistent social media presence. To start we recommend creating an Instagram account as well as spending more time on the RF Facebook account. Increasing the amount of time developing a Facebook presence should be the main priority. Every upcoming event that Rauscher Farm hosts should be posted. All events should be listed under the “events” tab which will then show up on the home page of RF’s profile. Pictures of the events should then be posted to show that there was a turnout and it is also a good way to generate likes and shares among the people who attended and were in the pictures. Spreading awareness of conservation efforts should also be the focus of some posts. This could include posting informative articles on what things are being done to help certain species as well as what people can do to help make an impact. Sharing posts from other conservation trust’s Facebook pages should be done to create an image that Rauscher Farm is part of a community that believes that environmental conservation is a priority everywhere. Pictures of Rauscher Farm’s landscape should also be posted to show off its beauty and attract people to come see for themselves.

We believe creating a presence on Instagram is the best way to reach the younger community of nature enthusiasts and it will also be a good way of truly showcasing Rauscher Farm’s beautiful landscape. Unlike Facebook, Instagram’s sole purpose is to post pictures and because of this we believe that Instagram should be used as a “picture diary” for RF. Images should be shared on this platform in abundance and the best pictures can be chosen to also share on Facebook. When the Instagram account is created a post should be created on Facebook with a link to the account to spread awareness. There is also a “contact and basic info” tab on Facebook where you can add external profile links that will show up under the “About” section on the home page.

To begin expanding Rauscher Farm’s online presence we recommend spending a minimum of an hour and thirty minutes to two hours and thirty minutes per week on social media. We understand that the RFMSC does not have a wealth of time to spend on social media. To aid the start of the committee’s

Facebook marketing campaign, we created a short video of Rauscher Farm to be posted on Facebook if the committee chooses to do so. We recommend exploring the possibility of getting an intern to manage Rauscher Farm's social media accounts. Clinton High School has a senior project internship program where an organization can hire a senior as an intern and the student will write about their experience for school credit. (Clinton High School, 2019). Reaching out to the community for content should also be done to help gain a larger following and increase community involvement. This can be done by posting a sign at Rauscher farm, as well as on Facebook, asking people to send in their pictures via email so that the RFMSC can use these pictures for Facebook and Instagram (just be sure to give them credit for the picture in the post).

5.5.2 Calendar Photo Contest

A calendar photo contest is an original idea thought up by the IQP group. We believe this could be a good way to generate some revenue as well as get people excited to explore the land. Hopefully people will already be sending in pictures to be posted on Rauscher Farm's social media profiles so the RFMSC can choose 12 of the best pictures to use for the calendar.

5.6 Timeline for Recommendations

The WPI team felt it would be helpful to give suggestions on how we saw the various recommendations on a timeline. The time frames were split up into three different categories: Short term (less than 1 year), Midterm (1 to 3 years), and Long term (3 years or more). The recommendations are sequenced according to what we think would be the easiest to accomplish and provide the most value for the amount of effort spent on each.

Short Term (less than 1 year)

- Develop a mobile app to assist visitors (see 5.4.1)
- Social Media Strategy (see 5.5.1)
- Furnish Temporary Bathroom Facilities (see 5.3.1)
- Host a Tick and Mosquito Awareness Program (see 5.4.2)
- Continue Seasonal Activities (see 5.4.3)

Mid Term (1 to 3 years)

- Improved Signage Within and on the Property (see 5.2.1)
- Examine Options for Creating a Nature Center (see 5.3.2)
- Enhance Rauscher Farm's Research Capacity (see 5.2.2)

Long Term (3 years or more)

- Calendar Photo Contest (see 5.5.2)
- Explore Alternate Structures for Volunteer Oversight (see 5.2.3)
- Exploring "Hands Off" Land Management Practices (see 5.3.3)
- Tracking the number of people visiting the farm (see 5.2.4)

6 Conclusion

The IQP project focused on the community's engagement and support of conservation land and how to get more people involved. Rauscher Farm is a piece of land that the town had bought in Clinton, MA. The grassroots movement was led by Gloria Parkinson and the Friends of Rauscher Farm who convinced the people of Clinton to purchase the parcel for open space use instead of being sold to a developer to put in houses in 2008. Now that time has passed Rauscher Farm has been experiencing less visitors over the years. The Rauscher Farm Management Sub Committee had reached out to WPI to try and get a team to help them remarket Rauscher Farm to the public.

Our goal was to come up with a list of recommendations that could be used by the Rauscher Farm Management Sub Committee to enhance the visitor experience and ensure the long-term sustainability of the conservation land. The group put in time to research the history of land use in New England, Clinton and Rauscher Farm to get a better understanding of the area and the land involved with the project. We had also put in time to learn the benefits of open space and conservation land and its importance to the community.

In order to get a current understanding of the land management, how the land is used and how the farm affects the community around it, the IQP team had set out to collect various different sets of data. The team had received photos of people captured by a trail camera set up on Rauscher Farm and were able to pull out information such as time and date people were visiting and make assumptions for the reasons why people visit Rauscher Farm. The IQP team compared past and current tax assessment of properties in different ranges from Rauscher Farm. This was done as an experiment to see if Rauscher Farm had an impact on the value of houses that are close to it. The group created a survey to be distributed by posting flyers and through online advertising on Facebook to get a sense of what the town had felt about the farm. As a team we had felt that social media would be the biggest way to promote Rauscher Farm so we did in depth research on social media and how it can be applied to conservation areas. And finally, we held interviews with a few key members of RFMSC to further understand how

the farm is being managed and reasons why they were involved. The team also had an interview with Patty O'Connor who is a person that works with a similar space of open space in Tyngsboro, MA.

The group used these data sets in order to come up with our recommendations to help get more people to Rauscher Farm. The recommendations fell into 4 different categories. The categories were management of resources, infrastructure, educational programs, and marketing strategies. Within each section the recommendations were ordered in importance based on the resources required and the potential value each suggestion's implementation would add to Rauscher Farm. The group also provided a timeline of when each recommendation could be completed.

We believe that this IQP project presented recommendations in a logical way based on research and through analyzing the different data sets collected. It was important to do this project to publicize the many benefits nature can bring people. In the current time that we are living, ruled by technology, these benefits can be forgotten. The group also feels like this project could work as a good stepping stone for future IQP groups working with Rauscher Farm. We had done some important initial research with the town and the surrounding areas and the transcripts of interviews can be used as useful resources for other groups. We recommend that a future IQP team look into developing a mobile application for Rauscher Farm. A mobile app would provide a way for technology to integrate into the nature experience of the farm. A feasibility study on the creation of a nature center using the house that was bought with the property, or through some means, could also be a project for a future IQP team.

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Appendices

Appendix A: Survey Materials and Data

Rauscher Farm Improvement Survey

1. Let us know what town you are from _____

Please indicate Yes or No for the following questions.

2. Are you familiar with Clinton's Rauscher Farm, and its 62 acres of preserved open space?	Yes	No
3. Have you ever visited Rauscher Farm?	Yes	No
4. Would the addition of handicapped accessible trails increase the frequency of your visits to Rauscher Farm?	Yes	No
5. Would the addition of a public restroom facility increase the frequency of your visits to Rauscher Farm?	Yes	No

Please rate the following questions from 1 through 5.
1 = disagree, 2 = somewhat disagree, 3 = neutral or no bias, 4 = somewhat agree, 5 = agree.

6. The preservation of open space for recreational use is important.	1	2	3	4	5
7. The preservation of bird and animal species is important.	1	2	3	4	5
8. The preservation of native insect species is important.	1	2	3	4	5
9. The preservation of native plant and fungi species is important.	1	2	3	4	5

Please check all that apply for the following questions.

10. How often do you visit Rauscher Farm?

<input type="checkbox"/> Have never visited	<input type="checkbox"/> Only once
<input type="checkbox"/> Once a week	<input type="checkbox"/> Once a month
<input type="checkbox"/> Once a season	<input type="checkbox"/> During school vacations
<input type="checkbox"/> During events/programs	
<input type="checkbox"/> Other (Please Explain) _____	

11. What are your primary reasons for visiting Rauscher Farm?

<input type="checkbox"/> Fishing	<input type="checkbox"/> Mountain Biking
<input type="checkbox"/> Hiking/Walking	<input type="checkbox"/> Nature Programs
<input type="checkbox"/> Dog Walking	<input type="checkbox"/> Stargazing
<input type="checkbox"/> Boating	<input type="checkbox"/> Plant life observation
<input type="checkbox"/> Wildlife observation	<input type="checkbox"/> Photography
<input type="checkbox"/> Other (Please Explain) _____	

12. What are your primary reasons for not visiting Rauscher Farm?

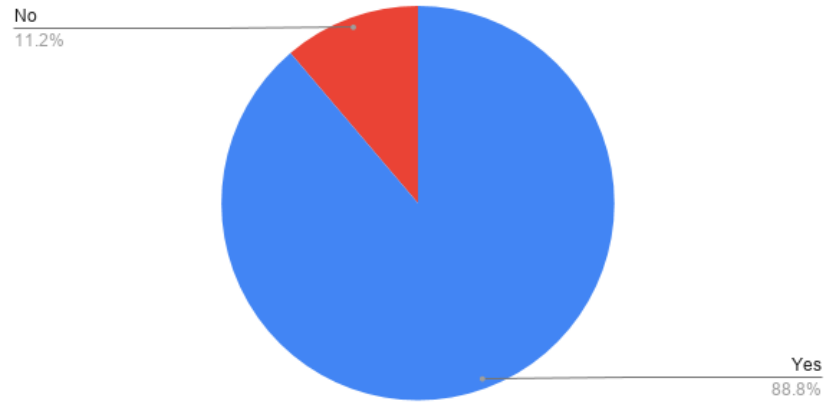
<input type="checkbox"/> Lack of a restroom	<input type="checkbox"/> Lack of a dock on Clamshell pond
<input type="checkbox"/> Lack of trail indicators	<input type="checkbox"/> Risk of tick and mosquito bites
<input type="checkbox"/> Trail mapping	<input type="checkbox"/> Trail conditions
<input type="checkbox"/> Other (Please Explain) _____	

13. Which of the following best describes your age?

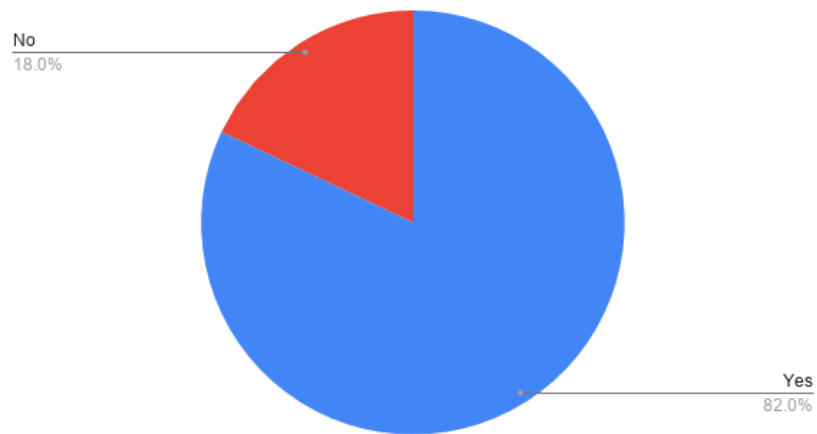
<input type="checkbox"/> 0 - 20
<input type="checkbox"/> 21 - 40
<input type="checkbox"/> 41 - 60
<input type="checkbox"/> 60 and over

Thank you for making a contribution towards bettering Rauscher Farm and the community.

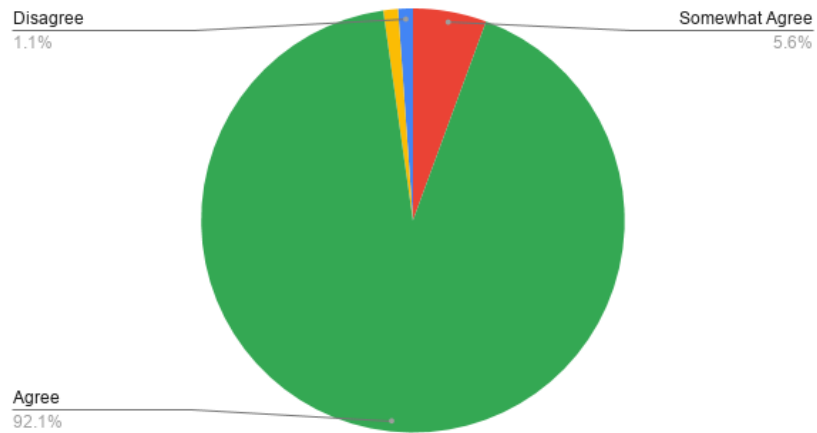
Are you familiar with Clinton's Rauscher Farm, and its 62 acres of preserved open space?



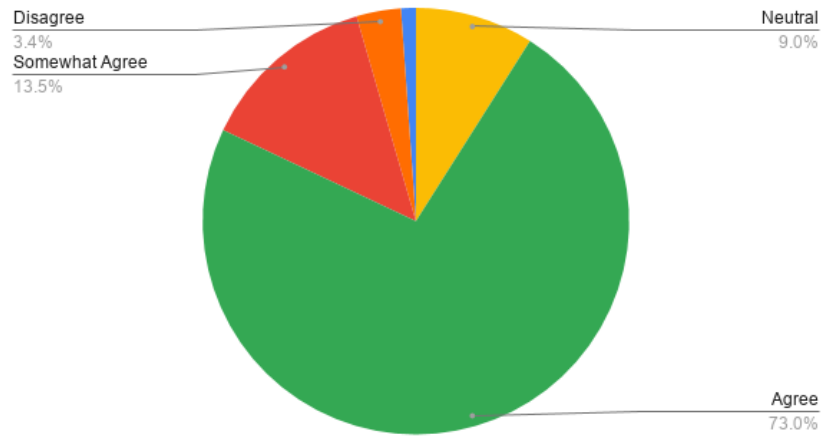
Have you ever visited Rauscher Farm?



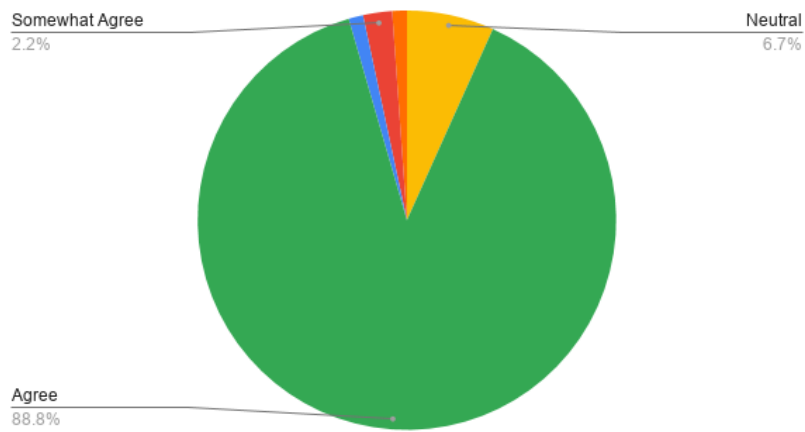
The preservation of bird and animal species is important.



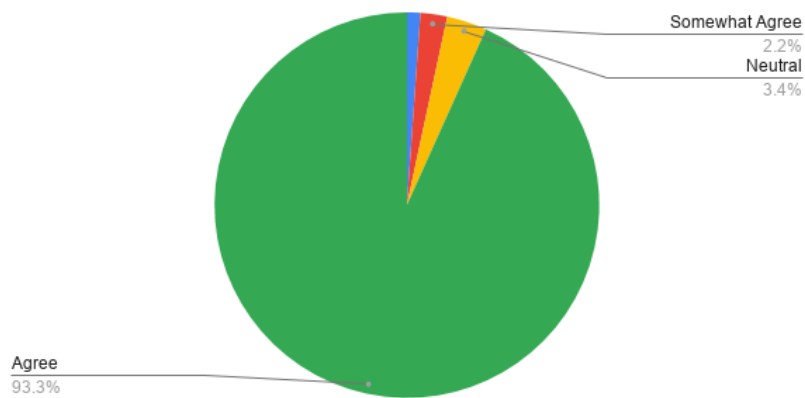
The preservation of native insect species is important.



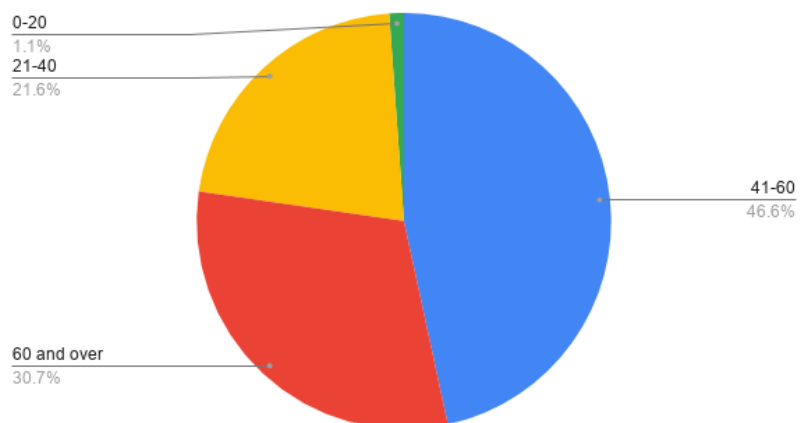
The preservation of native plant and fungi species is important.



The preservation of open space for recreational use is important.



Which of the following best describes your age?



Appendix B: Gloria Parkinson Interview

This interview was conducted on Saturday January 25, 2020. Gloria Parkinson is the head of the Rauscher Farm Management Sub Committee and was in charge of the campaign to have the town of Clinton buy Rauscher Farm.

Jesse Kablik: How did you first hear about Rauscher Farm and what made you want to get involved?

Gloria Parkinson: The other organization, Clinton Greenway Conservation Trust (CGCT), which is a nonprofit small land trust in town. I am on the board of directors, and we are working on trying to get part of the old rail bed for the rail trail that goes across the state. There is also the open space plan. Towns have to have open space plans. So we had identified what open spaces were left in Clinton at some point going way back. And the goal was to keep an eye on what was happening to them, knowing they were with private landowners. And one of the CGCT who had predated me and Jim had approached the owner of Rauscher Farm and said whenever you are interested, when you want to, should you want to divest yourself of your property, please let us know. He didn't and there is a history to that because going back even more years, he had tried to sell Rauscher Farm to the town for something like \$150 thousand going back a whole generation, probably 25 years or so. And the only reason why I know that is because one of my older townie buddies was on that Conservation Commission when that first came up and he was very upset when his fellow members of that committee said no. So it was the last working farm so we had sort of been watching it not really expecting anything to happen. Then suddenly we heard a purchase and sale agreement had been signed. At that point what that basically did was "Poof," the clock was ticking and it was also for this huge amount of \$2.6 million dollars. I think I showed it to you guys, but I'll say it again, the town had the right of first refusal because according to Massachusetts law Rauscher Farm was technically a working farm. [This] meant that the town had the right to say, yes, we want it, but they could not negotiate the price of the previously signed purchase and sale agreement. At that point the town said,

I'm talking about town government at this point, it's impossible, there is no money, it can't be done. Somehow then I became involved and said, yes, you're probably right but if you don't try it's a done deal. And that's how it started. A good solid group of people worked on this campaign; it's not me. I didn't do this on my own. You don't do anything in life on your own. Biologically speaking, [as] Homo sapiens we are social beings. We function much better as groups believe it or not. It's hard to believe. So that's when I became involved and we came up with the Friends of Rauscher Farm as a working title for a group. I became the point person of the group. And what I did was recruit people and have them cast themselves in the roles that they would play in the campaign. I think I told you. I did it physically. We were in a room in the elementary school. We were in the library and I divided the room physically into several sections and I invited people, go to where you physically think you belong. What that gave me immediately was a sense of where all the skill sets were. Looking back, it was really crucial because the worst thing you possibly could do, as you already know, is try to cast people in roles that they really aren't comfortable in. Sometimes they won't say no to you. But they do unconsciously through their actions and their degree of involvement and everything else. If you let people cast themselves, you are going to get the best that everyone can be. And I think looking back, that had a huge part in the very short timeframe we had to snatch these 62 acres from being developed.

Jacob Marshall: It's very interesting, it's kind of ironic that the property was offered to the town before and then they said they don't really want it but like 20 years later they buy it for way more money.

Gloria Parkinson: To put that in a context. Clinton believed developers saying development was good for a town financially because of the tax base that that development will bring into the town. It's not a complete lie. Certain types of development will bring in a profitable dollar amount. Industrial and things like that tend [to bring in a profit]. Certain types of residential developments will maybe more or less break even. But certain other types will not. If you have got these bigger residential developments which have these properties for families, that's when the whole equation shifts. Because the tax from the property is not going to cover the cost of the services delivered by the community to that property. And I

think there was going to be a need for an extension to the fire station. And suddenly “Boom!” we had the economic argument. You have to remember this, the \$2.6 million [to buy Rauscher Farm] gets paid off in a bond. Once it's paid off, Rauscher Farm doesn't cost the town any money. If that had not [happened], if those houses had been built, servicing them would have gone on forever so that cost would never have gone away. So it's not just an absolute finite number at that snapshot in time. It would go on forever.

Another financial aspect to this is open space attracts people to live in towns, which in turn sends up the value for people in town that want to sell. There are reports on how having certain things in a town make a town more attractive to people moving into that town, schools, libraries, open space, etc.. The value of having open space is enormous.

Jesse Kablik: How did you come up with the figure for every \$1 the town earns in tax revenue the town has to pay \$1.15 to \$1.50 for community services?

Gloria Parkinson: Studies. I think they are still on the website. We are going back to 2005 so there probably is more stuff that we have not looked at.

Jesse Kablik: What do you think are some of the most promising assets or attributes of Rauscher Farm?

Gloria Parkinson: That's a good question because I am so much in it I don't even think about it. I think it's two way. You have the open space on one side and you have the community on the other. People benefit by being in open space and there are studies that have shown this. There are studies that children who go into an open space and then go back and do a test do better. So there is a measurable value to people being in open space. I haven't looked for the studies recently but I remember the kid stuff. Now going the other way, to Rauscher Farm. What we have done with expert guidance is to try to enrich the actual space itself, which in turn enriches what comes into the space in terms of nature. You know, the birds, the animals and everything else. So we are actually enriching. You call it conservation, but you're not conserving anything, you are expanding something. It's actually expanding. That acreage itself is undergoing constant change, expansion. That is done sometimes by removing something from it, such as

the invasive species, which takes it back to the much more natural environment that it was. 'Cause you have to think. All of Rauscher Farm was cut back in the 19th century, as much of New England was cut back to be farming. So the whole ecosystem was destroyed. Now we are trying to get the ecosystem to regain what it naturally should be although we will never get there because it has changed so dramatically. Those woodlands, the woods of Rauscher Farm, are why we did the forest management plan. We go and seek these plans, experts, etc. to guide the process of the property itself expanding internally which in turn increases the experience for the community to whatever level they are going into it. So this constant thing happening, constant movement, like the perpetual motion thing. But imperceptible because it is so slow. I can only see it looking back on the ten years we have been doing it and the first couple of years we couldn't do that. Although the very first thing we did was get a report from Mass Audubon on what do we do now. Because at that point we had this farmland that had been big fields of hay cut twice a year. Nothing would grow except hay because that was a commodity. So having to do your best to get back to the balance. You guys, this is a most amazing dvd [The Little Big Farm]. A couple in California, nothing but dry soil, and over a decade you see what happens. I'm not saying that's what happens on Rauscher Farm, but I saw this [dvd] a few weeks ago and sat on the sofa and sobbed. We look now at that constant motion; they meet in the middle. That motion that goes in both ways is like that loop, the figure 8 loop. Clamshell Pond. We didn't know until a couple of years ago when we suddenly got this message from the DCR saying, Guess what? You've got Brazilian Elodea in Clamshell Pond. If you look at the location of Rauscher Farm, it's really close to the reservoir in terms of bird flaps. It's a twinkle of a flap and you're there. Chances of a bird migrating from Clamshell Pond to the reservoir is a fairly high probability. We found it. This fern that grows under the surface. It's commonly seen in fish tanks, that little wavy thing that looks like a fern. It had taken over 70% of Clamshell Pond. When you look at the water surface, you can't see it. Once you know it's there... If that had not been spotted... Then they [DCR] went through the Rauscher Farm Management Subcommittee and brought it to the Conservation Commission. It has been treated but we had to get the grant and all of that to clear it. Not because the DCR loved Clamshell Pond but because they were afraid it would get into the reservoir,

tainting the whole water supply. Eventually, over time, there would be no Clamshell Pond. It would spread everywhere. Again this whole thing about invasives. It's not meant to be there. Somebody maybe inadvertently tipped their fish tanks into the water, maybe sixty years ago without thinking; maybe a bird brought it? Who knows? But it was 70% of Clamshell Pond. The value of that was a whole water supply was protected by action being taken in a small pond that could have contaminated the whole reservoir and would have cost the state a fortune.

Jesse Kablik: Would it even have been caught if you guys hadn't bought the farm?

Gloria Parkinson: Because no one would have been looking for it? Probably the DCR.

Jacob Marshall: Even further with that if there was any kind of contamination from construction could have caused something terrible too.

Gloria Parkinson: To play devil's advocate: some would say we take all the precautions but you can't prepare for a bird to take it and travel with it.

Jesse Kablik: What do you think are the obstacles limiting Rauscher Farm?

Gloria Parkinson: Basically money. Money would speed up the process of removing what shouldn't be there and allowing what should be there to be there. That's one way of doing it. Money and more people to be involved with helping. I think it's important to have volunteers. Even if you win the mega bucks [it's important to have volunteers] because you are talking about a commitment and a relationship with something. I think this is really important because without this sort of relationship with nature there can be no appreciation about what to do about climate change. In that sense, for me personally, Rauscher Farm is almost like a nursery because if people aren't connected to nature in any way what does climate change mean? Meh, a big storm and a terrible happening in Australia but not here. It's not real to people. Watching your generation and younger take it on, that's the hope. But your generation and younger won't take it on if people like me didn't do nature adventures on Rauscher Farm as a summer program where kids go, oh, look! We found a frog. There's a turtle; oh, the turtle's gone. I have no illusions of grandeur

here about changing anyone's mind or anything else, but somewhere in all of those sessions with kids that come up and do a week long program on Rauscher Farm, one or two kids... It doesn't matter, it only takes one. I'm not saying Rauscher Farm is unique. Other place [have this same goal] as well. It's what Mass Audubon Society does and all these places. We are all doing the same thing. There is nothing unique about what we do on Rauscher Farm. In fact, I am constantly taking other people's ideas because there are no new ideas, just different ways of doing things.

Jesse Kablik: How are programs thought of and run?

Gloria Parkinson: A mixture of running them myself and having other people do them. Basically I'm there for every one because I have the background. There are two ways of enjoying Rauscher Farm. One is going there on your own and doing your own thing; the other is the events and activities. It's a deliberate two-pronged thing. All that's happening in the year is based on both specific dates to do things and then this open-ended thing where people go on their own time. For example, the StoryWalk in July. This gives a reason to come to Rauscher Farm that ties into the geocaching and letter boxes which are open-ended activities that people do in their own time. Any program has to have a rain date or an element on Rauscher Farm that is not contingent on weather.

Jesse Kablik: Do you think any of your planned programs this year are going to be more successful?

Gloria Parkinson: How do you define success? Because some of these people come in their own time, there is no way we can tabulate that. I have no qualms about taking pop culture to Rauscher Farm. To me it doesn't matter how people get engaged, which is why I'm looking at having an app. I do want to begin the process this year of finding how to do that. It might be with your successors I don't know or some group like that that wants to develop a Rauscher Farm app.

Jacob Marshall: Is there any kind of budget for Rauscher Farm or is everything invented?

Gloria Parkinson: Going back to the early conversation we had, there's the town and Rauscher Farm Management Subcommittee, and there's the Clinton Greenway Conservation Trust nonprofit, within

which is the dedicated Rauscher Farm Fund. When you get to the fundraising part, there are certain things municipalities can go for but nonprofits can't, and certain things nonprofits can go for but municipalities can't. The amount of money is miniscule, ultimately very small, but enough to get things done by going from one side or the other. The forest stewardship plan, which was really important to get because we base a whole lot of volunteer activities on that report, that came from the municipality applying to the DCR. That grant was about \$1900, [that] paid for the forester who comes and looks and does the whole report. But you have to work within the confines of applying for state money as a municipality. This means stepping through the Rauscher Farm Management Subcommittee, then the Conservation Commission, then having someone on the Selectboard sign off on it to get the grant done on time. On the other side, come back to the geologist. There is the state lottery money. A percentage of that money goes into a slush fund which is then subdivided into local cultural councils so every town and city in the commonwealth has a budget to dispense an amount of money, again not a huge amount. The deadline is always October 15 and it's meant to be arts but there is also science in there, which is how I can get Rauscher Farm stuff under the science heading. I wrote the grant by October. Meanwhile I have to have the person in place and I have to have the date in place to go into that grant application. So I started finding the geologist last September to present in May and nailing a date. There is not much money but I give him a presenter fee. Other people, the painter who is doing this painting thing. Because she does it as a business, I said, I'll try and get you a grant. Normally if she does it financially people pay to attend. We can't do that. It all has to be free. Everything on Rauscher Farm is free. So I said I'll try and get a grant which she said, no, to. I want to give this to you. So it's under this rock of what a municipality can apply for and under this rock of what a nonprofit can apply for. But at the same time I have to be careful because the CGCT is also trying to raise money for the rail trail. I can't get into competition with myself. Then there are also donations because the Rauscher Farm Fund takes donations. We send out a mailing at end of year and a couple of thousand comes in-- if that. But the goal of that is to grow an endowment fund. When the rest of us are chirruping in the trees, this fund is slowly growing with the interest on it. There will come a point when I am long gone that there will be a certain amount of money to pay for

certain aspects of the maintenance on Rauscher Farm. However, although the town doesn't have a budget, there is suddenly a bit of money for RF in the Conservation budget. \$4000 this year that has to be spent by the end of June. I am now trying to get the professional plan for the ADA trail so that \$4000 can pay for that service.

Jesse Kablik: How are you guys reaching out and acquiring volunteers?

Gloria Parkinson: This is really hard and it's not just Rauscher Farm. There is a huge dearth of volunteers stepping forward for any sort of engagement. This isn't just Clinton trying to fill boards appointed or elected. It's very hard for organizations trying to get volunteers. It has to do with people's lives. It is a very hard period to find volunteers. I try to do things like talk to WPI students and say, By the way, if you want to do a project here, how about you turn up on volunteer day! Then I take your picture and then I use that to recruit others. One of the ways to do it is finding people that have a project that they need to accomplish. Hence Eagle Scouts. In other words, trying to not just sit there and say, Oh, you'll love it. Please come. But trying to see what somebody needs to do or what a group needs to do to benefit them. Rauscher Farm can provide the resources for that to happen. You find ways where someone says, That's a good idea. I'm interested in X and therefore you can be my Y.

Jacob Marshall: Did board members originate as volunteers?

Gloria Parkinson: Some of the Rauscher Farm Management Subcommittee members go back to the campaign, obviously me and Jim. Some go back to campaign; others have come on since. Some people left because of work schedules. People come from different places. This is where you guys are crucial. Yesterday I was down. on High Street by the Strand Theater. Cheryl, the artist, has a store down there. Along there is a coffee place called Coffee Land. I went in there to grab a coffee. And talking to the woman it becomes apparent she has never heard of Rauscher Farm. I said, Do you live in Clinton? [She says] yes, but I have not heard of Rauscher Farm. This is why I came to you in the first place, to republicize Rauscher Farm. It's time to go back and remarket Rauscher Farm. And this time Rauscher

Farm has more resources to offer. But the branding and everything has to be done again. I read in the business pages about the CEO of Instagram. I don't do Instagram. I barely do anything on Facebook. I keep trying but it has come apparent to me right now that this is probably going to be key. I'm going to need to find maybe someone in the high school who has a passion for doing this. They have a community project they have to do and they can post, post, post, post. Can't just be me. I can't keep up with it. Jim can't keep up with it. No one among us with the sweat equity has that time to devote to that type of outreach. I have to find a way where somebody or somebodies do the project even if it's the school year. We are doing social media but barely. Rauscher Farm is not pushy enough. Every so often there is something from Rauscher Farm. Then "Boom!" it's gone. I need to educate myself on at least the structure of it so I can go out and recruit.

Jacob Marshall: Has Rauscher Farm worked in partnership with other land conservation programs?

Gloria Parkinson: We paid Mass Audubon \$1500 to get the very first management document. We had hardly any money but we did it because we knew from the get-go, given the whole tenor of the campaign, people loved it, people hated it, we had to be able to say, Here is a land management document. The state gave some money for the purchase and there also had to be a Rauscher Farm management plan submitted to the state.

Jacob Marshall: Has there ever been a partnership with others about educational programs?

Gloria Parkinson: There have been some. The annual summer enrichment program I did, that was a week-long summer enrichment program of the Clinton Public School system. There was another program I did for Worcester school and they were great. They used Rauscher Farm as an outdoor laboratory. I worked with the person running that program. I am trying to do that more now. I think I mentioned I already got the giant books from Massachusetts framework which talk about all of that. Because this is a dream right now I have all the books I need to do research in using Rauscher Farm as a research base to monitor global warming for at least a decade. I have to make it relatively easy for public schools to be involved

with it because it has to be so whether they can do one day to monitor something. I haven't worked that out yet. I will go to the public schools here in Clinton first to see what happens but I also have a list of other schools that I will approach because this is a global situation. I am not talking about limiting it to one small thing. That is something I want to really try Rauscher Farm to be because it's small enough. You go to some of these other places. They have these huge [pieces of land] and it's great, but it's different. With Rauscher Farm, it's small but with these diverse habitats. So you can say this part of monitoring will be just this woodland here or this part for flowering will be this section here. It's manageable. It's not overwhelming but I have to work it out. The bee thing I mentioned, taking this section and developing a bee friendly habitat. That's the sort of thing that dare I say is the beginning of the program. We got that without knowing we have it. Found out last year there is a strip with plants we never even knew we had. Then this bloke came who is now at UMASS Dartmouth. He did this whole bee thing [on Rauscher Farm]. He was very jolly, quite happy. Then towards the end we took him down here [to the grassland field] and he went, Oh, because suddenly he was seeing bees that he assumed he wouldn't see on Rauscher Farm. There they were because the plants were there. And bees are really important. Not just the honey bees, the native bees do most of the pollination, We are talking about the global food supply. A finite observation point here on Rauscher Farm? The tricky thing about getting schools involved is transportation and that is very hard because getting a kid on a bus used to be \$34 for a bus. Now it is \$500. So who pays? We don't have the budget and schools don't have the budget. It's a real challenge but because it's a challenge doesn't mean don't do it. If they don't perceive the value they are getting from it they won't commit to it. I'm no different. I have my passion that Rauscher Farm can provide something for everybody. I don't just walk up there and say how I love the trees, I do but I love them because of a passion to get that involvement before it's too late.

Jacob Marshall: I know you mentioned the fund for managing the farm in the future. How do you envision the management of Rauscher Farm for the next generation?

Gloria Parkinson: It depends how this volunteer thing goes. This is my personal opinion but I think there needs to be at least one full time person who then in turn would work out how to manage it and how to find other people to come and do it even if that meant paying people. I think there has to be independent professional management and not just left to the Parks and Rec. [Department]. I like Parks and Rec but it's not the same mandate. I believe there has to be someone dedicated to the management of those 62 acres. And that could feasibly happen. If the Fund reaches a certain amount after building up and with compound interest this could happen. Going forward the goal is to grow the Rauscher Farm Fund and let it grow itself in this diverse portfolio. We have short term cash if we need it. This solid financial growth plan will ultimately protect Rauscher Farm in the future.

Jesse Kablik: Which short term project do you think will enhance Rauscher Farm the most

Gloria Parkinson: Accessibility is key. How do you define it? One person's accessibility is not another's. Do you define it by physical activity? We cannot make Rauscher Farm 100% wheelchair accessible. That is impossible but if we can inch our way in with things we can make the experience of Rauscher Farm accessible. Now take that [concept] to the visitor center. If you're providing things educational and visual there, you have made the experience more accessible by that. Accessibility is a multilayered thing. It's not just physical although initially physical is key. I think there is a moral obligation to do that on town property. Everything we have talked about this afternoon--the accessibility of people becoming involved in an experience that is out of doors. It's not just saying there are 10 turtles in Clamshell Pond. That is the how you experience Rauscher Farm but that is not the what of Rauscher Farm. Why would you come to a place like Rauscher Farm? Why would anyone come? You look at these different reasons why people come.

Jacob Marshall: What is your favorite feature of Rauscher Farm?

Gloria Parkinson: All of it. Truly. It's a mood thing.

Jesse Kablik: I also love the different ecosystems in such a small area. It's really cool.

Jacob Marshall: I like how quiet it is. Because you are so close to the center of Clinton, even the reservoir, there are people everywhere. And you go there and it's dead quiet.

Gloria Parkinson: And then you've got the sound scape too. It's all of that.

Appendix C: Jim Webster Interview

This interview was taken on Sunday February 9, 2020. Jim Webster is on the Rauscher Farm Management Sub Committee and works extensively on the management of the wildlife.

Jesse Kablik: Can you tell us how you came to be involved with Rauscher Farm and how you first heard about it?

Jim Webster: It was mostly through Gloria. Going back that far it's hard to remember. Was I a member of Clinton Greenway Conservation Trust(CGCT) at the time, I don't think I was. So the Rauscher Farm project when it came up came up first to the attention of CGCT. And then through that to Gloria and you know Gloria by now she's a natural organizer/producer. She did run a theater company in England for years so she's one to get the ball rolling and stir the pot. We also had a business together in the 90s too and I always fell into the role of being the utility infielder, basically filling any job that needs to be filled. So early on I started doing research on the benefits of open space etc. I also put up a website early on so we could use that for promotion. And then all of the organizing activities that Gloria and others were setting up, walking the streets with door hangers and leaflets and talking to people and all that kind of stuff. So that was basically the beginning, so here it is another 12 years later and I am still here still doing work. As the Rauscher Farm project came on I became an active member of CGCT. In 2011 I became treasurer and a director and so on. So that's basically the rough background

Jacob Marshall: What do you think are the most promising attributes to Rauscher Farm?

Jim Webster: From my point of view I mean there is the whole thing about public access and events and all the rest. Personally to me that's secondary. I look at it as conservation land and conservation land that ties together with adjacent parcels because it borders on DCR property. It extends that as a natural range for wildlife and plant life. The more you can add to that, to me, is all to the good, because it creates habitat for wildlife and also green plants and trees that take carbon out of the atmosphere. Access to

Clamshell Pond which is not technically part of Rauscher Farm but because it abuts Rauscher Farm we've sort of taken on management of that as well. So again cleaning up and maintaining that pond has become part of it. We found out a few years ago Clamshell Pond was heavily invaded with non-native water plants. So that's the idea of having something that extends existing natural conservation land and, beyond that trying to improve the land that's there. My focus is more on trying to manage the invasive plants, push back the invasive plants, turn it more into what it should be or used to be. Along with that is clearing and maintaining the walking trails. for everybody who comes there to use it and enjoy the property, . which is also what it's there for. I want people to come and use the property, but even if nobody came. Rauscher Farm would still be a good investment -- what we need to do for our local environment and the planet.

Jesse Kablik: What do you think are some of the obstacles limiting Rauscher Farm?

Jim Webster: Well let's back up to the use by people. There are the access issues -- bathroom issues which we are looking into now. The fact that there is no bathroom now makes it more difficult for people to use it, especially with kids, the elderly, etc. In terms of the use of the property as conservation land and habitat the obstacle is the extensive amount of invasive growth -- non native plants. This is true all over New England, not just there. I drive down the road and see them on the side of the highway, now that I know what they all look like. There is no way we can eradicate all of those, and it may not be a good thing to eradicate them all either, because they are also habitat to some extent. To the extent we are able to, I and the others who are working on the physical maintenance up there are trying to beat back as much of the invasives as we can to open up territory for native plants, because those invasives suck out resources and drive out the growth that should be there. So we have things like multiflora rose that we have cut back quite a bit but there is a lot more of it there. Things like glossy buckthorn which is everywhere there and because both of those plants have berries. Birds eat the berries and spread the [seeds]. So managing that, beating it back and now beginning to look to the next phase. Can we maybe introduce things that belong there which would be beneficial to native bees, birds etc.? There is no simple

solution. It's an ongoing maintenance project that will go on well beyond my lifetime. So in terms of obstacles to me, it's identifying and managing it as conservation land and then building a team that can keep passing the torch down the line, which means for as long as we are here on this planet, I hope.

Jacob Marshall: On the invasive species do you think eventually there will be a point where you cut back the invasives enough where the native plants start to grow and proliferate and kind of almost build up and immune system to the invasives?

Jim Webster: I hope so, on a limited case by case basis. I mean we are never likely to clear the entire property of non-native growth. And even if we thought we could, most of what you read about managing invasives plants usually calls for using herbicides. We are not using herbicides on Rauscher Farm. Some people conservation advocates do. At some of the he conferences and presentations I've been to there are advocates of using herbicides to clean invasive growth out of fields to make room for native plants. And they have a point. But on the other hand, those herbicides – glyphosate and others - the chemical companies say are not harmful or persistent. But there are any number of things you can read that say otherwise. There are claims that suggest some of these are carcinogenic. Even if they may not be long lasting after application you are exposed to them by applying them. And also in the short term even if they do break down in water and in theory, as chemical companies claim, in the mediate aftermath of spraying-- in the next 24 to 48 hours among other things – glyphosate is said to disorient bees, so bees go out and can't find their way back to the hive. We all know maintaining bee colonies is a big issue these days so, for that and for those reasons we don't want to use herbicides on Rauscher Farm. So the next line of attack is to try and cut back to the point where they just can't keep growing. One of the ways we are treating that right now is in a couple of fields we are trying to use as a test. The dangers of trying to do it everywhere at once is we could end up doing a surface level job. If we you don't come back and recut, recut, and recut it's just going to grow back again and it may grow back stronger because we could give it incentive to put out more shoots. So we have a couple of areas where we have been mowing fairly heavily we have been cutting back the shrubs, and now that we have a wood chipper that we didn't have until this

year we have been chipping up those stalks and we have been trying to eradicate them through mowing and removing. One of the more difficult ones is the oriental bittersweet which you can see all over New England. It will grow into large vines and wrap around trees. But long before it had gotten to that point it is little woody stalks that grow up in a field. And those little woody stalks when you first see them, may not look like much. But if you pull on those --- and you can tell when you pull them they are Bittersweet because they have an orange root -- they are all interconnected underground. If you try to pull those up you find the roots are a net that is underground and all connected. So to go in and hand pull those just isn't practical. Which is again why some recommend using herbicides. But since we aren't using herbicides, we are doing a plan B in a couple of test areas in particular. We started working one particular hillside two years ago that was heavily overgrown. We've mowed it and removed it as often as we can throughout the season. We still haven't mowed it as often as we would like. We now have a couple more volunteers than a few years ago and we are hoping to get another one on board in the spring who has asked to be involved. But we will first need to get him trained up on equipment and what things need to be done. But with a couple of other volunteers, especially in the summer when you have light in the evening, people who are younger than me who have jobs can come up after work and work in those areas. I would like to get them mowed and removed, and maybe to the point we mow them with a brush cutter then come back with a lawn mower to cut them shorter every couple of weeks throughout the summer. The idea there to deprive those root systems of nutrients by keeping the stalks and leaves down to the point those roots systems eventually get weak enough and die out and reduce resources competition for grasses. And so far I have to say the couple of areas we have done that look different than they did three years ago. If we walked away from it I'm sure in a few years it would be back again. I've noticed a couple of other areas where we have cut things back and other things have come up. Like areas where we have cut back a lot woody invasives we have things that have come up like goldenrod, which is good. We want goldenrod. The woody stuff would probably still take over and grow back up through there if we don't stay on top of it but it's interesting to see you cut one thing back and a different thing moves in its place. Which means it may work as a strategy, but it's something we are going to have to stay on top of pretty

much forever. And I know they're herbicide advocates who also have a legitimate rationale. In the forest management plan that we had done, you'll see that they do recommend herbicides. This is often done with a sprayer to spray high bushy growth and then cut them down. I've seen slides in presentations in which volunteers walk through a field and wipe herbicide onto stalks using a cotton glove over a rubber glove for application. Our strategy but is to not use herbicides. Doing this requires labor throughout the growing season. We also work in winter if there is little snow. This requires equipment. We are fortunate this year to get some additional equipment. One of the shortcomings in the past is, even if we had more willing volunteers, we had only one brush cutter machine. I can go out and show someone how to use it and walk next to him. But with two machines two people can go out together. One of us can train a new person, and and also run a second machine at the same time. On our new second brush cutter we can also replace the brush cutter head with wood chipper head. It's self-powered, so we can walk behind it and take it to where we need to use it. Without this having a wood chipper would introduce the problem of how transport it to the far side of the property without a tractor. Thus far we purposely don't have tractors because of safety issues. A volunteer worker could roll a tractor over on a hillside, but does not face roll-over risk with a walk-behind machine.

Jacob Marshall: We were pretty surprised that you guys got the entire field mowed last fall.

Jim Webster: Before last year – 2018 -we had a guy who mowed the fields for us in exchange for the hay. But hay quality has deteriorated because we've purposely converted former hay fields to grassland habitat. We encourage bee and butterfly friendly growth such as milkweed and goldenrod. We found out late in that season - 2018 that he wasn't going to come. I didn't start until with the brush cutter until well into late October. And at the time we had just one brush cutter. Because I am retired, I could be out in the daytime so, I went out and did most of our biggest field on my own. While I was doing that I measured distance and time to estimate how many hours it would take to mow all the fields that had previously been cut in the fall by tractor. We used that estimate as part of the justification for buying a second brush. The newer brush cutter has a bigger cutting radius too. It cuts 30% wider swath. I worked out that the fields

that had been mowed by the tractor amount to about 40 hours of work if you use walk-behind brush cutters. So realistically this means about 40 hours between October and snow coming which is about the normal amount of volunteer work we'd do anyway. So it really means just prioritizing mow over other work in October and November. This year our first snow came earlier than usual – in mid-November. But the main fields we hoped to get cut got cut before snowfall. And now that we have the 2 machines it's really the same amount of work we would be doing there anyway during the summer. In the fall we no longer need to mow the trails. In the summer growing season we need to mow the walking trails every couple of weeks that itself is a big part of the job in the summer. And sometimes when I was working more on my own before we had more volunteers, mowing and removing those walking trails often meant little time to do brush cutting. Now that we have a couple of other dedicated volunteers and more equipment we can maintain the trails and also attack the brush, and then in the fall easily shift to field mowing for a few weeks.

Jesse Kablik: How are these volunteers acquired?

Jim Webster: Dave Notaro and I have been there the longest. But because I've been retired since 2011, I did most of the initial property mowing and brush clearance. Ray Stowell, who you know from the Rauscher Farm Management Subcommittee arrived a few years ago. Ray is younger than me and also has a day job and a long commute, but even so he'll usually be on Rauscher Farm a couple of times per week. On a summer evening he will often be there working after his day job. As I recall, Ray contacted the Clinton Greenway Conservation Trust. He and I then spent some time working together, and since then he comes and works on his own or with other volunteers. Two or three years ago Dean Briggs, who you also know from the subcommittee moved to Clinton. He discovered Rauscher Farm and got curious about who does the work there. As I recall, he contacted us through the website and subsequently became a member of the Rauscher Farm Management Subcommittee and also of the Clinton Greenway Conservation Trust... I spent a bit of time working with Dean on Rauscher Farm, gave him a copy of the

Massachusetts guide to invasive plants, etc. All new volunteers are given a copy of the invasive plant guide. Ray, Dean, Dave and I are members of the town's Rauscher Farm Management Subcommittee, which means we have keys to the barn and access to maintenance equipment. Other volunteers who are available from time-to-time have to work under supervision of a town subcommittee member, who see that work conforms to our maintenance and restoration objectives and that equipment is used safely. As a group we keep track of what needs to be mowed, water levels, which is connected to trails because some of the trails can be available only spring water levels go down. We also keep an eye out for things going on up there in terms of wildlife, encroachment by people with ATVs, etc. We keep a log book in the barn. Whichever of us works there logs what we have done or observed. So things like that we log so we know what's going on where. So if for example I turn up and somebody else has been there a few days before, I know that those trails in the southwest pasture were just mowed so I don't have to do anything up there and I can work somewhere else instead. There is a couple of other potential volunteer we hope to get onboard this summer who are younger and still have full-time jobs. So to any of them up to speed needs to be in the summertime when they can come up on weekends or during evening daylight. Now that there are several of us who are trained and are authorized to oversee work. This means there are now several of us who can arrange to meet and work with new potential volunteers.

Jacob Marshall: Which obstacle do you think will be most important to change to enhance Rauscher Farm?

Jim Webster: To me the most important enhancement is the ongoing management of the habitat It's an ongoing project. It's not so much an obstacle as it is a scope of work that's going to be ongoing. Doing that means there is going to be a need for equipment, equipment maintenance and volunteers into the future. The equipment takes a beating. Me being a retired guy with a truck, I am the one who takes it back and forth for maintenance. This past season we had more maintenance than usual. We have a brush cutter that is 5 or 6 years old that is still in good shape, but had downtime due to things like flat tires or a broken cable. We had one point this past fall where we had both brush cutters out of service. With brand new

equipment we learned the trick adjusting the tension on one of the cables. So we had the brand new brush cutter out of service temporarily until we learned its quirks, we had older brush cutter out of service at the same time with an oil leak, which was major maintenance. And we also have what we call a brush saw. It's basically a heavy duty weed whacker, that also takes a cutting blade with a guard. That was out of service at the same time. This was just at the point where we needed to start fall mowing of the fields. Part of things going forward is staying on top of equipment maintenance but also keeping spare parts in stock. We got that brand new brush cutter in September. I immediately ordered small nuts and bolts to keep in stock. So going forward there will be equipment that needs to be replaced and eventually old equipment that has to be retired -- new equipment to be bought -- new volunteers has to be found and trained. Part of it is getting younger volunteers, so that when my or others knees are gone and we can't do it anymore we can sit in the back of a truck and maybe play guitar while someone else does the work.

Jesse Kablik: How often do you use the trail cam?

Jim Webster: It's always in use. I maintain it. I move it around from time to time. Right now I need to check it. I haven't checked it for a couple a while. Usually in the winter I move it close to the parking area so I don't have to snowshoe to get to it. I moved it in the fall to the same area it was in a couple of years ago but in a different part and facing a different direction. This is a spot where I know there was a lot of through traffic with coyotes and foxes. They seem to follow along a fence line there. Since then we have cut a lot of growth back in that area, so I am curious to see what difference that might have made. I had the camera down at the far end of the field over the far end of the big field over the summer. Other than seeing hikers go by and the occasional deer and one or two coyotes and a fox, I didn't see a lot of activity there. On the other hand, if I go up along the fence line there are a lot of coyote and foxes that pass by. So moving it around is educational. We can see what was where. I still keep hope to capture a bobcat or a bear one of these days but that hasn't happened yet.

Jacob Marshall: Have you noticed an increase in wildlife since you have started using the camera?

Jim Webster: I don't really have a baseline to tell that. I can tell what we have seen since we have got that camera three years ago. A light snow in the winter time is a good time to go out and see because you can see the tracks. And I noticed a couple of years ago before we had the camera, you go out when there is like an inch or two of snow on the ground and you would see coyote tracks going into and out of the woods. You'd see a lot of people with their dogs, dog tracks near people tracks. Then then you'd see dog tracks going off into the woods on their own. It might be somebody let their dog off their leash. But some of those are coyotes. I'm not an expert on tracking at all. There are Foxes and of course house cats and whatever is out there. I don't know how the house cats survive, but they seem to. I catch them on the trail camera You'll see a cat on the same camera two hours later a fox or a coyote is in the same spot I've also seen a couple of interesting thing with the camera because you know the camera is time stamped. Along that fence line where the coyotes and foxes come up a lot-- a couple of years ago there were two coyotes going west and you could see a couple of different pictures of them. They disappeared. And then maybe two minutes later on the time stamp you can see a fox in that same spot going from the west to east. Then a couple of minutes the coyotes returned going west again. So I'm speculating--I assume the coyotes smelled, or heard, or sensed the fox and not looking for a confrontation they decided to just get out of the way. I don't know if it's a coincidence this one time or if it's them thinking why get into a fight if you don't have too, why risk an injury if you don't have too/ I think there is that certain kind of logic that goes on. I haven't seen it enough. I would like to see it be repeated. I think there is a certain built-in incentive to avoid confrontation.

Jacob Marshall: Have you noticed if invasive species have gotten more difficult to maintain or has it gotten easier?

Jim Webster: It's gotten easier in the sense we have become more educated ourselves. We, the volunteers, know more about what to look for. We've worked out a strategy and we are following that strategy. For instance, there is glossy buckthorn which sort of looks like a black birch and it will grow into a good size tree if you let it and there is a lot of that up there. So we started attacking that a couple of years ago. Our

plan at the time was to cut it back but to cut them a few inches off the ground so when we go back to uproot them with uprooting tools. We haven't really had the time to go back and do the uprooting but in terms of easy, well yes we've cut a lot of those down, which means they aren't putting out berries. So at least we have cut back on the number of bushes that have been dropping berries. But there are so many berries in the ground already up there. I don't know how many more years those seeds can survive in the ground without constant mowing but the more of this we cut back in the long run, the less of it is reproducing. And then ideally if we can go back and uproot those stumps that would be a good thing. It's just something to do when we have the volunteers and the time. But if we don't, plan B will be to cut the stumps down to ground level so we can just mow right over them so the blades don't hit. We can just keep mowing over it, which will pretty much do the same thing. Those won't grow as trees if they get mowed over enough. So yes, it gets easier because there are more of us that know what to look for and there is more of it that's already cut back. That first year we had the brush cutter when I was mostly on my own, the edges of that big 8-acre field-- I started there first, mowing the trails but I also started pushing into the edges with the brush cutter, pushing that back. So if you look around the field there is another four to eight feet of open space on the edges than there used to be, because a lot of that – especially multiflora rose is cut back. And once you cut it back all you have to do is mow it over a couple of times a year to keep it from coming back. There was a tangle of multiflora rose and the other thorny growth. Some of it native but also aggressive in its expansion. We had some areas of heavy blackberry growth that was taking over fields and have cut some of that back too. But once we cut it back we've got to mow over the area at least once a season to keep it from filling in again. It gets easier as long as you stay on top of it – re-mow while it is still small. It gets harder in the sense that the more of it we the more we have to maintain. So there is the initial reclamation which is harder work because you are cutting into big tangles of thorny bushes and you are coming out looking like you came in second best in a knife fight sometimes. But once that had been cut we can mow over before it gets that big and thorny again. Another thing we are doing is, Ray in particular sort of made it his crusade, to go after a lot of the rocks up there. You find a lot of the rocks in the tall grass when you ding your blade on them. So he is going to war with some of

those rocks, which is a good thing. Moving them out of the fields makes maintenance easier in the long run. Also you notice in a lot of those fields you'll see grass and you'll see a cluster of multiflora rose and buckthorn all growing on an island. That usually means there is a rocky ledge there. They grow there because they haven't been mowed in the past and even when the cattle grazed there the cattle would graze around but wouldn't get in the crevices of the rocks. So usually we see those clusters and we can cut them back but because you have all those roots down inside the crevasses they are going to keep growing back again. This is one of the reasons we bought that brush saw. With the cutting blade on the extended pole you can go after that kind of stuff you can't get into with a big brush cutter machine. There's other thorny growth up there too. On the hillside going by Clamshell Pond. All along the edge of the pond is covered by greenbrier. That's a native plant. It's technically not invasive. But t's nasty. You don't want to walk through it. There is no way you are going to cut all of that back. But keeping that from encroaching on the trails -- I'd like to cut some of that back further away from the trails. It's a native plant, but we do want to keep walking areas accessible. Cutting beyond the trail in that area is unlikely because that hillside is covered in lady slippers. So going after the greenbrier without damaging a major the lady slipper habitat isn't really practical. So the most we can do is try to protect the edges of the trail so it doesn't keep encroaching there. There is the oriental bittersweet -- the big vines when they wrap around the trees they will strangle and kill those trees over time. We have cut back a lot of that just cutting it at the ground and as high up the tree as we can reach. What is left hanging on the tree will eventually die. But that bittersweet stump is going to grow right back again. So that is ongoing maintenance. We need to go back and cut that again from time to time. That's a good project for a volunteer weekend because people can go in with hand saws and clippers and with one person supervising and can cut that right back. But that's going to be an ongoing project forever.

Jesse Kablik: What's your favorite feature of Rauscher Farm

Jim Webster: I am all over in the summer in the summertime. My favorite, I don't know if you'd call it a feature but when I am out there doing maintenance usually behind the brush cutter and am suddenly

surprised. You'll come around a corner and suddenly there will be a deer staring you in the face and are as surprised as I am. They can hear the brush cutter, They are there all the time so they must know this machine comes around. But occasionally you get some of those little surprises where you walk into a clearing, it's happened to me I don't know how many times up there. You suddenly come face to face a doe or a doe and a fawn. They stop they look at you, I stop. I usually don't shut off the machine, I let it idle. I don't want to do anything because of the sudden change. I usually try to get to my camera but by the time I get to my camera they are gone. But you get those little 20 second to 30 second interludes where you are just looking face to face with wild critters. A couple of years ago I had young does they must have been yearlings and I was coming down the side of that big field. They stayed for the longest time probably a minute or more just looking at me. And I stopped the machine and managed to get a couple fuzzy pictures as they took off., I didn't have time to focus but I basically clicked and hoped I got lucky. And then when they left they bounded across the field. I studied up afterward and found out that when they make that sort of escape they also deposit a scent which is a warning to other deer to stay away from this area for at least for a few days until the scent wears off.

I'm not sure you call this a feature, but educating myself about things like that is fascinating You discover something like that then go back home and look it up to understand what you'd seen. Likewise I've photographed and then looked up animal tracks. Is that a fox print or a cat print? I take a lot of pictures, not necessarily because they are good photographs but for identification purposes so I can go back and look something up later on. A bird of prey flying overhead even if I don't have the right lens on to get a good picture -- I'll take it so that even with a fuzzy picture I can zoom in on my computer and see if that's a hawk, or an eagle, or turkey vulture. From time to time I've seen bald eagles that fly over from the reservoir. I find these wildlife surprises special, to walk into a clearing and suddenly something is there.

Appendix D: Patty O'Connor Interview

This interview was taken on Sunday March 1, 2020. Patty O'Connor works on the Trails Committee in Tyngsboro and lives adjacent to the Sherburne Nature Center in Tyngsboro.

Jesse Kablik: How are you involved with Sherburne Nature Center?

Patty O'Connor: How I got involved, actually started out with my neighbors behind us donated 80 acres and their house, they wanted it to be open and recreation space for the town. The house became like a town building that's managed for recreational use. They helped pave the driveways and do things like that and then, for the land they got the Trustees of the Reservation to preserve it. At first I was on the trails committee. We had four hiking trails in town and we just took open parcels, there were only like five of us and tried to get boy scouts and folks involved in putting trails in. We created little maps from printouts online. The way I got involved was they just put an ad neighbor to neighbor. Since I live right next door, I mean I had little babies and stuff but I was really interested in what they were doing over there. So basically their first approach was just in our local newspaper.

Jacob Marshall: How long ago was the land donated?

Patty O'Connor: Maybe like, right when we moved here. I want to say almost 30 years ago. So we were very fortunate because then everybody wanted our house. It was a very much little fix up cape. This house actually used to be where the lumber workers lived. There is a lumber mill, Sherburne Lumber. The owner of the land, Maxwell Sherburne, originally had a business here and everything, and then his kids moved here. Anyway I got involved in that and the trails committee. You know it's hard to get people involved for a long term but I found if you are trying to get people to come and help, hold a trail day or something. It's hard to get people on a regular basis to commit over time. So we started putting in the trails. So it was pretty much just us then there were the boy scouts and the girl scouts. The boy scouts and the girl scouts are very interested in anything like this that you are doing. Because they can earn badges. A lot of boy scouts have earned their eagle badges helping us do things here. Putting in trail markers, one of them created a couple of benches and put them on our trails. My daughter got her silver ward, she went

around town and documented all of the beaver dams around town and put it up in the nature center as a display. And she made a movie. So anyway there are different things you can do to get people involved. We have an earth day every year, it's nothing big, but we have a trail walk and some vendors come in from around town come and just to kind of get people aware and come to the trails.

Jesse Kablik: It's a surprise to us to hear that the land was donated, since we have been hearing about how people in Clinton had to fight for Rauscher Farm and pay 2.6 million dollars for it.

Patty O'Connor: We have had some parcels like that as well. There is an old girl scouts camp on Long Lake. Sometimes it costs towns more to have a development go in because of the cost of something like \$100,000 per family. For maintenance and funding for the house, I believe there's funds coming from the state that a town can vote on to get money to help preserve a historic building or a building for recreation so there is a certain amount of money to help. That helps maintain that house but the land is all the Trustees of the Reservation. But another group which is good is Mass Audubon because they help actually maintain the land. Like the trustees, ya they come in and inspect it once a year to make sure people aren't abusing it and they make their assessment and they are gone. So the rest of the year we get the boy scouts, the Sherburnes and myself and we all go and clean the trails, take out the downed trees and whatever. It's just amazing because everyone comes now and walks their dogs from all over the place and they come from other towns and it's really great to see how people really enjoy having that land there. So on your land what kind of parcel is it?

Jesse Kablik: It's 62 acres that used to be a farm. It has three distinct different areas where one area, probably a little over half of it is grass fields. In which they have to mow trails around and keep constantly maintained and they have to cut down the tall grasses every year. Do you guys have similar maintenance on the grassfield?

Patty O'Connor: We have a field. And Lucy Gertz my co- chair and she is really the nature brain person. She works at Mass Audubon so anything I don't know she definitely knows. But we would cut it every

other year because then the wildlife thrives and I think it's better for the field, I don't know the technical reasons. I don't believe we cut it every year. We cut it every other year. We were going to mow all along the edge but there was already like a cart trail there. But eventually what we did was mow across the center of the field and then we put crushed stone and we did that ourselves. It was like a chain gang. It's very heavy, we were doing that all day. It's a good project to get people to come and help and it's more aesthetically pleasing to come into the property and then be able to go right through and then ours is woods on the edge, because we put in quite a few trails in the woods. And there is a beaver dam there so we put in the trail with the crushed stone and we just had it all delivered. And then there is a man, he does a lot, he'll help guide folks, he puts in a wood walkway and we actually helped put in the slats ourselves but he kind of manages it and knows how to get materials and he'll help you do it. I forget what his name is. He did a walkway in Ipswich, he helped do one here. So if you have a spot where there is water, so in the middle of our field there is a brook that runs through it, so we just have a small walkway over the brook that goes back to grass again, that makes it more pleasing and nice. Like the property you have with the grasses, I don't know it may be cool to put a path through it and you have butterflies all around, it makes it kind of cool to be in the nature and makes it easier to get in and out.

Jesse Kablik: Does the stone going across the grassfield make maintenance easier for that trail?

Patty O'Connor: Yeah there is practically nothing and the guys that mow, mow right over it.

Jesse Kablik: Do you guys bring in people to mow?

Patty O'Connor: The town mows it. And they do the plowing. But the house maintenance, Robert Sherburne, one of the sons, still lives in the house next to the property. His dad passed away, his dad and Henry Youngman... they were the two that got it all rolling. And like out on the trail, what else do you have there?

Jesse Kablik: So a little over half is big fields with the edges cut so you can walk around them. Then on the other half there is a wooded area with trails. A lot like Sherburne kind of.

Patty O'Connor: Are there trails in the woods yet?

Jesse Kablik: Yes there are trails going in the woods, through the woods. One of our recommendations is looking to be marking them a little more clearly.

Patty O'Connor: So initially we used little round pieces of steel. Because people will try to rip them off the trees, kids partying or whatever. You can't avoid it. If there is somewhere to go walk then kids are going to go party back there or whatever they are going to do. But anyway we just had a metal disk to start. Or you can have them made with something more interesting. And we just painted them yellow with some black numbering. And some guys now they have all the apps on the phone. Now when we have to cut a trail you can get topological GPS kind of stuff on your phone and figure out the grading and the best place to put the trail in is and its fun. When you are first getting out there. If it's already there that's great. Again if you have a couple of small waterways, we had the boy scouts build us a couple of bridges. Because they like to do stuff like that for their badges or whatever they are doing... Do you have a building?

Jesse Kablik: They have a building that was bought with the property but right now it's not used for anything. And they want to try and turn it into a nature center.

Jacob: I was under the impression that they looked into it but it is going to be a lot of money to turn it into a nature center.

Patty O'Connor: That's the thing it's a lot of money right. Like this house doesn't have a kitchen. I don't know what happened to it. So its limited on the town events people could use it for and we have a rec center that has a kitchen. But Sherburne Nature Center has a bathroom and it has different rooms. Like one of the things, my husband helped make it and an artist in town Lynn Barker, we created a puppet theater out of wood. And it's pretty cool... it's just ideas of things so you don't have to spend a whole ton of money but you can make it into [a nature center]. Like ours is not some professional thing it's just stuff like that that we have done over the years or that the scouts have done. Like one of the boy scouts created

a display for us for his eagle project and he put drawers that have clear plexiglass on the top so you can have little displays of things. And people will donate collections that they have. We had these birds but they had formaldehyde in them so you have to be careful. You know people will give you whatever right. So you can kind of turn it into a nature center not spending so much money over time. I do find it's a challenge to get a group to dedicate all of the time to it. People like to come and help then go. Don't get frustrated if you try to do something where you say you would help and they only show up once and you don't see them again. It's because people are busy and they have the time and they want to help. But if you give them a goal, like I bought a TV at Walmart because we have a man who likes to do nature walks and he made a video. Mark Fraser. He does all our hikes around here. He just does it as a hobby. But he created a video of all the nature he saw. So I bought a TV for \$100, there is some money for the house maintenance so I got my money back, and then we just played the video in the nature center of his cd. And it's just cool like all of a sudden we have a nature center. It's not like we did anything really outrageous to make it that way just collecting stuff from other people. And Mass Audubon gave us a lot of brochures and fliers and things so if you go to visitor centers and stuff you can get free stuff and just put it in yours... Something else we had for a scout project is a kiosk to put the maps in. So we built a kiosk right at the base of the trail, right at the base of the property. We took one of the maps and we put it up there and we laminated it. And we had a little chalkboard so people could write down what they see on the trail. Also the town posted rules that we had to post at the base of the trail.

Jesse Kablik: Did you guys have to convert the house at all to be wheelchair accessible for the nature center?

Patty O'Connor: It does have a ramp that we had to put in. It's a ramp that goes up and over. You're right we did have to do that. And it's just that all weather particle board stuff so they can get into the front. We try to put in trails when people donate land and it's great. People love it, people love to go out on them. And they love to help but as I have been saying you have to plan it. If you plan it, splash it on facebook, put it in any town newspaper. Like the Lowell Sun always has events in the area and they will have a list

of events. So if you are going to have a trail clean-up day just post it in there. Because people are constantly trolling these things for what they want to do this weekend. It's amazing how many people really enjoy it. They want to help they want to get out there. I had one man who had just built me a stand for the television and I put it over the fireplace in the house. People are willing to do little projects for you if you tell them what you need. So if you need this, this and that you have a trail day. Tell them what they need to bring, tell them what you need and people will donate it. We have had a lot of trail days over the years because we have 4 different trails now. But bring bug spray, there's ticks, should wear a hat. We had this one day in June and the bugs were out of control. And we had these little kids with their parents so you have to make sure to bring bug spray in case people don't and tick repellent.

Jesse Kablik: Before the Sherburnes donated the land was it just used as private property?

Patty O'Connor: Yeah it was private property, it was their house next to the lumber mill and they lived there.

Jesse Kablik: That's a huge backyard.

Jacob Marshall: How many acres is it?

Patty O'Connor: Eighty acres. It's a lot, it goes back there. That's kind of why we bought this house. It was kind of a fix up cape, not really a house. It wasn't very expensive but we wanted to live next to open space. It worked out well for us.

Jesse Kablik: For a couple of the paths you were talking about, like the one that goes along the beaver dam area. How was that funded for?

Patty O'Connor: I can check with Lucy but it might have been money that came in for the house maintenance from the town. I can't recall, she used to handle that. I can find out more about that logistic stuff. Also she used to write a lot of grants. So you can write a grant for a project and then get funding for it. She did that for a job so I wasn't involved in that a lot.

Jesse Kablik: Do you have any way of monitoring how many people are visiting? Are you worried about that at all?

Patty O'Connor: We haven't done that. It hasn't been a problem. We have had some vandalism, it hasn't been horrendous... You know how kids are, it's stupid but I guess we have all seen it or been there at one time. It's not a worry that there are so many people. And there is people there all the time. There are cars over there even now. Everyone is pretty much great except for sometimes partying at night.

Jacob Marshall: Would you say it gets used daily?

Patty O'Connor: Yes, yes most definitely. Every day. And they love the trail we put through the field. It really makes a difference. You can get in and out of there easily. People with dogs use it all the time. People want to go somewhere and let their dogs run. So how much trail do you have? Is there enough to make a map?

Jacob Marshall: There is a map already made.

Patty O'Connor: Like the parcel across from town hall is 12 acres, that's the bell property. We put a trail in there and all it does is a loop around. People use it all the time. It's not so hard to put in a trail really, unless you have to chainsaw a tree that got in the way. We are lucky that the boy scouts will come once a year and they will come and chainsaw and clean it out for us.

Jesse Kablik: Is there an active ongoing social media presence for Sherburne?

Patty O'Connor: Yeah we created a web page that is linked to the town page. Also the man who does the nature walks for us, Mark Fraser, he has a website too. It took us a little bit. I started to create a website and wanted to get it hooked up with the town. And it's better that way because the town webmaster will help you maintain it. I volunteered to maintain it but he had too many restrictions for me to do it. So he ended up doing it. Now anything we do like when we have earth day I have a link to the site. I put up fliers all over town and if you have a link to a website it's helpful. We have gotten an owl person that comes, and a lot of organizations that rescue animals like to come and talk about it and bring their

animals. So we do that every earth day and they come and show the owls and that's a kind of like a draw to get people there. You can get someone to come that rescues birds or whatever they do. We have a bird lady in town and she loved to talk about the blue birds that she would raise. And it helps to have the house because then there's a place for people to come see something... We used to have our trail walks on national trails day and we used to also get EMS (Eastern Mountain Sports) to come. Those guys would come and bring a canoe and come to your trail walk and just talk to people about the outdoors. It doesn't cost you anything. They once lent us snow shoes and we had a snow shoe walk. There are ways you can do stuff without spending money.

Jacob Marshall: Have there been other people that you have invited to give programs or talk about their interest? Such as the bird lady.

Patty O'Connor: We had the bird lady. We had the guy that does solar energy. And there is also a group for kids that we hired, it wasn't that much money and they'll actually do a petting and they will bring a snake and all of that like a kid show thing. We almost had a pow wow but it draws so many people it was a little too much. When Native Americans have pow wows it turns into a big circus. They have all their vans and all of their wears and have music and all of that. We have had live music and blasted it all over the neighborhood and have bands play on earth day. And I cook burgers. So we pretty much do it ourselves [but in a smaller way]. And then like the recycling committee and other committees from the town come. That's why it's good to get on the town cite. That way if you have an event you can ask someone to come. Cause when you ask someone to come then they tell people and they set up their little table. Then you have got a bunch of people coming. It kind of makes it more of an atmosphere when you try to get something done. I think the recycling committee donated gloves and bags for picking up trash. So if you just tell them what you are trying to do. I bet you will have a lot of people that will give up time or be interested in helping. And definitely the scouts. The scouts are great they come and set up tables and do things. The boy scouts will do anything. On earth day they help me set up my tents and they go on the trails and they are amazing and I got them pizza. The more people that get involved the better.

Jesse Kablik: Clinton had made the Rauscher Farm Management Sub Committee to take care of the property, does Sherburne Nature Trails have a similar committee that is solely committed to it?

Patty O'Connor: It's really just Robert Sherburne kind of maintaining the house and the town doing the grounds and the trustees. That's it and me if I see something weird or hear the alarm go off. But he lives right next door and he kind of maintains around the house. And then the police come and keep an eye on it as well.

Jacob Marshall: Do you guys ever run into troubles with invasive species and trying to manage them?

Patty O'Connor: There are a lot of invasive species around here. I did another group, the stream team. The streams here a lot of them run into the Merrimack River, so they are part of the Merrimack River watershed. So we went around town to take water samples and check them and a lot of them are terribly overgrown. I don't know how you handle them. I think you need permission from the conservation commission if you want to move any plant near water. My neighbors across the street own the golf course right there. And I know they had a lot of issues, they couldn't even take leaves out of the brook because the brook is part of the Merrimack River watershed. We haven't had a lot of trouble here partly because of the beaver dam. The beaver dam is part of the reason that we have a pond and some of the waters come through. We haven't had too much trouble on this parcel. But it is around town and I think you have to get permission to mess with it.

Jacob: Rauscher Farm has large amounts of multiflora rose and glossy buckthorn that they move and spend a lot of time trying to push it back.

Jesse Kablik: Do you have plants like those growing around the field that gets maintained or do you let the field grow and cut every two years?

Patty O'Connor: The field they let grow and cut. I don't recall us preserving anything. And the trails we just kind of let go. If there is a lady slipper you aren't supposed to pick it. But I just hack through creating the trail.

Jesse Kablik: How many volunteer days a year do you guys have?

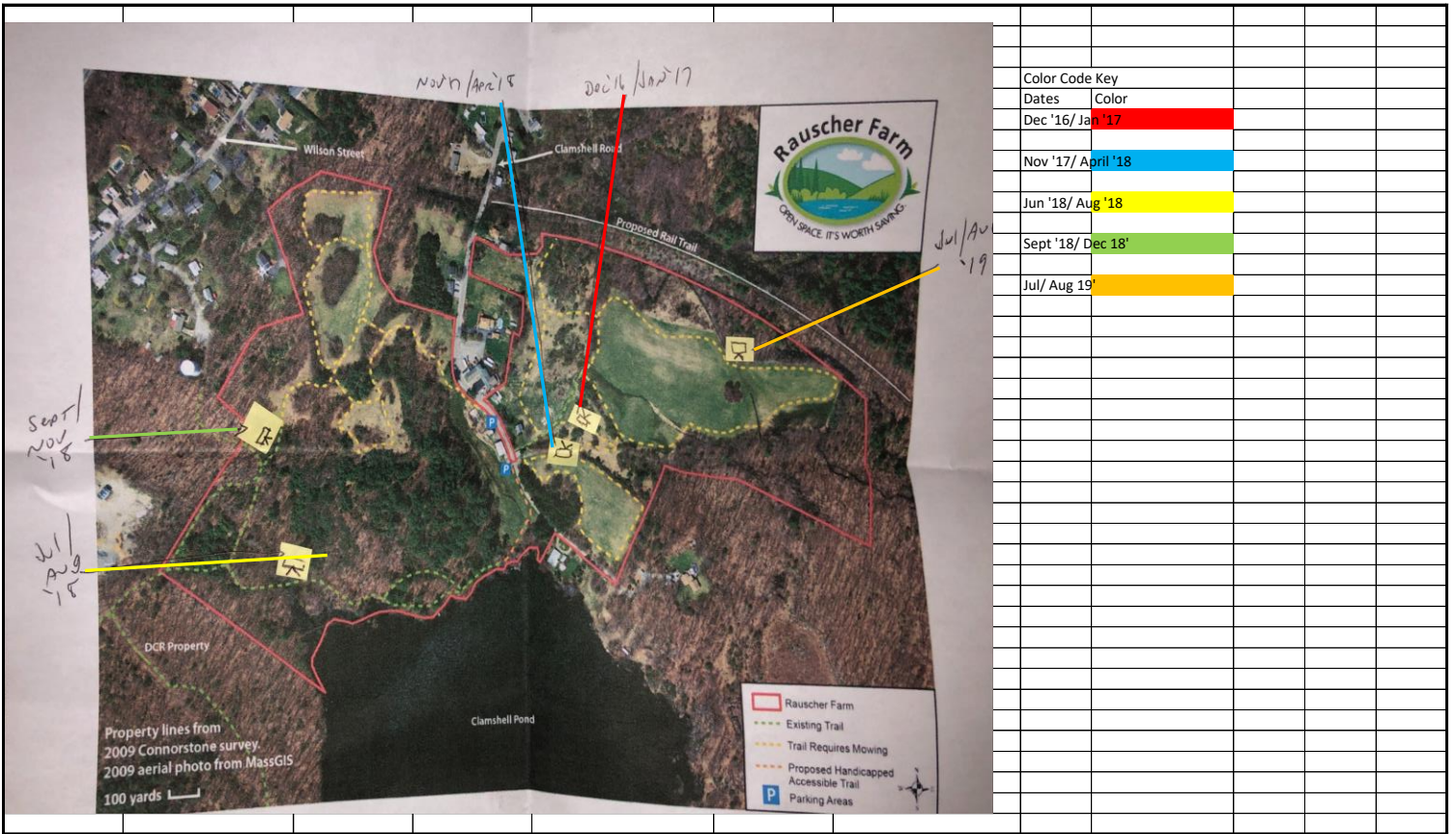
Patty O'Connor: We do one in the fall and one in the spring. And then in the winter we have a hike and then a snowshoe. We were fortunate enough to have Mark Fraser come and he liked to do it. And lots of people come. And people like to come on a trail day. I'll tell you, all of the scouts come even the little daisy scout kids they all come out and they all have their bags and rakes and everything. And my company, I work for VM ware and they are very into their employees volunteering and they give us 40 hours a week to just do community service and volunteering. And they do camp Paul. I think it's in Chelmsford and so a bunch of people in my office go once a year and go work on the trail, paint the house, mend the fences. It's really cool and it's a way to get other people to come out just at work. Because people want to do good. And also seniors in high school need community service. We get a lot of national honor society and seniors come and they helped us put in now that I remember the stones for the walk way through the field.

Appendix E: Trail Camera Data Set

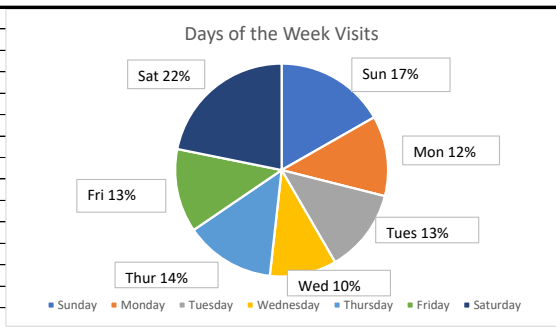
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December 2016	13 Tuesday	3	14:16		3	1	1		dog walkin	1	
	25 Sunday	1	15:09		4		4		Hiking	2	
	30 Friday	6	16:02		4	2	2	6	dog walkin	1	
January 2017									7		
	8 Sunday	1	14:49		3		1	1	hiking	2	
	15 Sunday	1	16:42		4		1	1	hiking	2	
November 2017									2		
	25 Saturday	7	14:20		3	1	1	1	1 hiking	2	
December 2017											
	7 Thursday	5	16:37		4	1	1	1	1 hiking	2	
April 2018											
	1 Sunday	1	10:59		2	1	1	1	hiking	2	
	17 Tuesday	3	13:24		3	1	1	1	Dog walkin	1	
	22 Sunday	1	15:17		4	1	1		hiking	2	
	24 Tuesday	3	19:28		5	1			hiking	2	
	24 Tuesday	3	19:43		5	1	2	3	5 hiking	2	
June 2018											
	6 Wednesday	4	15:37		4	3			fishing	3	
	6 Wednesday	4	16:37		4	1			Fishing	3	
	6 Wednesday	4	19:44		5	1	5		Dog walkin	1	
	7 Thursday	5	10:34		2	1			Fishing	3	
	7 Thursday	5	16:25		4	3			family dog	1	
	7 Thursday	5	17:26		4	1			dog walker	1	
	7 Thursday	5	20:28		5	2	7		fishing	3	
	8 Friday	6	11:59		2	2	2		out for a hi	2	
	9 Saturday	7	8:45		1	1			Fishing	3	
	9 Saturday	7	9:55		2	1			Photograp	2	
	9 Saturday	7	10:12		2	1	3	17	hiker	2	
	10 Sunday	1	12:13		3	3			Fishing	3	
	10 Sunday	1	14:37		3	2			hiker	2	
	10 Sunday	1	15:06		4	1			hiker	2	
	10 Sunday	1	16:20		4	2			hiker	2	
	10 Sunday	1	18:25		5	3			hiker	2	
	10 Sunday	1	18:26		5	1	12		Fisher	3	
	11 Monday	2	15:01		4	1			Fisher	3	
	11 Monday	2	17:49		4	1			Fisher	3	
	11 Monday	2	17:57		4	1			Fisher	3	
	11 Monday	2	19:07		5	1			fisher	3	
	11 Monday	2	20:03		5	2	6		Fishing	3	
	12 Tuesday	3	20:01		5	1			dog walkin	1	
	12 Tuesday	3	20:05		5	1	2		Fishing	3	
	13 Wednesday	4	9:04		2	1			dog walkin	1	
	13 Wednesday	4	19:34		5	1			Fishing	3	
	13 Wednesday	4	19:58		5	1	3		Fishing	3	
	14 Thursday	5	16:25		4	1	1		Fishing	3	
	16 Saturday	7	13:07		3	1			Hiking	2	
	16 Saturday	7	13:08		3	2			Fishing	3	
	16 Saturday	7	18:08		5	1			Dog walkin	1	
	16 Saturday	7	19:02		5	1			Fishing	3	
	16 Saturday	7	19:36		5	1			Fishing	3	
	16 Saturday	7	20:20		5	2	8	32	Fishing	3	
	17 Sunday	1	18:22		5	2			fishing	3	
	17 Sunday	1	18:40		5	1	3		Fishing	3	
	18 Monday	2	12:01		3	2	2		Hiking	2	
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	19 Tuesday	3	16:58		4	1	2		dog walkin	1	
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	20 Wednesday	4	15:22		4	1			Fishing	3	
	20 Wednesday	4	16:10		4	1	3		Hiking	2	
	21 Thursday	5	13:11		3	3			Hiking	2	
	21 Thursday	5	18:45		5	1			Hiking	2	
	21 Thursday	5	19:20		5	2	6		Hiking	2	
	22 Friday	6	15:08		4	3			Hiking	2	
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	30 Saturday	7	10:55		2	4			dog walkin	1	
	30 Saturday	7	18:14		5	2	6	16	Fishing	3	
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July 2018											
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7	Saturday	7	13:43	3	2				Hiking	2
7	Saturday	7	14:25	3	1				hiking	2
7	Saturday	7	18:19	5	2				hiking	2
7	Saturday	7	18:19	5	2				Hiking	2
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8	Sunday	1	14:15	3	4				Fishing	3
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8	Sunday	1	18:39	5	2	8			hiking	2
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9	Monday	2	13:25	3	1				Hiking	2
9	Monday	2	20:16	5	1	3			Hiking	2
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10	Tuesday	3	12:51	3	1				Hiking	2
10	Tuesday	3	15:10	4	1				fishing	3
10	Tuesday	3	15:50	4	1	4			hiking	2
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14	Saturday	7	15:28	4	3	4	19		fishing	3
15	Sunday	1	14:40	3	2	2			fishing	3
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16	Monday	2	17:15	4	1	2			hiking	2
18	Wednesday	4	9:46	2	1	1			fishing	3
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21	Saturday	7	10:59	2	1				hiking	2
21	Saturday	7	15:24	4	3	5	13		hiking	2
22	Sunday	1	17:10	4	1	1			dog walkin	1
24	Tuesday	3	10:08	2	1				hiking	2
24	Tuesday	3	13:52	3	1	2			dog walkin	1
25	Wednesday	4	16:46	4	2	2			hiking	2
26	Thursday	5	18:58	5	1	1			dog walkin	1
27	Friday	6	11:07	2	2				hiking	2
27	Friday	6	13:08	3	1				dog walkin	1
27	Friday	6	15:43	4	1				hiking	2
27	Friday	6	17:34	4	1	5	11		dog walkin	1
30	Monday	2	15:58	4	1				hiking	2
30	Monday	2	15:59	4	4	5			dog walkin	1
31	Tuesday	3	14:03	3	2	2			dog walkin	1
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August 2018										
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2	Thursday	5	6:41	1	1				hiking	2
2	Thursday	5	8:58	1	1				hiking	2
2	Thursday	5	11:22	2	1				fishing	3
2	Thursday	5	13:44	3	2				fishing	3
2	Thursday	5	16:59	4	2	7	15		hiking	2
10	Friday	6	16:21	4	1				dog walkin	1
10	Friday	6	20:34	5	1	2			fishing	3
11	Saturday	7	12:49	3	1	1	3		hiking	2
12	Sunday	1	9:42	2	1				fishing	3
12	Sunday	1	16:32	4	1	2			hiking	2
14	Tuesday	3	10:16	2	1				hiking	2
14	Tuesday	3	13:02	3	3	4			hiking	2
15	Wednesday	4	9:49	2	1	1			dog walkin	1
16	Thursday	5	11:48	3	3				fishing	3
16	Thursday	5	15:56	4	1	4			dog walkin	1
17	Friday	6	12:11	3	1				hiking	2
17	Friday	6	19:47	5	1	2			dog walkin	1
18	Saturday	7	11:31	2	2				hiking	2
18	Saturday	7	14:29	3	2	4	17		fishing	3
19	Sunday	1	11:24	2	1				fishing	3
19	Sunday	1	11:46	2	2				dog walkin	1
19	Sunday	1	12:10	3	1				fishing	3
19	Sunday	1	14:21	3	4				Hiking	2
19	Sunday	1	15:49	4	2				hiking	2
19	Sunday	1	16:42	4	1				fishing	3
19	Sunday	1	17:00	4	2				fishing	3
19	Sunday	1	17:16	4	2	15			hiking	2
20	Monday	2	11:38	2	1	1			hiking	2
21	Tuesday	3	15:08	4	1				dog walkin	1
21	Tuesday	3	17:49	4	3	4			hiking	2
22	Wednesday	4	19:12	5	1	1			fishing	3
23	Thursday	5	15:35	4	1	1			dog walkin	1
25	Saturday	7	7:18	1	1				hiking	2
25	Saturday	7	10:03	2	2				hiking	2
25	Saturday	7	11:51	2	4				dog walkin	1
25	Saturday	7	12:19	3	1				Hiking	2
25	Saturday	7	12:28	3	1	9	31		dog walkin	1
26	Sunday	1	11:33	2	1	1			fishing	3
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27	Monday	2	17:04	4	2				hiking	2

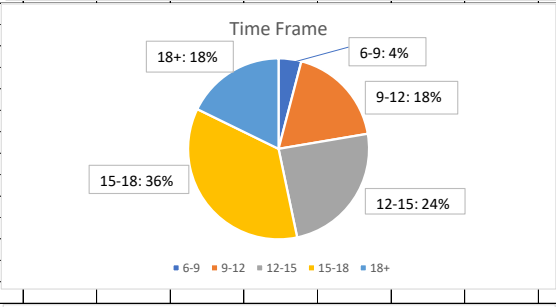
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30	Thursday	5	16:47	4	1	2				hiking	2
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31	Friday	6	16:06	4	1					dog walkin	1
31	Friday	6	16:44	4	2	7				hiking	2
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September 2018											
1	Saturday	7	17:57	4	1	1	17			fishing	3
2	Sunday	1	8:45	1	1	1				fishing	3
3	Monday	2	7:04	1	1					Hiking	2
3	Monday	2	9:05	2	1	2				Hiking	2
4	Tuesday	3	18:38	5	1	1				fishing	3
5	Wednesday	4	9:55	2	1	1	4			Hiking	2
15	Saturday	7	17:08	4	1					dog walkin	1
15	Saturday	7	19:01	5	2	3	3			hiking	2
19	Wednesday	4	10:06	2	1					dog walkin	1
19	Wednesday	4	12:44	3	1	2	2			dog walkin	1
23	Sunday	1	13:11	3	2	2				hiking	2
24	Monday	2	14:38	3	1	1	3			dog walkin	1
										14	
October 2018											
5	Friday	6	15:01	4	1	1	1			hiking	2
13	Saturday	7	17:07	4	3	3	3			hiking	2
18	Thursday	5	10:02	2	2					hiking	2
18	Thursday	5	15:52	4	1					hiking	2
18	Thursday	5	16:14	4	1	4	4			dog walkin	1
25	Thursday	5	16:47	4	1	1				dog walkin	1
26	Friday	6	14:39	3	1					hiking	2
26	Friday	6	15:35	4	1	2	3			dog walkin	1
										11	
November 2018											
4	Sunday	1	16:12	4	1	1	1			biking	2
12	Monday	2	13:16	3	1	1	1			dog walkin	1
										2	
December 2018											
1	Saturday	7	16:33	4	1					Hiking	2
1	Saturday	7	16:54	4	1	2	2			dog walkin	1
4	Tuesday	3	14:43	3	1	1				dog walkin	1
6	Thursday	5	13:52	3	1					hiking	2
6	Thursday	5	16:42	4	1	2				dog walkin	1
8	Saturday	7	10:29	2	1	1	4			dog walkin	1
										6	
July 2019											
5	Friday	6	9:50	2	1	1	1			Hiking	2
13	Saturday	7	11:06	2	1	1	1			hiking	2
15	Monday	2	8:23	1	1	1				hiking	2
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20	Saturday	7	12:55	3	1	2	3			hiking	2
27	Saturday	7	15:05	4	1	1	1			hiking	2
										6	
Aug 2019											
13	Tuesday	3	10:50	2	1	1	1			1 Hiking	2
	Total amount of pictures	197			total people in pictures	279					



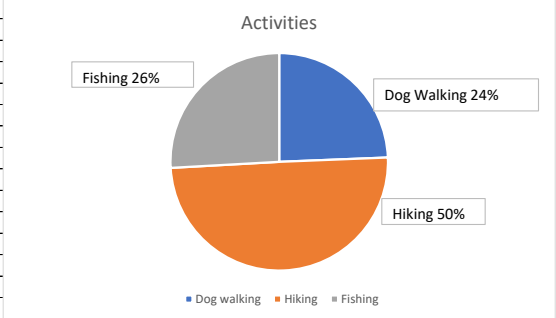
Day of week	D.O.W Key	Total
Sunday	1	33
Monday	2	24
Tuesday	3	25
Wednesday	4	20
Thursday	5	27
Friday	6	25
Saturday	7	43
		197



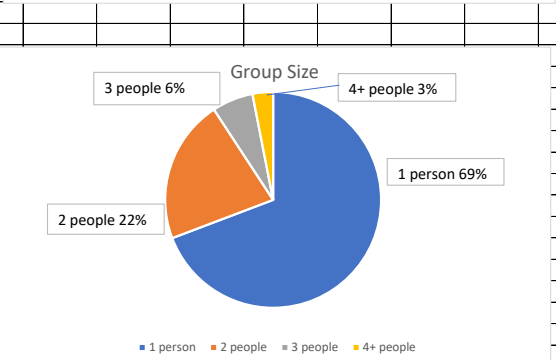
Time Frame	Time Frame Key	Total
6-9	1	8
9-12	2	36
12-15	3	48
15-18	4	70
18+	5	35



Activity	Activity key	Total
Dog walking	1	48
Hiking	2	98
Fishing	3	51



Group Size	Total
1 person	135
2 people	42
3 people	12
4+ people	6



	day of week	time	Per Photo	Activity			
December 2016	13	Tuesday	14:16	1 dog walking	1		
	25	Sunday	15:09	4 Hiking	2		
	30	Friday	16:02	2 dog walking	1		
January 2017	8	Sunday	14:49	Snow Shoeing	4		
	15	Sunday	16:42	hiking	2		
November 2017	25	Saturday	14:20	1 hiking	2		
December 2017	7	Thursday	16:37	1 hiking	2		
April 2018	1	Sunday	10:59	1 hiking	2		
	17	Tuesday	13:24	1 Dog walking	1		
	22	Sunday	15:17	1 hiking	2		
	24	Tuesday	19:28	1 hiking	2		
	24	Tuesday	19:43	1 hiking	2		
June 2018	6	Wednesday	15:37	3 fishing	3		
	6	Wednesday	16:37	1 Fishing	3		
	6	Wednesday	19:44	1 Dog walking	1		
	7	Thursday	10:34	1 Fishing	3		
	7	Thursday	16:25	3 family dog walk	1		
	7	Thursday	17:26	1 dog walker	1		
	7	Thursday	20:28	2 fishing	3		
	8	Friday	11:59	2 Photographer	5		
	9	Saturday	8:45	1 Fishing	3		
	9	Saturday	9:55	1 Photographer	5		
	9	Saturday	10:12	1 hiker	2		
	10	Sunday	12:13	3 Fishing	3		
	10	Sunday	14:37	2 hiker	2		
	10	Sunday	15:06	1 hiker	2		
	10	Sunday	16:20	2 hiker	2		
	10	Sunday	18:25	3 hiker	2		
	10	Sunday	18:26	1 Fisher	3		
	11	Monday	15:01	1 Fisher	3		
	11	Monday	17:49	1 Fisher	3		
	11	Monday	17:57	1 Fisher	3		
	11	Monday	19:07	1 fisher	3		
	11	Monday	20:03	2 Fishing	3		
	12	Tuesday	20:01	1 dog walking	1		
	12	Tuesday	20:05	1 Fishing	3		
	13	Wednesday	9:04	1 dog walking	1		
	13	Wednesday	19:34	1 Fishing	3		
	13	Wednesday	19:58	1 Fishing	3		
14	Thursday	16:25	1 Fishing	3			
16	Saturday	13:07	1 Hiking	2			
16	Saturday	13:08	2 Fishing	3			

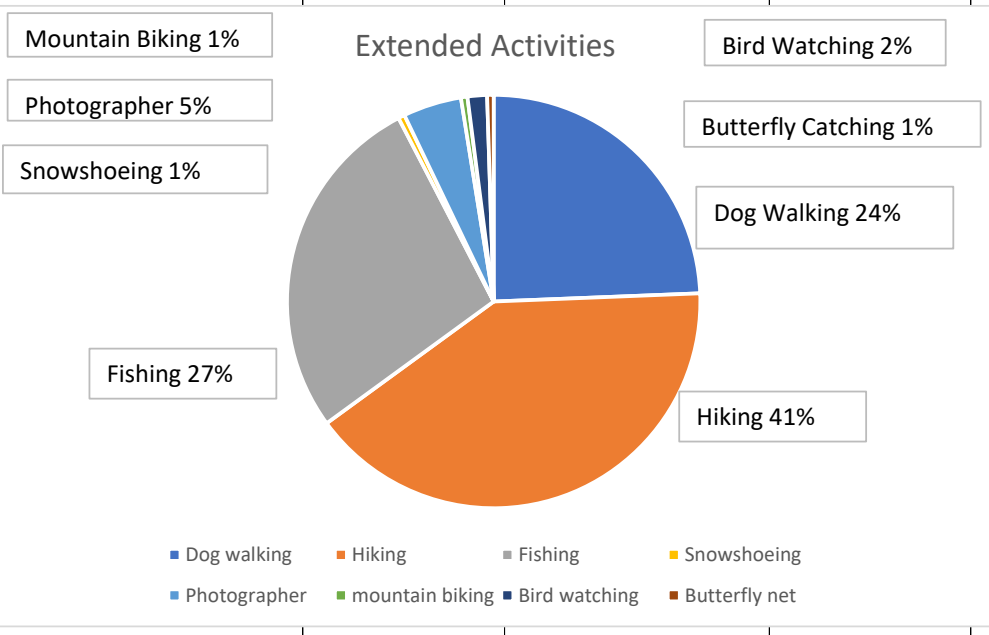
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16	Saturday	19:02	1	Fishing	3		
16	Saturday	19:36	1	Fishing	3		
16	Saturday	20:20	2	Fishing	3		
17	Sunday	18:22	2	fishing	3		
17	Sunday	18:40	1	Fishing	3		
18	Monday	12:01	2	Hiking	2		
19	Tuesday	14:14	1	dog walking	1		
19	Tuesday	16:58	1	dog walking	1		
20	Wednesday	12:38	1	Hiking	2		
20	Wednesday	15:22	1	Fishing	3		
20	Wednesday	16:10	1	Hiking	2		
21	Thursday	13:11	3	Hiking	2		
21	Thursday	18:45	1	Hiking	2		
21	Thursday	19:20	2	Hiking	2		
22	Friday	15:08	3	Hiking	2		
22	Friday	17:44	1	dog walking	1		
22	Friday	17:53	1	hiking	2		
23	Saturday	13:59	1	hiking	2		
25	Monday	22:08	2	hiking	2		
26	Tuesday	10:39	1	Fishing	3		
26	Tuesday	15:06	2	Hiking	2		
27	Wednesday	13:41	2	Hiking	2		
28	Thursday	14:47	2	Fishing	3		
29	Friday	17:54	1	dog walking	1		
30	Saturday	10:55	4	dog walking	1		
30	Saturday	18:14	2	Fishing	3		
2	Monday	11:46	2	hiking	2		
4	Wednesday	11:28	1	dog walking	1		
7	Saturday	13:29	2	hiking	2		
7	Saturday	13:43	2	Hiking	2		
7	Saturday	14:25	1	hiking	2		
7	Saturday	18:19	2	hiking	2		
7	Saturday	18:19	2	Photographer	5		
7	Saturday	19:32	1	Fishing	3		
8	Sunday	13:55	1	Fishing	3		
8	Sunday	14:15	4	Fishing	3		
8	Sunday	16:19	1	hiking	2		
8	Sunday	18:39	2	hiking	2		
9	Monday	12:14	1	Hiking	2		
9	Monday	13:25	1	Hiking	2		
9	Monday	20:16	1	Fishing	3		
10	Tuesday	10:54	1	dog walking	1		
10	Tuesday	12:51	1	Hiking	2		
10	Tuesday	15:10	1	fishing	3		
10	Tuesday	15:50	1	hiking	2		
14	Saturday	13:53	1	fishing	3		
14	Saturday	15:28	3	fishing	3		
15	Sunday	14:40	2	fishing	3		
16	Monday	16:34	1	dog walking	1		

July 2018

16	Monday	17:15	1	hiking	2		
18	Wednesday	9:46	1	fishing	3		
20	Friday	17:35	1	dog walking	1		
20	Friday	20:56	2	Fishing	3		
21	Saturday	8:49	1	fishing	3		
21	Saturday	10:59	1	Fishing	3		
21	Saturday	15:24	3	hiking	2		
22	Sunday	17:10	1	dog walking	1		
24	Tuesday	10:08	1	hiking	2		
24	Tuesday	13:52	1	dog walking	1		
25	Wednesday	16:46	2	Fishing	3		
26	Thursday	18:58	1	dog walking	1		
27	Friday	11:07	2	hiking	2		
27	Friday	13:08	1	dog walking	1		
27	Friday	15:43	1	Photographer	5		
27	Friday	17:34	1	dog walking	1		
30	Monday	15:58	1	hiking	2		
30	Monday	15:59	4	dog walking	1		
31	Tuesday	14:03	2	dog walking	1		
August 2018							
1	Wednesday	11:44	1	Hiking	2		
2	Thursday	6:41	1	hiking	2		
2	Thursday	8:58	1	hiking	2		
2	Thursday	11:22	1	fishing	3		
2	Thursday	13:44	2	fishing	3		
2	Thursday	16:59	2	hiking	2		
10	Friday	16:21	1	dog walking	1		
10	Friday	20:34	1	fishing	3		
11	Saturday	12:49	1	hiking	2		
12	Sunday	9:42	1	fishing	3		
12	Sunday	16:32	1	hiking	2		
14	Tuesday	10:16	1	hiking	2		
14	Tuesday	13:02	3	hiking	2		
15	Wednesday	9:49	1	dog walking	1		
16	Thursday	11:48	3	fishing	3		
16	Thursday	15:56	1	dog walking	1		
17	Friday	12:11	1	hiking	2		
17	Friday	19:47	1	dog walking	1		
18	Saturday	11:31	2	hiking	2		
18	Saturday	14:29	2	fishing	3		
19	Sunday	11:24	1	fishing	3		
19	Sunday	11:46	2	dog walking	1		
19	Sunday	12:10	1	fishing	3		
19	Sunday	14:21	4	Hiking	2		
19	Sunday	15:49	2	hiking	2		
19	Sunday	16:42	1	fishing	3		
19	Sunday	17:00	2	fishing	3		
19	Sunday	17:16	2	hiking	2		
20	Monday	11:38	1	hiking	2		

	21	Tuesday	15:08	1	dog walking	1		
	21	Tuesday	17:49	3	hiking	2		
	22	Wednesday	19:12	1	fishing	3		
	23	Thursday	15:35	1	dog walking	1		
	25	Saturday	7:18	1	hiking	2		
	25	Saturday	10:03	2	hiking	2		
	25	Saturday	11:51	4	dog walking	1		
	25	Saturday	12:19	1	Photographer	5		
	25	Saturday	12:28	1	dog walking	1		
	26	Sunday	11:33	1	fishing	3		
	27	Monday	16:58	1	hiking	2		
	27	Monday	17:04	2	hiking	2		
	27	Monday	19:34	1	hiking	2		
	28	Tuesday	17:35	1	Hiking	2		
	29	Wednesday	11:01	1	Photographer	5		
	30	Thursday	16:46	1	dog walking	1		
	30	Thursday	16:47	1	hiking	2		
	31	Friday	13:42	2	Hiking	2		
	31	Friday	15:37	1	hiking	2		
	31	Friday	15:40	1	hiking	2		
	31	Friday	16:06	1	dog walking	1		
	31	Friday	16:44	2	hiking	2		
September 2018								
	1	Saturday	17:57	1	fishing	3		
	2	Sunday	8:45	1	fishing	3		
	3	Monday	7:04	1	Photographer	5		
	3	Monday	9:05	1	Photographer	5		
	4	Tuesday	18:38	1	fishing	3		
	5	Wednesday	9:55	1	Hiking	2		
	15	Saturday	17:08	1	dog walking	1		
	15	Saturday	19:01	2	hiking	2		
	19	Wednesday	10:06	1	dog walking	1		
	19	Wednesday	12:44	1	dog walking	1		
	23	Sunday	13:11	2	hiking	2		
	24	Monday	14:38	1	dog walking	1		
October 2018								
	5	Friday	15:01	1	hiking	2		
	13	Saturday	17:07	3	hiking	2		
	18	Thursday	10:02	2	hiking	2		
	18	Thursday	15:52	1	hiking	2		
	18	Thursday	16:14	1	dog walking	1		
	25	Thursday	16:47	1	dog walking	1		
	26	Friday	14:39	1	hiking	2		
	26	Friday	15:35	1	dog walking	1		
November 2018								
	4	Sunday	16:12	1	Mountain Biking	6		
	12	Monday	13:16	1	dog walking	1		
December 2018								

	1	Saturday	16:33	1	Hiking	2	
	1	Saturday	16:54	1	dog walking	1	
	4	Tuesday	14:43	1	dog walking	1	
	6	Thursday	13:52	1	hiking	2	
	6	Thursday	16:42	1	dog walking	1	
	8	Saturday	10:29	1	dog walking	1	
July 2019							
	5	Friday	9:50	1	Hiking	2	
	13	Saturday	11:06	1	Bird watching	7	
	15	Monday	8:23	1	Bird watching	7	
	20	Saturday	12:41	1	hiking	2	
	20	Saturday	12:55	1	Butterfly net	8	
	27	Saturday	15:05	1	Photographer	5	
Aug 2019							
	13	Tuesday	10:50	1	Bird watching	7	
Total amount of Pictures	197	Total People in pictures		279			



Activity	Activity key	Total
Dog walking	1	48
Hiking	2	80
Fishing	3	54
Snowshoeing	4	1
Photographer	5	9
mountain biking	6	1
Bird watching	7	3
Butterfly net	8	1

Appendix G: Trail Camera Data Set June- August 2018

	day of week	D.O.W. numbers	time	Time frame	Per Photo	Number of people per day	Per week	Per month	Activity	
June 2018	6 Wednesday	4	15:37	4	3				fishing	3
	6 Wednesday	4	16:37	4	1				Fishing	3
	6 Wednesday	4	19:44	5	1	5			Dog walking	1
	7 Thursday	5	10:34	2	1				Fishing?	3
	7 Thursday	5	16:25	4	3				family dog walk	1
	7 Thursday	5	17:26	4	1				dog walker	1
	7 Thursday	5	20:28	5	2	7			fishing	3
	8 Friday	6	11:59	2	2	2			Photographer	5
	9 Saturday	7	8:45	1	1				Fishing	3
	9 Saturday	7	9:55	2	1				Photographer	5
	9 Saturday	7	10:12	2	1	3	17		hiker	2
	10 Sunday	1	12:13	3	3				Fishing?	3
	10 Sunday	1	14:37	3	2				hiker	2
	10 Sunday	1	15:06	4	1				hiker	2
	10 Sunday	1	16:20	4	2				hiker	2
	10 Sunday	1	18:25	5	3				hiker	2
	10 Sunday	1	18:26	5	1	12			Fisher	3
	11 Monday	2	15:01	4	1				Fisher	3
	11 Monday	2	17:49	4	1				Fisher	3
	11 Monday	2	17:57	4	1				Fisher	3
	11 Monday	2	19:07	5	1				fisher	3
	11 Monday	2	20:03	5	2	6			Fishing	3
	12 Tuesday	3	20:01	5	1				dog walking	1
	12 Tuesday	3	20:05	5	1	2			Fishing	3
	13 Wednesday	4	9:04	2	1				dog walking	1
	13 Wednesday	4	19:34	5	1				Fishing	3
	13 Wednesday	4	19:58	5	1	3			Fishing	3
	14 Thursday	5	16:25	4	1	1			Fishing	3
	16 Saturday	7	13:07	3	1				Hiking	2
	16 Saturday	7	13:08	3	2				Fishing	3
16 Saturday	7	18:08	5	1				Dog walking	1	
16 Saturday	7	19:02	5	1				Fishing	3	
16 Saturday	7	19:36	5	1				Fishing	3	
16 Saturday	7	20:20	5	2	8	32		Fishing	3	
17 Sunday	1	18:22	5	2				fishing	3	
17 Sunday	1	18:40	5	1	3			Fishing	3	
18 Monday	2	12:01	3	2	2			Hiking	2	
19 Tuesday	3	14:14	3	1				dog walking	1	
19 Tuesday	3	16:58	4	1	2			dog walking	1	
20 Wednesday	4	12:38	3	1				Hiking	2	
20 Wednesday	4	15:22	4	1				Fishing	3	
20 Wednesday	4	16:10	4	1	3			Hiking	2	
21 Thursday	5	13:11	3	3				Hiking	2	
21 Thursday	5	18:45	5	1				Hiking	2	
21 Thursday	5	19:20	5	2	6			Hiking	2	
22 Friday	6	15:08	4	3				Hiking	2	
22 Friday	6	17:44	4	1				dog walking	1	
22 Friday	6	17:53	4	1	5			hiking	2	
23 Saturday	7	13:59	3	1	1	22		hiking	2	
25 Monday	2	22:08	5	2	2			hiking	2	
26 Tuesday	3	10:39	2	1				Fishing	3	
26 Tuesday	3	15:06	4	2	3			Hiking	2	
27 Wednesday	4	13:41	3	2	2			Hiking	2	
28 Thursday	5	14:47	3	2	2			Fishing	3	
29 Friday	6	17:54	4	1	1			dog walking	1	
30 Saturday	7	10:55	2	4				dog walking	1	
30 Saturday	7	18:14	5	2	6	16		Fishing	3	
								87		
July 2018	2 Monday	2	11:46	2	2	2			hiking	2
	4 Wednesday	4	11:28	2	1	1			dog walking	1
	7 Saturday	7	13:29	3	2				hiking	2
	7 Saturday	7	13:43	3	2				Hiking	2
	7 Saturday	7	14:25	3	1				hiking	2
	7 Saturday	7	18:19	5	2				hiking	2
	7 Saturday	7	18:19	5	2				Photographer	5
	7 Saturday	7	19:32	5	1	10	13		Fishing	3
	8 Sunday	1	13:55	3	1				Fishing	3
	8 Sunday	1	14:15	3	4				Fishing	3
	8 Sunday	1	16:19	4	1				hiking	2
	8 Sunday	1	18:39	5	2	8			hiking	2
	9 Monday	2	12:14	3	1				Hiking	2
	9 Monday	2	13:25	3	1				Hiking	2
	9 Monday	2	20:16	5	1	3			Fishing	3
	10 Tuesday	3	10:54	2	1				dog walking	1
	10 Tuesday	3	12:51	3	1				Hiking	2
	10 Tuesday	3	15:10	4	1				fishing	3
	10 Tuesday	3	15:50	4	1	4			hiking	2
	14 Saturday	7	13:53	3	1				fishing	3
	14 Saturday	7	15:28	4	3	4	19		fishing	3
	15 Sunday	1	14:40	3	2	2			fishing	3
	16 Monday	2	16:34	4	1				dog walking	1
	16 Monday	2	17:15	4	1	2			hiking	2
18 Wednesday	4	9:46	2	1	1			fishing	3	
20 Friday	6	17:35	4	1				dog walking	1	
20 Friday	6	20:56	5	2	3			Fishing	3	
21 Saturday	7	8:49	1	1				fishing	3	
21 Saturday	7	10:59	2	1				Fishing	3	
21 Saturday	7	15:24	4	3	5	13		hiking	2	
22 Sunday	1	17:10	4	1	1			dog walking	1	
24 Tuesday	3	10:08	2	1				hiking	2	



Color Code Key	
Dates	Color
Dec '16/ Jan '17	Red
Nov '17/ April '18	Blue
Jun '18/ Aug '18	Yellow
Sept '18/ Dec 18'	Green
Jul/ Aug 19'	Orange

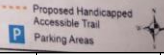
Jul/Aug '19

Sept/Nov 18
Jul/Aug 15

Nov/17/April 18
Dec 16/Jan 17

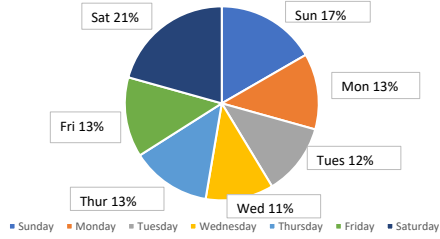
- Rauscher Farm
- Existing Trail
- Trail Requires Mowing
- Proposed Handicapped Accessible Trail
- P Parking Areas

Property lines from
2009 Connorstone survey.
2009 aerial photo from MassGIS
100 yards



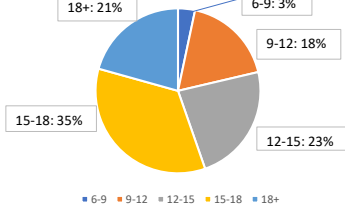
Day of week	D.O.W Key	Total
Sunday	1	25
Monday	2	19
Tuesday	3	18
Wednesday	4	17
Thursday	5	20
Friday	6	20
Saturday	7	31
		150

Days of the Week Visits July - August 2018



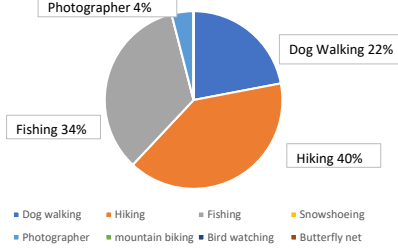
Time Frame	Time Frame Key	Total
6-9	1	5
9-12	2	27
12-15	3	35
15-18	4	52
18+	5	31

Time Frame July- August 2018



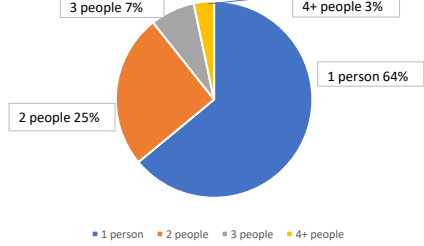
Activity	Activity key	Total
Dog walking	1	33
Hiking	2	60
Fishing	3	51
Snowshoeing	4	0
Photographer	5	6
mountain bik	6	0
Bird watching	7	0
Butterfly net	8	0

Extended Activities July-August 2018



Group Size	Total
1 person	96
2 people	38
3 people	11
4+ people	5

Group Size July- August 2018



Appendix H: Property Value and Tax Rates near Rauscher Farm

		Parcels	2004 Tax Valuation	2019 Tax Valuation	Percent Increase	Tax Paid 2004	Tax Paid 2019	Percent Increase
Clinton Ma Average			\$174,000	\$299,000	71.84	\$2,352	\$4,763	102.47
Zone A		39	\$189,825	\$264,507	40.36	\$2,545	\$4,181	66.29
Zone B		123	\$181,296	\$253,402	44.88	\$2,443	\$4,018	70.57
Zone C		182	\$158,873	\$222,139	42.74	\$2,148	\$3,532	68.15
Zone	GIS Parcel ID	Address	2004 Tax valuation	2019 Tax valuation	Percent Increase	Tax Paid 2004	Tax Paid 2019	Percent Increase
A	116-248	450R Wilson St	-	\$10,800	-	-	-	-
A	116-2623	440R Wilson St	-	\$9,800	-	-	-	-
A	116-3666	8 Mulberry Dr	-	\$599,000	-	-	-	-
A	116-3795	9 Mulberry Dr	-	\$85,700	-	-	-	-
A	116-3675	7 Mulberry Dr	-	\$97,600	-	-	-	-
A	120-2761	25 Clamshell Rd	-	\$150,500	-	-	-	-
A	120-1824	142 Wilson St	-	\$121,000	-	-	-	-
A	116-2752	20 Clamshell Rd	-	\$278,400	-	-	-	-
A	120-2767	Off Clamshell Rd	-	\$10,400	-	-	-	-
A	120-2755	29 Clamshell Rd	-	\$342,000	-	-	-	-
A	119-4335	Tall Pines	-	\$205,400	-	-	-	-
A	116-4334	16 Clamshell Rd	\$96,500	\$91,700	-4.97	\$1,026	\$1,461	42.40
A	116-4333	18 Clamshell Rd	\$179,300	\$250,100	39.49	\$2,461	\$3,984	61.89
A	116-13	6 Mulberry Dr	\$199,500	\$315,000	57.89	\$2,697	\$5,018	86.06
A	116-3187	5 Mulberry Dr	\$153,700	\$221,900	44.37	\$2,078	\$3,535	70.12
A	116-3448	3 Mulberry Dr	\$145,200	\$219,100	50.90	\$1,963	\$3,490	77.79
A	116-3185	1 Mulberry Dr	\$150,500	\$224,000	48.84	\$2,035	\$3,568	75.33
A	116-3574	396 Wilson St	\$309,300	\$388,200	25.51	\$4,182	\$6,184	47.87
A	116-3466	392 Wilson St	\$174,900	\$257,900	47.46	\$2,365	\$4,108	73.70
A	116-3907	388 Wilson St	\$290,300	\$403,600	39.03	\$3,925	\$6,429	63.80
A	116-3696	384 Wilson St	\$169,900	\$244,000	43.61	\$2,297	\$3,887	69.22
A	116-3697	310 Wilson St	\$191,300	\$248,500	29.90	\$2,232	\$3,959	77.37
A	116-4038	308 Wilson St	\$243,500	\$295,900	21.52	\$3,292	\$4,714	43.20
A	116-2949-298	298 Wilson St	\$171,900	\$234,300	36.30	\$2,324	\$3,732	60.59
A	116-3906-294	294 Wilson St	\$171,900	\$231,200	34.50	\$2,324	\$3,683	58.48
A	116-3170	282 Wilson St	\$145,400	\$228,500	57.15	\$1,966	\$3,640	85.15
A	116-2423	272 Wilson St	\$173,700	\$223,400	28.61	\$2,348	\$3,559	51.58
A	120-2616	236 Wilson St	\$173,700	\$261,900	50.78	\$2,348	\$4,172	77.68
A	120-2758	10 Clamshell Rd	\$181,700	\$285,200	56.96	\$2,457	\$4,543	84.90
A	116-967	14 Clamshell Rd	\$181,200	\$301,900	66.61	\$2,450	\$4,809	96.29
A	120-3199	40 Clamshell Rd	\$150,800	\$238,900	58.42	\$2,039	\$3,806	86.66
A	120-3840	51 Clamshell Rd	\$250,100	\$344,900	37.90	\$3,381	\$4,595	35.91
A	120-2762	21 Clamshell Rd	\$204,900	\$288,000	40.56	\$2,770	\$4,588	65.63
A	120-111	17 Clamshell Rd	\$150,300	\$236,000	57.02	\$2,032	\$3,759	84.99
A	120-1516	15 Clamshell Rd	\$144,900	\$228,700	57.83	\$1,959	\$3,643	85.96
A	120-1822	11 Clamshell Rd	\$159,700	\$207,500	29.93	\$2,159	\$3,305	53.08
A	120-4202	9 Clamshell Rd	\$252,700	\$313,600	24.10	\$3,417	\$4,996	46.21
A	120-4201	7 Clamshell Rd	\$243,800	\$305,800	25.43	\$3,296	\$4,871	47.79

A	120-4200	5 Clamshell Rd	\$254,500	\$316,500	24.36	\$3,441	\$5,042	46.53
39	Parcels		\$189,825	\$264,507	40.36	\$2,545	\$4,181	66.29
Zone	GIS Parcel ID	Address	2004 Tax valuation	2019 Tax valuation	Percent Increase	Tax Paid 2004	Tax Paid 2019	Percent Increase
B	119-3486-Z	Tall Pine St	-	\$210,900	-	-	-	-
B	117-2766	Tall Pines	-	\$162,100	-	-	-	-
B	116-1980	460 Wilson St	-	\$776,000	-	-	-	-
B	100-1894	5-7 Oak St	-	\$220,400	-	-	-	-
B	100-1229	1-3 Oak St	-	\$264,700	-	-	-	-
B	100-3135	17 Oak St	-	\$265,300	-	-	-	-
B	98-829	26 Oak Ct	-	\$77,300	-	-	-	-
B	98-1949	50 Top St	-	\$325,100	-	-	\$5,179	-
B	120-3359	161 R Berlin St	-	\$9,400	-	-	-	-
B	120-4044	207 Berlin St	-	\$105,200	-	-	-	-
B	120-22	291 Berlin St	-	\$164,200	-	-	-	-
B	121-3495	314 Berlin St	-	\$9,200	-	-	-	-
B	116-805	112 Boylston St	\$243,200	\$282,100	16.00	\$2,585	\$4,494	73.85
B	116-2901	387 Wilson St	\$229,400	\$301,800	31.56	\$3,459	\$4,808	39.00
B	100-3415	13 Oak St	\$257,500	\$235,600	-8.50	\$2,825	\$3,753	32.85
B	120-1827	2 Clamshell Rd	\$333,400	\$388,000	16.38	\$3,657	\$6,181	69.02
B	120-4286	72 R Wilson St	\$480,600	\$415,700	-13.50	\$5,272	\$6,622	25.61
B	120-2184	225 Berlin St A	\$241,800	\$229,500	-5.09	\$2,653	\$3,656	37.81
B	120-7	297 Berlin St	\$295,100	\$290,500	-1.56	\$3,137	\$4,628	47.53
B	120-2712	301 Berlin St	\$357,700	\$382,100	6.82	\$3,802	\$6,087	60.10
B	120-329	309 Berlin St	\$120,500	\$148,900	23.57	\$1,406	\$2,372	68.71
B	116-979	454 Wilson St	\$288,900	\$395,400	36.86	\$3,906	\$6,299	61.26
B	116-2554	450 Wilson St	\$278,100	\$377,800	35.85	\$3,760	\$6,018	60.05
B	116-522	448 Wilson St	\$185,700	\$281,400	51.53	\$2,511	\$4,483	78.53
B	116-1116	444 Wilson St	\$208,600	\$290,900	39.45	\$2,820	\$4,634	64.33
B	116-2563	440 Wilson St	\$157,400	\$206,100	30.94	\$2,128	\$3,283	54.28
B	116-3354	436 Wilson St	\$172,100	\$243,500	41.49	\$2,327	\$3,879	66.70
B	116-2089	432 Wilson St	\$204,800	\$268,100	30.91	\$2,769	\$4,271	54.24
B	116-1140	428 Wilson St	\$172,100	\$238,300	38.47	\$2,327	\$3,796	63.13
B	116-1047	2 Mulberry Dr	\$201,500	\$283,600	40.74	\$2,724	\$4,518	65.86
B	116-3467	422 Wilson St	\$151,300	\$228,900	51.29	\$2,046	\$3,646	78.20
B	116-3539	420 Wilson St	\$143,200	\$216,700	51.33	\$1,936	\$3,452	78.31
B	116-1542	451 Wilson St	\$241,600	\$344,400	42.55	\$3,266	\$5,486	67.97
B	116-599	449 Wilson St	\$198,000	\$291,300	47.12	\$2,677	\$4,640	73.33
B	116-690	445 Wilson St	\$209,500	\$323,300	54.32	\$2,832	\$5,150	81.85
B	116-1970	206 Boylston St	\$161,800	\$221,100	36.65	\$2,188	\$3,522	60.97
B	116-4197	443 Wilson St	\$243,700	\$259,600	6.52	\$3,295	\$4,135	25.49
B	116-1321	441 Wilson St	\$128,200	\$204,200	59.28	\$1,733	\$3,253	87.71
B	116-1320	435 Wilson St	\$164,700	\$242,200	47.06	\$2,227	\$3,858	73.24
B	116-1058	429 Wilson St	\$169,400	\$240,300	41.85	\$2,290	\$3,828	67.16
B	116-806	423 Wilson St	\$176,300	\$241,700	37.10	\$2,384	\$3,850	61.49
B	116-3330	421 Wilson St	\$188,800	\$244,100	29.29	\$2,553	\$3,889	52.33

B	116-1179	417 Wilson St	\$198,200	\$284,500	43.54	\$2,680	\$4,532	69.10
B	116-3964	395 Wilson St	\$58,200	\$377,400	548.45	\$787	\$6,012	663.91
B	116-1610	393 Wilson St	\$152,700	\$219,100	43.48	\$2,064	\$3,490	69.09
B	116-390	289 Wilson St	\$253,300	\$344,700	36.08	\$3,425	\$5,491	60.32
B	116-1639	287 Wilson St	\$171,500	\$241,400	40.76	\$2,319	\$3,846	65.85
B	116-274	295 Wilson St	\$216,000	\$305,700	41.53	\$2,920	\$4,870	66.78
B	116-533	283 Wilson St	\$166,000	\$259,400	56.27	\$2,244	\$4,132	84.14
B	116-1526	281 Wilson St	\$155,400	\$245,000	57.66	\$2,101	\$3,903	85.77
B	116-669	279 Wilson St	\$162,000	\$233,100	43.89	\$2,190	\$3,713	69.54
B	116-715	25 Hill St	\$186,800	\$244,000	30.62	\$2,526	\$3,887	53.88
B	116-2361	19 Hill St	\$175,400	\$222,700	26.97	\$2,371	\$3,548	49.64
B	116-3215	17 Hill St	\$190,100	\$233,000	22.57	\$2,570	\$3,712	44.44
B	116-146	15 Hill St	\$156,300	\$244,000	56.11	\$2,113	\$3,887	83.96
B	100-873	9 Hill St	\$138,500	\$180,200	30.11	\$1,873	\$2,871	53.28
B	100-1211	33-35 Oak St	\$166,600	\$234,200	40.58	\$2,252	\$3,731	65.67
B	116-872	21 Oak St	\$203,000	\$265,600	30.84	\$2,745	\$4,231	54.13
B	116-388	92 Boylston St	\$164,800	\$232,900	41.32	\$2,228	\$3,710	66.52
B	116-760	100 Boylston St	\$238,300	\$374,700	57.24	-	-	-
B	116-681	280 Wilson St	\$153,500	\$190,100	23.84	\$2,075	\$3,028	45.93
B	116-2384	266 Wilson St	\$138,100	\$188,100	36.21	\$1,867	\$2,996	60.47
B	116-687	260 Wilson St	\$114,400	\$176,200	54.02	\$1,547	\$2,807	81.45
B	116-1922	248 Wilson St	\$109,600	\$180,200	64.42	\$1,482	\$2,871	93.72
B	116-489	246 Wilson St	\$121,800	\$190,300	56.24	\$1,647	\$3,031	84.03
B	116-2616	244 Wilson St	\$151,000	\$224,400	48.61	\$2,042	\$3,575	75.07
B	120-2465	220 Wilson St	\$154,000	\$241,900	57.08	\$2,082	\$3,853	85.06
B	120-2191	210 Wilson St	\$181,600	\$259,300	42.79	\$2,455	\$4,131	68.27
B	120-317	200 Wilson St	\$148,300	\$198,100	33.58	\$2,005	\$3,156	57.41
B	120-1967	194 Wilson St	\$166,900	\$232,400	39.25	\$2,256	\$3,702	64.10
B	100-3220	44 Hill St	\$178,600	\$250,600	40.31	\$2,415	\$3,992	65.30
B	100-649	34 Hill St	\$203,000	\$262,700	29.41	\$2,745	\$4,185	52.46
B	100-205	20 Hill St	\$166,400	\$221,200	32.93	\$2,250	\$3,524	56.62
B	100-3385	16 Hill St	\$172,400	\$273,100	58.41	\$2,331	\$4,350	86.62
B	100-2866	55 Oak St	\$168,400	\$279,200	65.80	\$2,277	\$4,448	95.34
B	100-159	59 Oak St	\$201,000	\$290,500	44.53	\$2,718	\$4,628	70.27
B	100-3134	19 Oak Ct	\$185,400	\$296,300	59.82	\$2,507	\$4,720	88.27
B	98-1732	241 Wilson St	\$158,200	\$202,700	28.13	\$2,139	\$3,229	50.96
B	98-1590	227 Wilson St	\$144,200	\$193,300	34.05	\$1,950	\$3,079	57.90
B	98-813	71-73 Oak St	\$178,000	\$231,500	30.06	\$2,407	\$3,688	53.22
B	98-84	67 Oak St	\$158,800	\$212,000	33.50	\$2,147	\$3,377	57.29
B	98-1230	18 Oak Ct	\$143,000	\$192,900	34.90	\$1,933	\$3,073	58.98
B	98-2356	20 Oak Ct	\$168,000	\$212,500	26.49	\$2,271	\$3,385	49.05
B	98-1045	43 Top St	\$134,500	\$194,300	44.46	\$1,818	\$3,095	70.24
B	98-1342	37 Top St	\$48,600	\$77,200	58.85	\$657	\$1,230	87.21
B	98-580	29 Top St	\$160,700	\$216,100	34.47	\$2,173	\$3,442	58.40

B	98-1255	27 Top St	\$157,400	\$234,600	49.05	\$2,128	\$3,737	75.61
B	98-315	22 Top St	\$128,300	\$189,800	47.93	\$1,735	\$3,024	74.29
B	98-1373	32 Top St	\$178,900	\$237,800	32.92	\$2,419	\$3,788	56.59
B	98-1850	24-26 Top St	\$225,600	\$286,000	26.77	\$3,050	\$4,556	49.38
B	98-286	8 Top St	\$201,800	\$256,700	27.21	\$2,728	\$4,089	49.89
B	98-2008	199 Wilson St	\$140,700	\$224,600	59.63	\$1,902	\$3,578	88.12
B	98-1821	195 Wilson St	\$218,900	\$305,000	39.33	\$2,960	\$4,859	64.16
B	97-4012	177 Wilson St	\$414,500	\$499,000	20.39	\$5,604	\$7,947	41.81
B	97-1823	141 Wilson St	\$174,600	\$255,100	46.11	\$2,361	\$4,064	72.13
B	97-4058	99 Wilson St	\$153,000	\$203,200	32.81	\$2,069	\$3,237	56.45
B	97-4216	85 Wilson St	\$155,200	\$203,700	31.25	\$2,098	\$3,245	54.67
B	120-4199	3 Clamshell Rd	\$248,900	\$315,600	26.80	\$3,365	\$5,028	49.42
B	120-4198	1 Clamshell Rd	\$230,700	\$330,100	43.09	\$3,119	\$5,258	68.58
B	120-4208	84 Wilson St	\$262,200	\$327,000	24.71	\$3,545	\$5,209	46.94
B	120-4207	82 Wilson St	\$235,600	\$304,100	29.07	\$3,185	\$4,844	52.09
B	120-4206	80 Wilson St	\$245,800	\$307,300	25.02	\$3,323	\$4,895	47.31
B	120-4205	78 Wilson St	\$232,800	\$292,000	25.43	\$3,147	\$4,652	47.82
B	120-4204	76 Wilson St	\$232,700	\$301,300	29.48	\$3,146	\$4,800	52.57
B	120-4203	74 Wilson St	\$251,600	\$301,900	19.99	\$3,402	\$4,809	41.36
B	120-422	131 Berlin St	\$156,000	\$205,400	31.67	\$2,109	\$3,272	55.14
B	120-3545	151 Berlin St	\$230,400	\$301,200	30.73	\$3,115	\$4,798	54.03
B	120-2994	175 Berlin St	\$63,100	\$95,200	50.87	\$853	\$1,517	77.84
B	120-2995	183 Berlin St	\$220,900	\$264,000	19.51	\$2,987	\$4,206	40.81
B	120-3498	189 Berlin St	\$158,700	\$212,300	33.77	\$2,146	\$3,382	57.60
B	120-824	293 Berlin St	\$126,100	\$198,000	57.02	\$1,705	\$3,154	84.99
B	120-1368	295 Berlin St	\$212,500	\$114,200	-46.26	\$2,873	\$1,819	-36.69
B	120-4302	305 Berlin St	\$268,400	\$324,300	20.83	\$3,629	\$5,166	42.35
B	120-2518	315 Berlin St	\$187,500	\$263,900	40.75	\$2,535	\$4,204	65.84
B	119-241	333 Berlin St	\$155,400	\$221,100	42.28	\$2,101	\$3,522	67.63
B	119-3782	337 Berlin St	\$202,800	\$365,000	79.98	\$2,724	\$5,814	113.44
B	119-1803	345 Berlin St	\$208,700	\$295,400	41.54	\$2,822	\$4,706	66.76
B	119-239	351 Berlin St	\$243,700	\$361,800	48.46	\$3,295	\$5,763	74.90
B	121-2102	336 Berlin St	\$160,900	\$235,400	46.30	\$2,175	\$3,750	72.41
B	121-3035	224 Berlin St	\$153,000	\$229,900	50.26	\$2,069	\$3,662	76.99
B	121-1216	222 Berlin St	\$187,500	\$280,500	49.60	\$2,535	\$4,468	76.25
B	121-1117	220 Berlin St	\$131,800	\$236,400	79.36	\$1,782	\$3,766	111.34
B	121-953	1 Candice St	\$128,400	\$196,600	53.12	\$1,736	\$3,132	80.41
123	Parcels		\$181,296	\$253,402	44.88	\$2,443	\$4,018	70.57
Zone	GIS Parcel ID	Address	2004 Tax valuation	2019 Tax valuation	Percent Increase	Tax Paid 2004	Tax Paid 2019	Percent Increase
C	117-2766	Tall Pines		\$162,100				
C	116-3681	300 Boylston St		\$2,329,100				
C	116-136	520 Wilson St		\$3,300				
C	116-136-2-16	518 Wilson St 01	\$231,400	\$153,200	-33.79	\$2,538	\$2,440	-3.86
C	116-4042	301 Boylston St		\$4,912,100				
C	116-1979	Wachusett Reservoir		\$5,475,600				

C	111-684	286 Grove St	\$229,300	\$268,300	17.01	\$2,437	\$4,274	75.38
C	111-2430	244 Grove St		\$11,600				
C	100-430	34-36 Oak St		\$37,300				
C	99-3644	40 Boylston St		\$3,843,800				
C	93-98	3 Chestnut St		\$551,100				
C	93-455	3R Chestnut St		\$15,700				
C	93-3670	Cameron St		\$280,400				
C	93-376	20 Cameron St		\$4,439,200				
C	93-2897	Cameron St		\$127,100				
C	98-407	81-83 Oak St		\$261,800				
C	98-2709	12-1/2 Acre Ct	\$172,100	\$159,900	-7.09	\$1,888	\$2,547	34.90
C	98-3389	9 Top St		\$254,100				
C	97-2896	147 1/2 Oak St	\$308,700	\$280,600	-9.10	\$3,386	\$4,470	32.01
C	97-435	157 Oak St		\$203,000				
C	97-2250	50 Acre St	\$59,400	\$64,700	8.92	\$990	\$1,031	4.14
C	97-3395	21R Acre St	\$141,200	\$131,900	-6.59	\$1,549	\$2,101	35.64
C	122-802	112 1/2 Berlin St	\$234,700	\$256,600	9.33	\$2,575	\$4,088	58.76
C	122-1740	114 1/2 Berlin St	\$184,800	\$207,100	12.07	\$2,027	\$3,299	62.75
C	121-418	16A Lindberg St	\$190,200	\$185,500	-2.47	\$2,086	\$2,955	41.66
C	121-2903	37 Lindberg St		\$38,100				
C	121-4337	190R Berlin St		\$49,300				
C	121-4010	10A Candice St	\$315,300	\$246,700	-21.76	\$3,459	\$3,930	13.62
C	121-3489	290 Berlin St		\$9,029,700				
C	121-4303	1 West Ledge Rd	\$425,300	\$471,900	10.96	\$4,823	\$7,517	55.86
C	121-4304	3 West Ledge Rd	\$360,300	\$503,900	39.86	\$4,089	\$8,027	96.31
C	121-4305	5 West Ledge Rd	\$403,200	\$540,400	34.03	\$5,697	\$8,609	51.11
C	121-4306	7 West Ledge Rd	\$374,200	\$498,600	33.24	\$5,834	\$7,943	36.15
C	121-4307	9 West Ledge Rd	\$398,000	\$496,300	24.70	\$6,205	\$7,906	27.41
C	121-4317	12 West Ledge Rd	\$428,400	\$501,000	16.95	\$5,719	\$7,981	39.55
C	121-4318	10 West Ledge Rd	\$384,800	\$497,500	29.29	\$5,880	\$7,925	34.78
C	121-4319	8 West Ledge Rd	\$420,700	\$486,000	15.52	\$6,428	\$7,742	20.44
C	121-4320	6 West Ledge Rd	\$393,800	\$477,400	21.23	\$5,257	\$7,605	44.66
C	121-4321	4 West Ledge Rd	\$417,100	\$487,400	16.85	\$5,568	\$7,764	39.44
C	121-4322	2 West Ledge Rd	\$440,500	\$454,600	3.20	\$5,881	\$7,242	23.14
C	121-4458	340-342 Berlin St		\$226,600			\$3,610	
C	119-4455	447 Berlin St	\$167,800	\$167,800	0.00	\$2,965	\$2,673	-9.85
C	119-1882-1	377 Berlin St 1	\$198,900	\$233,900	17.60	\$3,212	\$3,726	16.00
C	119-1882-2	378 Berlin St 2	\$191,100	\$214,300	12.14	\$3,086	\$3,414	10.63
C	119-1882-3	379 Berlin St 3	\$198,700	\$223,000	12.23	\$3,209	\$3,552	10.69
C	111-1298	285 Grove St	\$170,400	\$258,000	51.41	\$2,304	\$4,110	78.39
C	111-1035	267 Grove St	\$182,900	\$273,900	49.75	\$2,473	\$4,363	76.43
C	111-1036	265 Grove St	\$181,200	\$226,800	25.17	\$2,450	\$3,613	47.47
C	111-3422	263 Grove St	\$194,800	\$253,300	30.03	\$2,634	\$4,035	53.19
C	111-2582	278 Grove St	\$154,300	\$258,900	67.79	\$2,086	\$4,124	97.70
C	111-2597	264 Grove St	\$145,200	\$398,900	174.72	\$1,963	\$6,354	223.69

C	111-1029	262 Grove St	\$172,300	\$322,000	86.88	\$2,314	\$5,129	121.65
C	111-1831	246 Grove St	\$176,000	\$274,500	55.97	\$2,380	\$4,373	83.74
C	111-634	230 Grove St	\$30,100	\$61,700	104.98	\$407	\$983	141.52
C	100-1992	12 Oak St	\$127,800	\$177,000	38.50	\$1,728	\$2,820	63.19
C	100-1188	24 Oak St	\$161,000	\$219,600	36.40	\$2,177	\$3,498	60.68
C	100-2135	28 Oak St	\$121,300	\$175,600	44.77	\$1,640	\$2,797	70.55
C	100-429	40 Oak St	\$173,700	\$221,400	27.46	\$2,348	\$3,527	50.21
C	99-4290	46 Oak St	\$69,900	\$90,000	28.76	\$945	\$1,554	64.44
C	99-3626	46 Boylston St	\$372,300	\$485,500	30.41	\$5,033	\$6,751	34.13
C	100-2353	52 Boylston St	\$152,100	\$195,900	28.80	\$2,056	\$3,121	51.80
C	100-160	56 Boylston St	\$153,700	\$195,600	27.26	\$2,078	\$3,116	49.95
C	100-2509	62 Boylston St	\$154,300	\$201,300	30.46	\$2,086	\$3,207	53.74
C	100-374	68 Boylston St	\$110,300	\$143,000	29.65	\$1,491	\$2,278	52.78
C	93-1683	51-53 Crown St	\$188,600	\$268,800	42.52	\$2,550	\$4,282	67.92
C	93-434	166 Oak St	\$149,100	\$226,200	51.71	\$2,016	\$3,603	78.72
C	93-1474	168 Oak St	\$129,800	\$176,200	35.75	\$1,755	\$2,807	59.94
C	93-1646	174 Oak St	\$136,000	\$185,100	36.10	\$1,839	\$2,949	60.36
C	93-759	182-184 Oak St	\$143,200	\$202,300	41.27	\$1,936	\$3,223	66.48
C	98-2912	77 Oak St	\$170,300	\$226,800	33.18	\$2,302	\$3,613	56.95
C	98-1739	89 Oak St	\$142,800	\$185,900	30.18	\$1,931	\$2,961	53.34
C	98-1341	91-93 Oak St	\$146,500	\$192,200	31.19	\$1,981	\$3,062	54.57
C	98-1104	97 Oak St	\$153,100	\$196,900	28.61	\$2,070	\$3,137	51.55
C	98-185	101 Oak St	\$170,600	\$221,400	29.78	\$2,307	\$3,527	52.88
C	98-960	105 Oak St	\$144,000	\$186,600	29.58	\$1,947	\$2,973	52.70
C	98-1994	109 Oak St	\$171,400	\$177,100	3.33	\$2,317	\$2,821	21.75
C	98-214	115 Oak St	\$129,300	\$176,900	36.81	\$1,748	\$2,818	61.21
C	98-3183	119 Oak St	\$145,600	\$196,700	35.10	\$1,969	\$3,133	59.12
C	98-1223	123-127 Oak St	\$271,000	\$349,500	28.97	\$3,664	\$5,568	51.97
C	98-1205	13 Acre Ct	\$136,400	\$214,400	57.18	\$1,844	\$3,415	85.20
C	98-3401	23 Top St	\$169,100	\$222,800	31.76	\$2,286	\$3,549	55.25
C	98-1958	17 Acre Ct	\$117,800	\$208,000	76.57	\$1,593	\$3,313	107.97
C	97-1028	135 Oak St	\$163,500	\$244,900	49.79	\$2,211	\$3,901	76.44
C	97-2638	151 Oak St	\$151,600	\$199,700	31.73	\$2,050	\$3,181	55.17
C	97-267	16 Acre St	\$151,800	\$185,300	22.07	\$2,052	\$2,952	43.86
C	97-710	20 Acre St	\$124,800	\$184,300	47.68	\$1,687	\$2,936	74.04
C	97-1747	161 Oak St	\$165,400	\$238,000	43.89	\$2,236	\$3,791	69.54
C	97-78	167 Oak St	\$145,500	\$221,400	52.16	\$1,967	\$3,527	79.31
C	97-2552	169-171 Oak St	\$299,800	\$362,000	20.75	\$4,053	\$5,767	42.29
C	97-2869	177 Oak St	\$151,300	\$211,400	39.72	\$2,046	\$3,368	64.61
C	97-2249	181 Oak St	\$154,800	\$195,600	26.36	\$2,093	\$3,116	48.88
C	97-2186	40 Acre St	\$134,100	\$142,300	6.11	\$1,813	\$2,267	25.04
C	97-3356	58 Acre St	\$159,500	\$188,200	17.99	\$2,156	\$2,998	39.05
C	96-2097	189 Oak St	\$196,700	\$277,900	41.28	\$2,659	\$4,427	66.49
C	96-2830	195 Oak St	\$134,300	\$191,700	42.74	\$1,816	\$3,054	68.17
C	96-3960	65-67 Acre St	\$196,200	\$218,100	11.16	\$2,653	\$3,474	30.95

C	97-1881	59 Acre St	\$204,900	\$241,100	17.67	\$2,770	\$3,841	38.66
C	97-638	55 Acre St	\$115,400	\$155,000	34.32	\$1,560	\$2,469	58.27
C	97-408	49 Acre St	\$164,900	\$204,200	23.83	\$2,229	\$3,253	45.94
C	97-698	43 Acre St	\$124,700	\$162,200	30.07	\$1,686	\$2,584	53.26
C	97-3449	37 Acre St	\$132,700	\$172,500	29.99	\$1,794	\$2,748	53.18
C	97-1095	33 Acre St	\$143,300	\$166,500	16.19	\$1,937	\$2,652	36.91
C	97-1198	23 Acre St	\$129,400	\$208,700	61.28	\$1,749	\$3,325	90.11
C	97-1137	19 Acre St	\$118,600	\$213,300	79.85	\$1,603	\$3,398	111.98
C	97-986	13 Acre St	\$158,500	\$203,400	28.33	\$2,143	\$3,240	51.19
C	97-1090	9 Acre St	\$140,400	\$171,200	21.94	\$1,898	\$2,727	43.68
C	97-2442	3 Acre St	\$109,500	\$137,400	25.48	\$1,480	\$2,189	47.91
C	97-4217	73 Wilson St	\$125,000	\$260,500	108.40	\$1,690	\$4,150	145.56
C	97-4218	71 Wilson St	\$184,500	\$258,500	40.11	\$2,494	\$4,118	65.12
C	97-2622	67 Wilson St	\$166,200	\$240,900	44.95	\$2,247	\$3,838	70.81
C	97-2863	57 Wilson St	\$165,000	\$244,600	48.24	\$2,231	\$3,896	74.63
C	96-2624	53 Wilson St	\$211,500	\$237,900	12.48	\$2,859	\$3,790	32.56
C	96-3203	41 Wilson St	\$155,700	\$209,100	34.30	\$2,105	\$3,331	58.24
C	96-32	23 Wilson St	\$169,900	\$228,300	34.37	\$2,297	\$3,637	58.34
C	120-1679	20 Wilson St	\$158,500	\$216,500	36.59	\$2,143	\$3,449	60.94
C	120-1680	40 Wilson St	\$172,500	\$260,900	51.25	\$2,332	\$4,156	78.22
C	120-2620	52 Wilson St	\$213,500	\$295,500	38.41	\$2,887	\$4,707	63.04
C	120-2501	60 Wilson St	\$297,400	\$337,700	13.55	\$4,021	\$5,380	33.80
C	120-2598	68 Wilson St	\$291,000	\$299,500	2.92	\$3,934	\$4,771	21.28
C	120-3038	72 Wilson St	\$161,100	\$235,900	46.43	\$2,178	\$3,758	72.54
C	120-2608	70 Wilson St	\$219,100	\$341,700	55.96	\$2,962	\$5,443	83.76
C	120-3328	75 Berlin St	\$145,300	\$188,900	30.01	\$1,964	\$3,009	53.21
C	120-109	91 Berlin St	\$157,100	\$231,600	47.42	\$2,124	\$3,689	73.68
C	120-821	99 Berlin St	\$130,000	\$213,000	63.85	\$1,758	\$3,393	93.00
C	120-2183	103 Berlin St	\$156,300	\$218,900	40.05	\$2,113	\$3,487	65.03
C	120-3475	117 Berlin St	\$206,200	\$270,100	30.99	\$2,788	\$4,303	54.34
C	120-818	121 Berlin St	\$210,100	\$262,500	24.94	\$2,841	\$4,182	47.20
C	120-1689	127 Berlin St	\$186,900	\$288,600	54.41	\$2,527	\$4,597	81.92
C	120-3360	161 Berlin St	\$283,700	\$338,900	19.46	\$3,836	\$5,399	40.75
C	120-3365	165 Berlin St	\$198,900	\$255,000	28.21	\$2,689	\$4,062	51.06
C	122-2729	74 Berlin St	\$156,800	\$210,900	34.50	\$2,120	\$3,360	58.49
C	122-103	84 Berlin St	\$174,300	\$221,600	27.14	\$2,357	\$3,530	49.77
C	122-1083	94-96 Berlin St	\$177,800	\$251,500	41.45	\$2,404	\$4,006	66.64
C	122-800	98 Berlin St	\$169,500	\$243,600	43.72	\$2,292	\$3,881	69.33
C	122-3554	104 Berlin St	\$161,100	\$335,800	108.44	\$2,178	\$5,349	145.59
C	122-425	112 Berlin St	\$144,400	\$276,200	91.27	\$1,952	\$4,400	125.41
C	122-625	114 Berlin St	\$147,500	\$249,900	69.42	\$1,994	\$3,981	99.65
C	122-3386	116 Berlin St	\$153,900	\$241,100	56.66	\$2,081	\$3,841	84.57
C	122-382	118 Berlin St	\$140,800	\$231,300	64.28	\$1,904	\$3,685	93.54
C	121-577	122 Berlin St	\$198,100	\$271,300	36.95	\$2,678	\$4,322	61.39
C	121-1305	7 Lindberg St	\$59,900	\$96,300	60.77	\$810	\$1,534	89.38

C	121-1304	9 Lindberg St	\$115,200	\$195,500	69.70	\$1,558	\$3,114	99.87
C	121-3125	14 Lindberg St	\$158,400	\$235,100	48.42	\$2,142	\$3,745	74.84
C	121-1594	18 Lindberg St	\$198,000	\$249,600	26.06	\$2,677	\$3,976	48.52
C	121-172	28 Lindberg St	\$205,800	\$273,400	32.85	\$2,782	\$4,355	56.54
C	122-2963	23 Coyne St	\$50,400	\$69,800	38.49	\$681	\$1,112	63.29
C	121-2904	35 Lindberg St	\$124,200	\$167,300	34.70	\$1,679	\$2,665	58.73
C	121-3738	21 Lindberg St	\$158,800	\$264,400	66.50	\$2,147	\$4,212	96.18
C	121-473	15 Lindberg St	\$158,800	\$203,500	28.15	\$2,147	\$3,242	51.00
C	121-1528	11 Lindberg St	\$56,000	\$87,600	56.43	\$757	\$1,395	84.28
C	121-2962	8 Lindberg St	\$214,700	\$313,800	46.16	\$2,903	\$4,999	72.20
C	121-1924	190 Berlin St	\$185,100	\$215,700	16.53	\$2,503	\$3,436	37.28
C	121-3523	200 Berlin St	\$147,500	\$230,000	55.93	\$1,994	\$3,664	83.75
C	121-2372	204 Berlin St	\$169,900	\$236,500	39.20	\$2,297	\$3,767	64.00
C	121-1785	6 Candice St	\$123,000	\$197,900	60.89	\$1,663	\$3,153	89.60
C	121-3329	8 Candice St	\$113,700	\$176,200	54.97	\$1,537	\$2,807	82.63
C	121-3851	10 Candice St	\$205,300	\$235,200	14.56	\$2,776	\$3,747	34.98
C	121-3072	12 Candice St	\$116,700	\$182,500	56.38	\$1,578	\$2,907	84.22
C	121-2773	14 Candice St	\$157,000	\$229,600	46.24	\$2,123	\$3,658	72.30
C	121-1466	16 Candice St	\$103,000	\$179,400	74.17	\$1,393	\$2,858	105.17
C	121-1488	18 Candice St	\$111,600	\$187,100	67.65	\$1,509	\$2,981	97.55
C	121-3210	20 Candice St	\$125,300	\$191,400	52.75	\$1,694	\$3,049	79.99
C	121-2143	21 Candice St	\$109,800	\$173,500	58.01	\$1,484	\$2,764	86.25
C	121-2926	19 Candice St	\$120,300	\$188,800	56.94	\$1,626	\$3,008	84.99
C	121-1757	17 Candice St	\$155,100	\$214,600	38.36	\$2,097	\$3,419	63.04
C	121-1854	15 Candice St	\$132,900	\$234,000	76.07	\$1,797	\$3,728	107.46
C	121-3310	13 Candice St	\$95,100	\$158,200	66.35	\$1,286	\$2,520	95.96
C	121-2774	11 Candice St	\$108,200	\$189,500	75.14	\$1,463	\$3,019	106.36
C	121-131	9 Candice St	\$145,800	\$217,200	48.97	\$1,971	\$3,460	75.55
C	121-3513	7 Candice St	\$169,000	\$243,400	44.02	\$2,285	\$3,877	69.67
C	121-468	5 Candice St	\$115,200	\$178,500	54.95	\$1,558	\$2,844	82.54
C	121-3280	3 Candice St	\$131,500	\$197,200	49.96	\$1,778	\$3,141	76.66
C	121-3315	366 Berlin St	\$316,600	\$334,900	5.78	\$4,280	\$5,335	24.65
C	121-3853-382	382 Berlin St	\$140,000	\$173,900	24.21	\$1,893	\$2,770	46.33
C	121-3853-384	384 Berlin St	\$154,300	\$187,100	21.26	\$2,086	\$2,981	42.91
C	121-3594	386 Berlin St	\$65,200	\$103,200	58.28	\$882	\$1,644	86.39
C	121-446	412 Berlin St	\$197,500	\$242,700	22.89	\$2,670	\$3,866	44.79
C	121-1851	414 Berlin St	\$145,800	\$214,700	47.26	\$1,971	\$3,420	73.52
C	121-1884	420 Berlin St	\$182,800	\$224,600	22.87	\$2,471	\$3,578	44.80
C	121-1883	424 Berlin St	\$165,100	\$213,600	29.38	\$2,232	\$3,403	52.46
C	121-3727	430 Berlin St	\$170,500	\$261,400	53.31	\$2,305	\$4,164	80.65
C	119-3486	417 Berlin St	\$207,200	\$253,100	22.15	\$2,801	\$4,032	43.95
182	Parcels		\$158,873	\$222,139	42.74	\$2,148	\$3,532	68.15