



Dartmouth

WEST WINDSOR
Vermont

Mount Ascutney and the West Windsor Town Forest: Linked Conservation and Recreation Planning at Mount Ascutney



Photo courtesy of Northeast Explorer

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ENVS 50

Advisors

Nicholas Reo
Karen Bieluch

Contributors

Tegwyth Alderson-Taber
Ricky Berman
Jessica Caron
Robyn Chemago
Meghan Christie
Connor Clark
Nevin Cunningham
Margaret Currie
Star Gulant
Francesca Gundrum
Eli Harrison
Molly Kornfeind
Michael Machlin
Charles Mack
Ryan O'Hanlon
Luka Pejanovic
Foreste Peterson
Adam Philie
Kepa Police
Zachary Shank
Ryder Stone
Eleni Tebano
Camille Wang
Mark Widerschein

Executive Summary

Over the course of the spring academic quarter, April to June 2017, the students enrolled in Environmental Studies 50 at Dartmouth College worked alongside active members of the Brownsville & West Windsor communities to further develop a conservation and recreation plan for Mount Ascutney, building off work done by the previous year's ENVS 50 class. In 2015, the town of West Windsor obtained 468 acres of land that was previously the Ascutney Mountain Resort. Ascutney Outdoors (AO), a local non-profit, has taken a pivotal role in leading the expansion of the property and acquiring funding to increase the recreational potential of the land. The students of the Environmental Problem Analysis and Policy Formulation, or ENVS 50 class at Dartmouth College have had the unique opportunity to work with AO board members, members of the Upper Valley Land Trust (UVLT) and Sports Trails of Ascutney Basin (STAB), administrators and activists within local communities, and experts within the Dartmouth community to identify and implement strategies to increase the depth of activities and range of users on Mount Ascutney. The 24 students in the class divided themselves into six groups based on the needs of the mountain and the interests of the individual students: Mountain Bike Revenue, Camps and Events, Interpretive Trails, User Research and Monitoring Study, Grantmaking, and Music on the Mountain. This document is an expansive report of the research and implementation efforts of each group over the spring of 2017.

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Introduction

Report Outline

The students of the Environmental Studies 50 class at Dartmouth College worked in close collaboration with Ascutney Outdoors (AO) board members, staff at the Upper Valley Land Trust (UVLT), administrators and board members from the Town of West Windsor, and other local community members to further develop the revitalization or creation of several exciting facets of Mount Ascutney. In the introduction of this seminar report, each sub-group topic, of which there are six, provide a brief description of the work done by each group. This introduction also includes background information on the mountain, encompassing the history of recreational use on the mountain, and the plans for future use of the mountain following the research conducted in this course.

Mountain Bike Revenue

We proceed with the goal of increasing revenue through mountain biking operations at Mount Ascutney. To do so, we first examine peer-reviewed academic literature in the area of human behavior and the psychology of donation. With this understanding in place, we consider Mount Ascutney's unique physical and financial constraints in implementing a combined onsite check-in and donation system. We propose a solution in two phases, the first requiring fewer technological and financial resources than the second, such that the initial plan can be implemented in the near future and the later plan later as resources allow.

We approach the task of increasing revenue beyond the most traditional method of donation collection, and consider ways to spread awareness of and excitement for Ascutney Trails in the greater New England region. To achieve this, we consider various avenues of

promotional material, both digital and print. For the former, we propose the increased circulation of promotional videos that have been generated both by a professional recreation company and former Dartmouth College students. For the latter, we describe a plan to contact individual businesses and chambers of commerce in the region and offer to share pamphlets or other physical promotional materials with the relevant parties in order to facilitate their sharing information about Ascutney Trails with residents and visitors not otherwise familiar with the trails.

Through a revamped approach to marketing and a completely new design for a donation system that can be implemented in phases, we hope to increase ridership at Ascutney Trails and encourage increased contributions per rider, all the while striving for the best possible experience for trail users.

Camps & Events

Exposing children at an early age to outdoor education and increasing the time they spend outdoors has been shown to positively impact their health, education, and life among other things. The amount of time that children in the United States spend in primary and secondary schools is about 980 hours. In addition a child attending a full time childcare program spends around 1500 hours per year at the program (Moore and Cosco 2014). Increasing their exposure to the outdoors and nature during this time is critical to improve attention functioning, motor development, stress reduction, and creative thinking in children and young adults of all ages (Moore and Cosco 2014). This is especially important today because young people are spending more and more time indoors with technology. One researcher, Louv, coined the term “nature-deficit disorder” to describe the physical and psychological consequences associated with the absence of “authentic outdoor experiences” during childhood and early adolescence (Larson,

Whiting and Green 2013). Research suggests that young people who spend a significant time engaged in recreational activities outside of school typically earn higher grades (Larson, Whiting and Green 2013).

Spending time outdoors and in nature during developmental years not only increases cognitive behavior but has also been shown to foster environmental behavior later in life. Studies have shown that positive associations with outdoor settings developed during childhood, especially before the age of eleven, are among the most significant predictors of adults' pro-environmental ideas and beliefs and their increased outdoor recreation participation (Larson, Whiting and Green 2013). It is becoming increasingly important to encourage and promote outdoor recreational time in any way possible, including fun and engaging camp programs.

Understanding these benefits, the Camps group provided a set of guidelines for restructuring a page on AO's website to improve marketing to other camps and schools, developed a database of youth camps within a 1.5 hour driving radius of Mount Ascutney, and planned a pilot camp in collaboration with local partner organizations, including Sport Trails of the Ascutney Basin and The Climb Fitness Center.

Interpretive Trails

The interpretive trail group had the opportunity to design an interpretive trail system that will serve as a gateway to the pre-existing trail network at Mount Ascutney and also expose visitors and community members to the ecological and cultural significance of the area. In collaboration with Ascutney Outdoors, National Park Service Rivers, Trails, and Conservation Assistance Program, and the Climb Fitness Center, this group developed a set of recommended interpretive trail elements that encourage recreational, educational, and community-oriented

experiences for all user groups. In response to field work conducted at Mount Ascutney to survey the land and the informal interviews conducted with community partners, this group took a place-based approach in order to highlight some of the most important features of the physical and social landscape. In addition to capturing in their proposed interpretive trail design the unique sense of place associated with Mount Ascutney, this group focused on designing a trail that is characterized by engaging, out of the ordinary, and highly accessible interpretive markers.

User Research and Monitoring Study

As the User Research and Monitoring group, we first reviewed literature on monitoring techniques of trail users in national parks and other outdoor recreational venues, and researched the importance of understanding trail use on Mount Ascutney. Our research led us to develop a structure for how Ascutney Outdoors might monitor their trail use, beginning with a baseline measurement in the summer of 2017. This measurement would include an analysis of ecological impacts of trail use, including trail erosion and the spread of invasive species. The long-term monitoring plan was developed to be in agreement with the current easement and any predicted future changes. Our research concluded with a financial analysis of the costs associated with our proposed monitoring plan.

Grantmaking

In partnership with AO and UVLT representatives and their contacts, the grantmaking group participated in one of the most crucial processes that nonprofits undertake: development. We learned fundraising skills from experienced community mentors through weekly meetings, a special grantmaking workshop and guest speakers that the AO partners had brought in. The

environmental studies department's Practice-Based Learning Specialist, Karen Bieluch, provided additional literature and support as well.

Working closely with community contacts tied to specific projects, we produced three grant applications under three project areas. The project areas are: community and education, mountain infrastructure/recreation, and trail monitoring technology for conservation. Additionally, we put together a grant database to aid future development of the young nonprofit. We are especially excited about building on the planning of our classmates and writing grants to fund the projects they have been designing.

Under the community and education project area, we worked with the interpretive trail group to compose a narrative about their project to our potential funder, the Vermont Community Foundation. Though the specific grant we applied to is a small grant that would only help a part of the interpretive trail project, the narrative we developed can inform future grant applications for the interpretive trail. For the mountain infrastructure and recreation project area, we wrote a grant on a flow country trail, to answer the demand for an improved mountain-biking trail system as well as diversify the local outdoor industry. This application is for the Recreational Trails Project Grant, a relatively large grant with an upper limit of \$50,000, in part because it is a government grant administered by the State of Vermont. If approved, the grant will ease the burden of an expensive but worthwhile flow country trail construction, including preliminary studies and assessments required by federal law, and professional trail building using heavy machinery. Finally, recreation and development must always be mindful of environmental impact, and our grantmaking solidly reflects this principle. We drafted a grant application to Keen Footwear to fund trail counters, tablets, cameras and GPS trackers that help monitor trail

use intensity. These tools can carry out the trail use study designed by another subgroup, in an effort to foster sustainable and responsible recreation at Mount Ascutney.

Music on the Mountain

The Music on the Mountain group worked extensively with Ascutney Outdoors board members and local music professionals to develop the fundamental structure for musical and artistic performances on Mount Ascutney. We researched several different stage layouts and pricing options, as well laid the groundwork to build a stage through community outreach programs. Input from equipment rental institutions and local concert producers was compiled to produce a cost estimate for holding a concert on the mountain. From that input, we walked through the steps of a theoretical ‘Battle of the Bands’ concert that we hope will be held on the mountain over the summer. Outreach to several artists and musical groups in the area culminated in a list of contacts willing to perform at the mountain to promote community values.

While music was the focus of our research, we worked to generate potential uses for the space related to the arts, such as a site for fitness circuits, yoga classes, theatrical productions, and camps. The stage near the Ascutney basecamp is an excellent site for these activities, as well as for musical productions, but the mountain has so much more space to offer. We researched designs of outdoor amphitheaters to provide insight as to which spaces on Mount Ascutney could provide such a venue, and how to develop a site provide an optimal outdoor amphitheater experience.

History of Mount Ascutney

Mount Ascutney has evolved as an outdoor recreation area since 1935 and provides economic, physical, and mental benefits to the surrounding communities of Brownsville and West Windsor, Vermont. Locals feel a deep connection to the mountain and see its potential to become a valued mountain biking and backcountry skiing area not only for Vermont, but also for the larger New England community. Since the Mount Ascutney ski area closed in 2010, a dedicated team of community members has formed, including Ascutney Outdoors, the Sport Trails of Ascutney Basin (STAB), the Upper Valley Land Trust, and members of the Town of West Windsor. These organizations share a common mission to reinvigorate the Ascutney Mountain recreation area. Indeed, over the course of Mount Ascutney's history, the area has closed and reopened, had multiple owners, and has filed for bankruptcy multiple times. The new Ascutney leadership is hoping to reverse this trend. Although there are many who love it, the Mount Ascutney Ski Area has had a long history of financial hardship, changing leadership, and unfulfilled potential. In 1935 the United States Civilian Conservation Corps (CCC) and the Windsor Outing Club opened the 5,400 ft. Mount Ascutney Trail for skiers. A decade later, Catharine Cushman, Bob Bishop, Dick Springer, Bob Ely, Robert Hammond, and Dr. Peter Patch, among others, helped develop the Mount Ascutney Slopes. The operation continued to grow over the next five years adding more runs and rope tow lifts. Unfortunately, in 1950 following an unfavorable skiing season, Ascutney filed for bankruptcy for the first time. In 1957, the new owner of the area John Howland founded Mount Ascutney Ski Area, Inc., and with external funding allowed for installation of a T-Bar lift and snowmaking equipment. In 1964, Ascutney, then owned primarily by Walter Paine of the Valley News, expanded to include higher verticals, a new T-Bar, and a lodge. Ownership of the mountain continued to change hands until

1983, at which point the Mount Ascutney Ski Area Corporation filed for bankruptcy for the second time. That same summer, Summit Ventures, Inc. purchased the mountain and embarked on a 10-year plan, which included the development of new slope-side condominiums, chair lifts, and snowmaking capacity. However, the plan proved to be unsuccessful, and in 1991, Ascutney was forced to liquidate its assets. Two years later, the Mountain reopened yet again under the ownership of Steve and Susan Plaustainer of Smugglers Notch. They invested millions of dollars into the area's expansion, but the success of the area did not outpace its growing debt. The Ascutney Ski area has remained closed since 2010, while neighboring mountains, such as Crotched and Whaleback Mountains, continued to grow and improve their operations. In 2013, Mount Ascutney was auctioned to MFW Associates who, unable to reopen the ski area, had to sell the triple chairlifts to Pats Peak, and they were removed during the summer of 2014.

Future Uses

Moving forward, Ascutney Outdoors, in conjunction with Sport Trails of the Ascutney Basin (STAB), the Upper Valley Land Trust (UVLT), and the Town of West Windsor have plans to further develop the year round functionality of Mount Ascutney. AO is seeking to increase the mountain biking traffic on Mount Ascutney, and will attempt to increase the revenue brought in by mountain biking events and trail use. Additionally, an interpretive trail system will be installed in conjunction with the existing trails in an effort to make more of the mountain accessible to the community of West Windsor and AO members. AO is also seeking to invest in a non-permanent stage structure so that concerts can be hosted on the mountain. Once construction of the lodge at Mount Ascutney and a stage is procured, it would be possible for AO to host musical events that would both generate revenue for Ascutney Outdoors as well as bring more awareness in the surrounding community to all that Mount Ascutney has to offer. Finally,

AO is working with their partners to run summer camps for children in the surrounding area. Ideally these camps will be affordable and will provide a constructive place for kids in the summer, while at the same time educating local youth about the value and importance of the natural environment and its ecological systems.

Chapter One

Mountain Biking Revenue

Ricky Berman

Francesca Gundrum

Molly Kornfeind

Michael Machlin

Chapter One: Mountain Biking Revenue

1.1 Introduction

We proceed with the goal of increasing revenue through mountain biking operations at Mount Ascutney. To do so, we first examine peer-reviewed academic literature in the area of human behavior and the psychology of donation. We then consider Mount Ascutney's unique physical and financial constraints in implementing a combined onsite check-in and donation system. We propose a solution in two phases, the first phase requiring fewer technological and financial resources than the second, such that the initial plan can be implemented in the near future and the later plan at a time determined by resource availability.

We approach the task of increasing revenue beyond the most traditional method of donation collection, and consider ways to spread awareness of and excitement for Ascutney Trails in the greater New England region. To achieve these goals, we consider various avenues of promotional material, both digital and print. For the avenue of digital promotion, we propose the increased circulation of promotional videos that have been generated both by a professional recreation company and former Dartmouth College students. For the avenue of print promotion, we describe a plan to contact individual businesses and chambers of commerce in the region and offer to share pamphlets or other physical promotional materials with the relevant parties in order to facilitate their distribution of information about Ascutney Trails, with residents and visitors who would not otherwise be familiar with the trails.

Through a revamped approach to marketing and a completely new design for a donation system that can be implemented in phases, we hope to increase ridership at Ascutney Trails and encourage increased contributions per rider, all while striving for the best possible experience for trail users.

1.2 Background Literature

Extensive literature exists informing the revenue model devised for Ascutney trails. At its core, our proposed donation model seeks to capitalize on the differences in riders' willingness to pay (WTP). The literature provides unambiguous methods to increase the median rider's willingness to pay and segment the market efficiently for optimal revenue capture.

1.2.1 Active vs. Passive Decisions and Crowdout in Retirement Savings Accounts: Evidence from Denmark. Chetty et al., 2012.

In his study, *Active vs. Passive Decisions and Crowd out in Retirement Savings*, Raj Chetty utilizes an extensive data set concerning the savings accounts of Danish citizens. The 41 million observations provide tremendous statistical power and the flexibility to isolate correlated variables for active and passive savers. It was concluded that 85% percent of citizens are considered passive savers, meaning they do not alter their saving habits from the default system they are presented. Practically, Chetty demonstrates it is more efficient for employers to divert income into a pension fund, because employees will not substantially alter individual savings habits. Although citizens are aware of their employer's changes and have the option to adjust this rate, they do not offset this higher savings rate via a decrease in personal saving. The salient conclusion from this research is that the default structure of economic situations can capitalize on a person's tendency to be passive. This type of analysis is vital in the development of a donation plan for Mount Ascutney. We have designed the Ascutney Trails revenue model to establish donations as the default economic decision.

1.2.1 When Profit Equals Price: Consumer Confusion about Donation Amounts in College-Related Marketing. Olsen et al., 2003.

In Consumer Confusion about Donation Amounts, authors Olsen, Pracejus, and Brown discuss the importance of advertising/ framing the charitable nature of transactions. They indicate that cause-related marketing (CRM) is one of the most rapidly increasing trends in sales, responsible for just under 1 billion dollars in 2003 using North American data. This research applies to Ascutney Trails because AO operates under non-profit status. Additionally, revenue from the donation model will be used primarily for trail maintenance. Olsen et al determined that quantifying the contribution in terms of the cost to the consumer substantially increases the likelihood of purchase over vague descriptions (i.e. “a portion of profits will be donated to X”). Fortunately for Ascutney Trails, virtually all revenue has a charitable purpose to be advertised. In response to CRM literature, we have created signage and software that informs the rider of the charitable nature of their payment.

1.2.2 A Model for Predictive Measurements of Advertising Effectiveness. Lavidge & Steiner, 2000.

Lavidge and Steiner create a model for predicting the effectiveness of advertising through a series of reductionist theories about the fundamental purpose, functions, and implications of various marketing strategies. They hypothesize that there are three primary advertising functions that directly relate to a classic psychological model and divide social behaviors into three central components:

- 1. The cognitive component — the intellectual, mental, or “rational” states.
- 2. The affective component — the “emotional” or “feeling” states.

- 3. The conative or motivational component — the “striving” states, relating to the tendency to treat objects as positive or negative goals.

Ascutney Trails’ social media outlets can use these foundational components and/or dimensions to improve the overall quality of their passive advertisement channels.

1.2.3 Social Influence and Collective Action: An Experiment Investigating the Effects of Visibility and Social Information Moderated by Personality. Margetts et al., 2013.

Margetts et al. gauge the effects of two different types of social influences on collective action; these two types of social influences are visibility, and social information about the contributions of others. Utilizing concepts derived from game theory, Margetts et al. find that the importance of social nudging in the form of clear, visible information - in our case, in the form of positive, informational signage - has a direct impact on the behavior of potential donors. Ascutney Trails can utilize said influences when constructing signage around the proposed donation sites.

1.2.4 Improving Patron Experiences and Increasing Tips with iPad POS software. [Software Advice LLC] Justin Guinn, 2015

Lastly, our team researched the specific methods for organizing iPad POS software to accept credit and debit donations. As Ascutney Outdoors gains infrastructure and ridership, we see tremendous potential in tipping software to increase their margins. A study conducted by Software Advice, a marketing research firm, discusses specific payment screens that would maximize a customer’s willingness to pay. These include multiple tipping options and the option to select a custom amount for donation. Although the VMBA membership structure necessitates

a system tailored to Ascutney Trails, Software Advice's research has informed many layout decisions present in our wireframe designs.

1.3 Recommendations for Implementation

1.3.1 Development Plan for Onsite Donation System

1.3.1.1 Envelope dispensers and donation boxes. Riders can submit cash or checks in the envelope, record VMBA information, and place a sticker trail pass on their bike.


In designing a revenue model for the Ascutney Outdoors' mountain bike trails, we explored several variations of models in existing systems at neighboring mountain bike venues. Due to Mount Ascutney's current lack of infrastructure and growing membership numbers, we determined that a donation model would be the most effective transition to consistent revenue. With this in mind, we examined features specific to AO to inform the model.


To effectively profit from increasing ridership, we encourage the establishment of check-in locations near the two parking lots on Mount Ascutney's base. These check-in locations will serve as information hubs as well as POS (Point of Sale) stations, to collect donations and demographic information about riders. Fortunately, Mount Ascutney's geography unambiguously directs riders to these two parking areas, a prerequisite for an effective POS donation system. It is important to note that each parking lot has different levels of infrastructure and capacity, and we have designed an action plan to accommodate infrastructure advancements in the future. Members of the AO board have confirmed that AO intends to develop an Ascutney Outdoors Center at the main parking lot, to be equipped with power and wireless internet. As a result, we divided our action plan into two segments: a donation model using paper envelopes and physical donation collection, and a more sophisticated system using iPad POS software

tailored to Ascutney Trails. Both models attempt to systematically incentivize donations, maximize riders' willingness to pay, and establish donations as the default economic decision (Chetty et. al, 2012). The second phase requires additional infrastructure, supervision, and active participation from AO board members and mountain volunteers.

Phase I (PAPER): For the first phase, we have developed envelopes with printed survey questions on the reverse side to collect information from riders and to allow riders to deposit donations. These envelopes are then placed in a secure donation box that can be emptied by an Ascutney Outdoors volunteer at a convenient time. The critical features of this system are (1) the ability to securely receive donations and (2) flexibility for AO volunteers to supervise the system. In theory, no full-time AO employee is required to run this donation system. Especially at a time when revenue is relatively low, it is important to implement a convenient and low-cost system that does not require constant volunteer supervision.

The two goals of the envelope survey, however, appear diametrically opposed: convenience for riders and thorough data collection for the AO board. As the survey becomes more comprehensive, it inconveniences riders and potentially incentivizes them to skip parts of the survey or not participate at all (Guinn, 2015). Therefore, after consultation with AO board members and groups involved with data collection, we highlighted the most important questions. Our proposed survey attempts to maximize utility for the AO board's data collection efforts, while maintaining simplicity for riders. This meant removing redundant questions and formatting the survey logically:



VMBA Membership	Activity	Support Mt. Ascutney
<i>(Check all that apply)</i> <input type="checkbox"/> STAB/AO Primary Chapter <input type="checkbox"/> STAB/AO Secondary Chapter <input type="checkbox"/> Other VMBA Chapter <input type="checkbox"/> Family Membership <input type="checkbox"/> Non-Member	Today's Date: / / <input type="checkbox"/> Bike <input type="checkbox"/> Hike <input type="checkbox"/> Run <input type="checkbox"/> Horseback Riding	STAB/AO Secondary Member <input type="checkbox"/> \$5 (Suggested Donation) Other VMBA/ Non-member <input type="checkbox"/> \$10 (Suggested Donation) Other Amount <input type="checkbox"/> \$: ____ (Cash, or Check to "Ascutney Outdoors")
Visitor Info Name: _____ (Number in Party ____) Gender: M <input type="checkbox"/> F <input type="checkbox"/> Other <input type="checkbox"/> DOB: / / State/Province: _____ Email: _____	Mountain Biking Level <input type="checkbox"/> Beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> Advanced <input type="checkbox"/> n/a	Want to Become a STAB/AO Member? <input type="checkbox"/> Yes! <input type="checkbox"/> Maybe Later...

Ascutney Outdoors
 PO Box 101
 Brownsville, VT 05037
info@mountascutneyoutdoors.org

- **VMBA Membership:** Provides AO with information the membership distribution among trail users, including the proportion that selects AO as their primary chapter.
- **Visitor Info:** Allows AO to match VMBA membership information with a specific person or family. Provides demographic information about Mount Ascutney's popularity and sphere of influence. Prevents riders from cheating and claiming membership.
- **Activity:** Provides information about trail use. Informs maintenance needs.
- **Mountain Bike Level:** informs future trail development and maintenance needs.
- **Donation:** Suggesting specific donation values provides a psychological anchor for contributions and increases the likelihood of donation (Guinn, 2015).
- **Email:** Allows non-members to sign up. While direct donations to Ascutney Outdoors are vital for operational revenue, we recognize the increased multiplier of VMBA

membership dues. AO volunteers can email riders after their Mount Ascutney visit with a link to the membership signup page. (Stussy [phone call], 2017)

Ultimately, the envelope donation system is designed to function for as long as necessary. We urge the AO board to adopt iPad POS software only when infrastructure requirements are met. iPad POS software has the potential to substantially increase tipping margins and check-in participation, but incurs higher operating costs and risk.

1.3.1.2 iPad POS software automates the donation model. Using strategies discussed in the literature, we present wireframes developed using software called Balsamiq.

After the initial stage of implementation using envelope dispensers and donation boxes, we propose a plan for the next stage of implementation. Once finances and physical constraints allow, a more technology- and infrastructure-intensive system will be implemented, with dual purpose: to (1) facilitate donations through the aforementioned revenue model and (2) record ridership and demographic information about trail users in order to inform trail maintenance and development. The latter can be accomplished passively through the active collection of information at a “check-in” station using an Apple iPad tablet.

With the background literature about donation aptitude and human psychology as context, it is essential that the user experience for checking in at Mount Ascutney is as streamlined and painless as possible. This will ensure that guests can get out on the trails quickly, keeping them happy and incentivizes more generous giving to Ascutney Trails. This will also help reduce failures to check in, either due to lack of intent to donate or impatience.

Collecting donation payments onsite can be accomplished with an Apple iPad and proprietary software. Although existing payment platforms such as Square allow businesses to charge customers' credit cards quickly and easily, they require a full-time employee to operate the iPad like a traditional point-of-sale (abbreviated POS) system. With Square, the cashier creates an itemized selection of each customer's purchases before completing the sale by swiping the customer's credit card and turning the screen to allow the customer to sign and add optional gratuity. As previously mentioned, the psychology of human consumer behavior reveals that a significant amount of additional revenue can be captured during the optional tip section of this type of transaction (Guinn, 2015). We plan to take advantage of this learning in our system design, while keeping in mind the need for an unmanned iPad application that differs from Square's use case.

With this inspiration in mind, a solution for checking in at Ascutney Trails, validating rider membership, and tastefully soliciting donations emerges. An iPad could be situated at both of the mountain's major trailheads that serve as initial access points for guests. Each would be labeled as a check-in station, and ask the trail user to complete a simple questionnaire with their information. Based on this information, a donation could be requested for those riders who are not registered members of VMBA, or who are VMBA members with their primary chapter designated elsewhere. For those with Mount Ascutney as their primary chapter, an optional donation would be possible, with the expectation that many would donate just as humans tip more regularly when presented with the option during a Square transaction (Guinn, 2015).

A few logistical challenges lie in the way of the implementation of this system for checking in mountain bikers at Mount Ascutney. Most notably, wireless internet and a source of power are necessary to continuously operate an iPad, in addition to relatively frequent charging

and an internet connection to complete credit card transactions. While a POS application could be used offline to record purchase information, it would still require an internet connection to complete the accrued offline transactions, which would require an individual to remove the iPad and bring it to a location with internet fairly regularly. Furthermore, without power in place, a solar charger or other source of power would be required, which compromises the reliability of the iPad system as opposed to a steady source of electricity.

Once electricity and wireless internet are available, an iPad-based system can be implemented to check in riders and facilitate revenue collection. However, as previously mentioned, the Square application is designed for use by a business employee who creates itemized invoices before the customer completes the purchase. The station at Mount Ascutney would ideally be unmanned, reducing the need for paid or volunteer labor to check in riders. Leaving an unmanned iPad running the Square application creates a privacy risk in that individuals could potentially see the invoices and other personally identifiable information (PII) about previous visitors, which poses a security risk and significant source of liability for Ascutney Trails.

With these considerations in place, our recommended solution includes a proprietary system that would both negate the need for wireless internet and protect the identities of trail users. We propose an application with the following user flow. When checking in, trail users will complete a simple survey with their information, including demographics, party size, membership status, type of activity, and skill level. They will then enter their email address. When convenient, a representative of Ascutney Trails will bring the device off-site to a location with internet, and the collected information can be used to send an auto-generated email to each party. This email will either solicit a suggested donation or allow for the possibility of an

optional one, depending on the user or party's member status. As possible, the system will recognize previous trail users when they enter their name at the trailhead, and use this saved information instead of requiring a complete new entry.

This solution will solve both the physical and information security concerns of using the Square application for payment processing. Further, it will reduce the burden of payment at the time of activity, instead providing the opportunity to reflect upon the experience and hopefully reward a positive experience with a generous donation afterward. By reducing the time necessary to start using the trails, we hope to create a painless user flow and encourage donations.

Using Balsamiq, a wireframing application, we designed the structure of this iPad application, delineating the most important visual features and an initial concept of their layout. These wireframes can be used by a software engineer to implement our solution at the iOS application level, simplifying the process of implementing an iPad payment system once the physical infrastructure is available.

Upon reaching the trailhead, trail users will be greeted with the following welcome screen on the iPad:

Welcome to Ascutney Trails
Please Sign In

STAB/AO Primary Chapter

STAB/AO Primary Chapter

Other VMBA Chapter

Non-Member

Ascutney TRAILS

SPORT ASCUTNEY TRAILS BASIN

Ascutney OUTDOORS

They will then select their membership status and see the appropriate screen from the following:

< Back STAB/AO Primary Chapter

Name: Date of Birth:

☐ Male ☐ Female ☐ Other

Party Size

State/Province

Activity

☐ Bike

☐ Hike

☐ Run

☐ Horseback Riding

Q W E R T Y U I O P


A S D F G H J K L return

z x c v b n m ! ?

.?123 .?123

iPod 09:35 PM

< Back **STAB/AO Secondary Chapter**


Name: Date of Birth: / /  Activity

☐ Male Party Size



☐ Female State/Province


☐ Other

☐ Bike
☐ Hike
☐ Run
☐ Horseback Riding

Q W E R T Y U I O P 


A S D F G H J K L return

 Z X C V B N M ! ? 

.?123 .?123 

iPod 09:35 PM

< Back **Other VMBA Chapter**


Name: Date of Birth: / /  Activity

☐ Male Party Size



☐ Female State/Province


☐ Other

☐ Bike
☐ Hike
☐ Run
☐ Horseback Riding

Q W E R T Y U I O P 

A S D F G H J K L return

 Z X C V B N M ! ? 

.?123 .?123 

The image shows a tablet screen with a form titled "Non-Member". At the top left is a "< Back" link. The form fields are as follows:

- Name:** A text input field.
- Date of Birth:** A date picker with slashes (/ /) and a calendar icon.
- Gender:** Three checkboxes labeled "Male", "Female", and "Other".
- Party Size:** A numeric input field with up and down arrows.
- State/Province:** A dropdown menu.
- Activity:** Four checkboxes labeled "Bike", "Hike", "Run", and "Horseback Riding".

Below the form is a virtual QWERTY keyboard with a ".?123" key and a "return" key.

After entering their information, the user will see a screen with an “Optional Donation” amount tailored based on their membership status. A VMBA member with Mount Ascutney selected as their primary chapter will have the option to donate but no suggested amount. A secondary chapter member will see \$5 as the suggested donation, and a member of another VMBA chapter or a non-member will see \$10 as the suggested donation. The latter two categories will also have the option to become a member at this time, with those prices differing depending on membership type (individual, family, or high school) as well as chapter designation (primary or secondary).



As aforementioned, an initial implementation of this system would generate an email based on the visitor's selections when connected to the internet, moving the payment step offline and allowing for further donations after a hopefully positive experience at Mount Ascutney. If payment is eventually conducted onsite and the user decides to make a donation, they will be directed to a payment portal that operates like a Square system, prompting them to swipe (or insert) their credit card and sign. It will then show the following thank-you message before resetting for the next user's check-in:



1.3.2 The successful implementation of these models is dependent on donation site visibility. Signage has the potential to change social behavior.

Both of the above proposed donation models are contingent on our team's ability to clearly and visibly direct visitors to the donation box or POS system. Throughout our research, it has become clear that signage is important to encouraging positive social behavior to support donation-reliant non-profits. These strategies employ sound methods for augmenting the power of social influence and thus collective action (Margetts et al, 2013). In order to nudge Mount Ascutney users to donate, we will create two signs to be displayed directly above the black, metal box that reads "Donation" that will be placed on the side of the mountain's primary messaging board. Currently, this board houses a handful of materials regarding the mountain's attractions and liability documents. Some of the most prominent messages on the board are a now-outdated trail map, a liability document beginning with "USE TRAILS AT YOUR OWN RISK", and a small welcome sign.



It is imperative that we create a welcoming environment for Mount Ascutney users in order to ensure they have an enjoyable experience at the mountain and choose to donate during their visit. Our team plans to add two signs to the current message board: a welcome and a donation sign. The welcome sign will be placed over the topmost and/or bottommost beam of the messaging board; an example appears as follows:



The donation sign will be placed directly next to both the donation slip box and donation box and will appear as follows:



Our team has chosen specific language and imperative sentence structures to encourage users to donate. We believe that these simple, colloquial, aesthetically-pleasing signs will nudge even infrequent donors to fill out a donation slip. Our team is working with talented, award-winning artists at Dartmouth College and a local lumber company to make both of these a reality.

1.4 Digital Marketing

1.4.1. Plan for social media and website exposure to marketing film.

As previously mentioned, our team recognized the importance of increasing overall traffic to Mount Ascutney. From conversations with AO officials, it became clear that the majority of riders learn about Mount Ascutney through word-of-mouth. Approximately three

years ago, AO and their partners produced a map and pamphlet in order to advertise the trails - both of which are now outdated. Instead of promoting the trails on their website (ascutneyoutdoors.org), AO focused on producing high-quality maps and selling them at a variety of bike shops and chambers of commerce throughout New England. Our team raised concerns about this mode of revenue production due to the ease of circulating the map online after purchase, which could disincentivize riders from purchasing these maps. In addition to said maps, AO reaches their audience more frequently via social media platforms like Facebook and Instagram, and expressed a desire to expand their social media presence further and help their website gain more traction.

In informal interviews with DMBC members, it has become apparent that most riders rely on activity tracking apps such as Strava and promotional videos of mountain biking trails to discover new places to ride. In November 2016, GearJunkie, a prominent outdoor news and product review company, produced a brief promotional video for the mountain titled *Ascutney Rising - Mountain Bikers Revitalize Vermont Ski Area* (GearJunkie.com, 2016). The video features interviews from GearJunkie representatives, AO and STAB officials, and local riders. The video is of high production value and features a variety of mountain bikers utilizing the trails as well as scenic footage of the mountain. Unfortunately, the promotional video has only been viewed approximately 1,000 times. Additionally, in 2016 Dartmouth students developed a promotional video for the mountain that was both informative and high quality. This video has yet to be circulated on social media outlets.

Our team believes that the Ascutney Trails Facebook page provides the most accessible, sustainable form of advertising at no cost to Ascutney Outdoors, and we anticipate that the increased circulation of said promotional videos will encourage riders to explore Mount

Ascutney (Lavidge & Steiner, 2000). In conversations with AO board members, it has become clear that the Ascutney Trails page is managed by three individuals. These individuals post updates on average 2-3 times a week, and most posts receive a somewhat limited response from Facebook users. The page currently has approximately 3,500 “likes.” In order to increase traffic to the page, our team advises that the page be managed more actively and that AO utilizes Facebook’s potential for low-cost, high-quality advertisements during peak seasons by circulating videos and photographs.

Our ultimate goal is to create an accessible and exciting advertising platform that will reach new audiences in New England and beyond. If these promotional videos are dispersed consistently and efficiently to email lists, affiliated websites, and social media pages, we expect more mountain bikers to explore Mount Ascutney’s trails.

1.5 Local and Regional Information Distribution Plan

1.5.1 Pamphlets, maps, or digital media to be distributed among bike shops, general stores, chambers of commerce, schools, and universities. Medium will be selected based on feedback from surveying these partners

Our final recommendation to increase revenue for AO includes a plan to reach out to mountain-biking related businesses in the greater New England area. By contacting and creating a partnership with these businesses, popularity of the mountain and membership numbers will likely increase. Through a survey we created, we will learn what medium of promotion these businesses use to encourage customers to select their mountain biking destinations.

The first step in this process includes finding these businesses and creating partnerships with them. Bike shops, general stores, and chambers of commerce, as well as institution such as

schools and universities are all targets where these partnerships would benefit AO's revenue stream. At these locations, information could be dispersed through a variety of different media, such as pamphlets, maps, or digital media. Pamphlets would give a general overview of what Ascutney Outdoors, Ascutney Trails, and the affiliated groups offer, including, but not limited to, mountain biking, promotional events (i.e. concerts) and camps. Digital media options include the previously mentioned marketing film and other video footage or pictures that AO can access.

1.5.2. Plan for increasing exposure in the greater New England area by distributing this information

After these connections are established, our survey will be administered over the phone or in-person to guide AO toward their next step. By utilizing our survey, AO can hone in on how, to whom, and where they need to advertise their mountain biking trails as well as membership options. Once they receive feedback on how best to reach our intended audience through these businesses, AO can generate and distribute the best type of media for this outreach.

1.6 Methods

1.6.1 Peer-reviewed academic literature

1.6.2 Surveys (local businesses and institutions)

We compiled questions to create a survey meant for local businesses in order to gather information on how to best promote Ascutney Outdoors and their mountain biking trails. The questions are as follows:

- Do you promote mountain biking or ski mountain locations in your store?
- If so, is there a method that works best from your experience? Pamphlets? Maps? Digital media?

- How do your customers generally decide where to mountain bike?
- How do you choose mountain biking locations to recommend to customers?
- Is any promotion from your business word of mouth?
- Are you familiar with Ascutney Trails?
- Would you be willing to distribute informational materials about Mount Ascutney?

1.6.3 Case studies: Conversations with VT ski shop, Skirack, and with prominent recreation center, Kingdom Trails Association.

We contacted an equipment manager at Skirack, an outdoor sports store in Burlington, Vermont, and interviewed him about the store's current partnerships with mountain biking areas. Through this conversation, we determined that the preferred method of advertising is through Skirack's website. This mutualistic relationship promotes Ascutney, while increasing demand for riding and rentals in the bike shop.

Additionally, we spoke with Tabitha Bowling, the treasurer at Kingdom Trails in East Burke, Vermont, about the organization's revenue model. Since they have become a large-scale operation, Kingdom trails has shifted from the traditional VMBA membership model to a proprietary system of day and season passes, incorporating a unique financial partnership with VMBA. Ultimately, Kingdom Trails made the move to a pay-to-play revenue model as a result of their infrastructure and ridership. Kingdom Trails also uses a proprietary POS system with multiple iPads that allow riders to sign insurance waivers and check in upon arrival. Since Kingdom Trails employees do not monitor riders on the trails to confirm their purchase of a day or season pass, they operate on the honor system. According to Bowling, those who cheat the system are an overwhelming minority. Kingdom Trails' ridership has increased from approximately 5,000 day passes in 2004 to approximately 35,000 in 2016 with 100,000

membership visits. These guests are geographically and socioeconomically diverse, and their activities span all those offered by Kingdom Trails. Ultimately, Kingdom Trails' pay-to-play system serves as a leading example for AO, but only after the requisite infrastructure and ridership is accrued. As a result, we recommend our two-phase VMBA donation model instead of a pay-to-play system.

1.7 Conclusion

In order to increase revenue from mountain biking operations at Mount Ascutney, we analyzed existing donation systems, reviewed relevant academic literature, and designed and proposed a new system for donation collection that can be implemented in two phases as physical infrastructure and financial resources allow. We designed mockups of a paper donation envelope to be used in the first phase and an iOS application to be used on an Apple iPad for collecting donations in the second phase.

In conjunction with the implementation plan, we researched methods of effectively directing trail users to a combined check-in and donation station, and determined that well-designed signage was both effective and necessary. We designed and then built a sign to be placed at the trailhead, partnering with talented artists and a local lumber company for artistic assistance and materials, respectively.

Beyond maximizing donation collection through a well-designed system that promotes a positive experience for the trail user, we sought to increase ridership through digital and print media exposure in the greater New England region, in addition to word-of-mouth information dissemination about Mount Ascutney. We surveyed local bike shops and interviewed a member of the board of directors of the Kingdom Trails Alliance, a preeminent example of a successful mountain biking location that transitioned from a donation model to a pay-to-play model as it

scaled. The results of these discussions will inform how best to spread awareness of Ascutney Trails going forward.

Altogether, our hope is that the implementation plan and deliverables will allow Mount Ascutney to generate sustainable revenue from mountain biking operations while providing a great experience for trail users from the local community as well as the greater New England area. Our team is excited to watch the progress of the mountain as these plans are implemented and beyond.

Chapter Two

Camps & Events

Tegwyth Alderson-Taber

Jessica Caron

Adam Philie

2.1 Introduction

Vision: Our vision is to encourage recreation in the Ascutney conservation area that both promotes youth education and generates revenue for Ascutney Outdoors.

Ascutney Outdoors (AO) maintains an incredibly dynamic resource in their land base. The 1,700 acres of forest land and trail networks has massive potential to engage local and further reaching communities in outdoor sport, recreation and education. AO has a goal of increasing the use and benefit of this resource, and have been tasked by the Town of West Windsor to control the development and management of recreational and educational aspects of the resource. As it stands, the Ascutney area offers great benefits to its users, though it has the potential to increase its impact. As a budding conservation success story, the mountain is an educational exhibit in community managed conservation and recreation in New England. Its rich biodiversity in the wake of its history of use lends it to provide an important biological resource and exhibit. Many are engaged in sports and recreation at the mountain, but there is an area of potential growth in youth education and recreation.

Youth education and recreation can take many forms, but one of the most effective is youth camps. Mount Ascutney and West Windsor Town Forest combined are an ideal space for youth programs that encourage recreation, health and environmental education. There is a significant amount of work required to effectively run a camp, and, to do so, a strong base and proper infrastructure are needed. As AO grows from its early stages, it can achieve this goal of promoting youth education and recreation through camps and programs. Creating an effective camp program is a process that occurs over a number of years. The first camp will never be perfect, and it will be important for AO to reflect on each program, through feedback from campers, parents, and counselors. As Ascutney Outdoors maneuvers this process in the future,

they will increase their impact within their community and provide an important service for children in the area. By engaging children and fostering connections with the mountain, AO will help to ensure a future that is marked by the same enthusiasm and volunteerism within the local community.

To contribute to achieving AO's camps vision, we provided them with three deliverables. Recognizing that Ascutney Outdoors may be a few years away from independently running camps, we sought to take steps to prepare AO for that moment. First, we provided a set of guidelines to restructure a page on AO's website to better attract currently operating camps and schools to make use of the space. Second, we developed a database of day camps in a 1.5 hour driving radius of Mount Ascutney and then planned a pilot camp, providing AO with an outline of a camp that could be executed as an initial program when they are prepared to do so. As part of the pilot camp planning process, we worked with two potential camp partners, specifically STAB and The Climb Fitness Center.

2.2 Website Recommendations

2.2.1 Summary

To promote youth education, AO needs to continue to welcome already-established institutions to the mountain. The space is a living classroom that can be tailored to a number of different educational fields. We believe that the first step in promoting this interaction and use of Ascutney is altering the website to better express the potential of the space. Currently, Ascutney's website has a page for education, where it states that its vision is to "provide a welcoming environment for local conservation and science organizations to host informational and educational programs." There is an event resources page that states that AO welcomes "like-minded groups and organizations to consider hosting an event at Ascutney Trails. The trail

network, surrounding acreage and adjacent Town Forest land offers diverse terrain for recreational, environmental and educational events for all ages.” Through a few simple alterations, AO could position itself in a stronger way, attracting these like-minded organizations. Representing the space effectively on the website may contribute to an increase in engagement with established schools and youth camps. This would increase contact and interaction with the mountain in both recreational and educational capacities. We found that in taking on this task, we would move beyond only promoting engagement youth organizations, and in that way the scope of this deliverable was altered slightly.

Ascutney has the potential to host numerous different organizations and events. Along with being a space for education (collaboration with local schools will increase in the coming years as well), it often hosts sports events that raise money for non-profits. It is difficult to grasp the immense value of the mountain (especially as an educational resource), without visiting and knowing the mountain. Being able to increase the awareness of Ascutney's potential as an event/educational space will be crucial to increasing engagement with organizations, including youth organizations. This also provides a chance to monetize the space and earn income from its use. It would be a fairly hands off and low investment process.

2.2.2 Literature Review

Ascutney outdoors occupies an interesting space as a non-profit that is run by volunteers and donations. It is fueled by an immense amount of goodwill, volunteerism and a communal love for the mountain. Despite this, it is still tied to greater economic forces. When looking at increasing use of the mountain as an event space, it is important to consider business tactics that yield increased production. Focusing on marketing, Ascutney can increase its business and improve its position. The book *Marketing Management* by Kotler and Keller states that “

"Finance, operations, accounting, and other business functions won't really matter without sufficient demand for products and services so the firm can make a profit....Thus financial success often depends on marketing ability." While AO is a non profit organization, it is important for them to remain viable financially, and use of their space as an event space can help this. "Marketers market 10 main types of entities" and two of those are places and organizations. Ascutney Outdoors effectively markets its organization, telling its story through different media outlets, connecting with its member base. We believe that yin the realm of the mountain as an event space, slight changes in marketing tactics could yield positive results. Kotler and Keller explain different types of market demands, and we believe the market is currently in a latent demand state where "consumers may share a strong need that cannot be satisfied by an existing product." With this in mind, we hope to use the website to tap into that demand, and present Ascutney to a market that would make use of its resources.

In "*Market Segmentation, Target Market Selection, and Positioning*" Sarvary and Elberse explain that positioning is a "marketer's effort to identify a unique selling proposition for the product. It is arranging for a product to occupy a clear, distinctive, and attractive position relative to competing products in the minds of target consumers." They explain that to best position a product or service a company needs to ask three questions: "Who are the customers? What is the set of needs that the product fulfills?" and "Why is the product the best option to satisfy those needs?" They explain that to be well positioned, a company must consider "how it would approach serving that group of customers, and how it would want to be perceived by those customers." These insights offer guidance for the process of altering the website. Ascutney Outdoors would benefit from positioning itself in a slightly different manner. Specifically it may help to consider how it would want to be perceived by organizations that would hold an event

there. We want to use this idea of positioning to guide suggestions for altering the website so that potential customers can better understand Ascutney as a space to engage with (as an educational space, a space for endurance sports, a space for fundraising, etc).

Donlan and Crowther explore the significance of sponsorship-linked events, explaining the value a sponsor can get through an event such as one that could be held at Ascutney. They state “Hosting specifically designed events affords sponsors an increased modicum of control over consumer–brand experiences in sponsorship environments characterized by a lack of control over sponsored property actions.” There is an incentive for organizations to interact with participants, and AO can use their website to position themselves as a prime space for such an interaction. With its wealth of possible activities, there is a wealth of brands that may be interested in taking part in events at Ascutney. Along with this, the space offers a place for local businesses and organizations to connect with consumers via events.

2.2.3 Methodology

Creating suggestions to reposition Ascutney began with researching positioning practices. We then looked at the website to understand how Ascutney has positioned itself as a space for organizations to use. We consulted with professionals in the marketing space and came up with a plan to modify the website to better suit AO's position. We built off of last year's project, suggesting the use of their videos and photos for the website, and we consulted with the website manager to ensure these changes could occur.

2.2.4 Deliverables

We assembled a document with suggestions for Ascutney Outdoors to revise and revamp certain spaces on the website (see Appendix A). We suggest that the “Event Resources” page

undergo the largest transformation, and act as the space from which AO positions the mountain as a space for multiple types of events/engagements. We suggest that both the “Arts” and “Education” pages display links to the “Event Resources” page, directing interested parties to inquire about running an event on that page.

The suggestions for the “Event Resources” page come from a traditional and widely used marketing tactic. Speaking with marketing professionals, it was determined that the best way to position the resources the mountain provides to organizations was to provide samples. Examples of sampling range from traditional grocery store food samples to test driving a car. Ideally, key decision makers for organizations that would engage with Ascutney would physically experience the things the mountain has to offer. Not all can do this though, so Ascutney would benefit from providing a sample through their website. The suggestions for the “Event Resources” page mirror this idea.

The page should be segmented by the different types of events that are possible at the mountain. Here, Ascutney positions itself, choosing to occupy the role of a space for charitable bike/running races or the role of a living classroom or even the role of a concert venue. Within each space/role that Ascutney chooses to portray, there should be a well worded value proposition statement. Each statement ought to explain the aspects that make Ascutney an ideal venue for such an event. These statements should point to the physical attributes of the space, providing a mental sample to potential organizations. Along with this, samples should be provided in the form of media. Visitors to the “Event Resources” page ought to see examples of the space. Providing this sample for web page visitors will allow them to understand the possibilities and visualize how their organization could benefit from an event at Ascutney.

2.3 Camps Database and Pilot Camp Program

2.3.1 Summary

Outdoor community based organizations, like Ascutney Outdoors, have a duty to the community of which they are a part to serve the people in a way that aligns with their organizational mission and the needs of the community. One way AO has decided to do this is by focusing on children and their overall wellness and education. Getting children outdoors at an early age has been found to positively affect attention functioning, motor development, stress reduction, and creative thinking (Moore, Cosco 2014). AO plans to create summer outdoor day programs that are low cost, high quality and educational.

To identify niche programs for AO and to better understand the day camp landscape in the area, we started by developing a camps database that lists important information about the day camps within a 1.5 hour driving radius of Mount Ascutney (see Appendix B). This data informed our pilot camp planning process and may help inform future camp planning by AO. Because AO is in its beginning phases, it is currently not possible to create a camp catalogue only run by AO, so we created a pilot camp program, based on a partnership with Sport Trails of the Ascutney Basin (STAB). The pilot program design focuses on mountain biking for young children aged 8-11 while also providing environmental, fitness and health education (see Appendix C). This pilot program is something that is not set in stone and will just be an idea what a camp like this would look like if AO ever decides they are ready to continue with this idea. We understand that once this plan is in place, times will have changed and resources available to AO and STAB will have changed, so the program outline is designed to be as flexible as possible.

2.3.2 Literature Review

Exposing children at an early age to outdoor education and increasing the time they spend outdoors has been shown to positively impact their health, education, and life among other things. The amount of time that children in the United States spend in primary and secondary schools is about 980 hours. In addition a child attending a full time childcare program spends around 1500 hours per year at the program (Moore and Cosco 2014). Increasing their exposure to the outdoors and nature during this time is critical to improve attention functioning, motor development, stress reduction, and creative thinking in children and young adults of all ages (Moore and Cosco 2014). This is especially important today because young people are spending more and more time indoors with technology. One researcher, Louv, coined the term “nature-deficit disorder” to describe the physical and psychological consequences associated with the absence of “authentic outdoor experiences” during childhood and early adolescence (Larson, Whiting and Green 2013). Research suggests that young people who spend a significant time engaged in recreational activities outside of school typically earn higher grades (Larson, Whiting and Green 2013).

Spending time outdoors and in nature during developmental years not only increases cognitive behavior but has also been shown to foster environmental behavior later in life. Studies have shown that positive associations with outdoor settings developed during childhood, especially before the age of 11, are among the most significant predictors of adults’ pro-environmental ideas and beliefs and their increased outdoor recreation participation (Larson, Whiting and Green 2013). It is becoming increasingly important to encourage and promote outdoor recreational time in any way possible, including fun and engaging camp programs.

Not only does outdoor play in young people increase a child's cognitive development and growth but it also improves health-promoting physical play and motor skills, such as running, jumping, and throwing, which has been linked to bone development and bone strength in later life. It is not just being outdoors that benefits children though, they need to be surrounded by vegetation and natural elements. Children who regularly play in outdoor environments that contain trees and other vegetation show signs of more advanced motor fitness - including coordination, balance, and agility. These kids also tend to be sick less than children who do not regularly play outdoors.

2.3.3 Methodology

To learn about the local summer day camp market, we conducted a review of summer day camps within a 1.5-hour radius of Mount Ascutney. We used camp websites to collect information on camp activities, session length, camp size, day length, extended care programs, cost, age groupings, discounts and scholarship availability, and other similar categories. This database is available in an Excel format and was distributed to our primary community partners, including AO board members, UVLT, and STAB.

There are a number of directions to take a youth camp, and the first step was making that choice. Considering the lack of established infrastructure within Ascutney Outdoors, we looked to partner with an existing establishment to plan a pilot camp. We surveyed possible local partners, and engaged in discussions with the Weston Playhouse and with STAB. In our discussions and interactions we factored in the likelihood of establishing a successful camp, the partner's willingness to be involved and engaged, and Ascutney Outdoors' interest in each partner. STAB was decided upon with our community partners as an exciting partner.

There was further research that contributed to the choice to run a mountain biking camp. We conducted discussions with local youth camp professionals and investigated the market for such camps, finding it to be an underserved market. Our STAB partners put us in contact with local resources to begin to plan such a camp, and we made contact with a local fitness center, and places to secure bike rentals.

2.3.4 Deliverables

The first of these deliverables is a camp database. Our group surveyed camps within a 1.5 hour driving radius of Mount Ascutney to better understand the camp market. We identified 87 youth camps and recorded the following: camp name, website, location, variety of activities, dates, dates and hours, age groups, cost, availability of scholarships, size, admission deadline, distance from the mountain, whether lunch was provided, and contact information. Among these 87 camps were only 4 that provided mountain biking, all of which were 40+ minutes from Mount Ascutney. Our group used this database as we planned a pilot camp, working to create a unique plan. The hope is that this database can aid AO as they plan for their future. The database offers the ability to analyze and compare camps and different aspects of these camps. This should help AO with planning for future camps.

The second deliverable is an extensive document that outlines the pilot camp program that we planned in conjunction with our community partners. Ascutney Outdoors is not ready to independently run a camp program, so we worked to take steps to prepare for that moment. With our community partners, our group decided that the most meaningful contribution to the goal of an Ascutney Outdoors run youth camp program was to provide a pilot camp. The pilot camp is intended to act as a 'skeleton' of sorts. Through this skeleton, we have identified an effective course of action that AO could take in the near future to initiate the process of implementing a

camp program. We have laid some of the groundwork that would go into creating a camp, and have provided AO with a document that identifies areas where decisions will need to be made and objectives that will need to be accomplished to run a pilot camp. Of the many things Ascutney Outdoors needs to consider when running a pilot program, some of the keys are creating a low-risk environment where AO has little chance to lose money or damage its reputation. AO must view this pilot program as a trial run, and as a first step to build off of.

We recognized that AO would be better suited to begin the process of creating an effective camp program if it began operations with a partner. Running an initial camp program with a partner allows Ascutney Outdoors to begin the process of creating an effective camp without being completely prepared to do so independently. Our group and the community partners felt that this would better prepare AO to run effective camps that served both the community and AO as soon as they were able to run a program independently. Obtaining a partner also presented the possibility of more infrastructure, experience and ability to effectively begin a camp.

Because Mount Ascutney has recently decided to focus its efforts on creating amazing mountain bike trails, we agreed that a mountain bike camp would be a perfect fit for both AO and the mountain itself. Mountain biking camps for young children are also hard to find in general but especially in this area. There are only two camps in a one hour radius of Mount Ascutney that focus on mountain biking. Once we decided on a focus we could continue our search for the perfect partner, and we came across Sports Trails of Ascutney Basin (STAB). STAB is already closely partnered with AO, and members of the STAB board have experience running adult mountain biking clinics.

The planned pilot camp has three facets: sport, conservation ecology, and alternative athletic education. These three areas provide a well-rounded, wholesome camp that will have the ability to keep children engaged without losing their attention. It is attractive to parents, children, and AO because of this variety including the educational aspects to the camp. Through our market analysis of youth summer camps, we identified only 12 of the 88 surrounding camps as educational in nature. Of these, none of the camps mixed sports recreation and education. Some involved hiking and nature exploration, but none focus on learning and improving in a skill-based sport such as mountain biking.

The camp should serve to give kids a chance to become more confident on their bikes. Camp staff will teach mountain biking skills and techniques and work with campers to improve through the week. The mountain offers a huge variety of trails for many different skill sets and the camp ought to be open to all skill levels. To help balance the mountain biking agenda and provide an educational experience, the pilot camp ought to include various sessions that cover basic bike maintenance. This curriculum can differ depending on age and ability as well. Some possible topics to cover are changing and patching flats, cleaning and lubricating bike mechanisms, and tuning bike gears and breaks (for older and more able groups). The hope is that while riders increase their confidence on the bike, they will also increase their awareness and understanding of their bikes and how to take care of them, and there are many ways to make this topic fun and interesting.

The second facet is meant to both engage campers in an academic sense while connecting them to the mountain. If campers can engage in mountain biking, experience the fun, and get to know certain trails and areas of the mountain, this will elicit a sense of connection to place. This can be fostered by camp staff as well through a number of different ways. As campers become

more knowledgeable with the space, and more connected to it, the story behind Ascutney Outdoors and the acquisition of the mountain will hopefully resonate with campers. Through storytelling, camp staff can portray the vision of the original AO members as they decided to tackle this massive feat. Hopefully, through this place based connection, camp staff can instill and teach the principles of AO that have led to such incredible, community-centered management of the mountain. Camp staff can instill AO's values through teachings like the leave no trace mentality. Campers ought to learn what an invasive species is and take part in removal of various species found. A past ENVS 50 class has provided AO with an invasive species field form. Using this as a model, and catering the data collection process to different ages, campers can engage in important field work to gather data on the mountain.

Ascutney's story moves past ecology and conservation though, and for campers to truly engage and understand the mountain, education in recreation will be important as well. A love for outdoor recreation has kept this mountain the incredible space that it is, and recreation fuels the hope for an increase in tourism revenue within the community. Campers will learn about the importance of recreation at the mountain, and the hopes for the community that accompany an increase in mountain use. A hands on way to teach this is through trail maintenance activities. Keeping with the active nature of the camp, it would be effective to incorporate actual trail maintenance and perhaps foster creativity through a trail design curriculum. An effective way to foster a connection with the mountain, while maintaining a mountain-biking theme is to have campers make a physical impact on the mountain. Trail maintenance could achieve this.

The last aspect of the proposed camp involves a partnership with The Climb Fitness Center that is located within the resort. Erin Kershaw, the manager of the Climb Fitness center and a STAB board member, is an enthusiastic advocate of a possible camp partnering with the

fitness center. The fitness center offers numerous resources for the camp, and provides even more variety for campers. There are two different aspects of The Climb that are appealing to a pilot camp. The Climb offers physical spaces and resources, and Erin and her team offer invaluable athletic educational resources. Campers will be able to enjoy the pool and basketball and tennis courts. Erin and her staff can provide fitness and health training to campers. Campers would be given the tools to train specifically for mountain biking and for every day help. Along with this fitness training, campers can make use of nutritional education, learning how to make healthy food choices every day.

The most important thing to understand when looking at this framework is the flexibility that it entails. Here, three facets of camp (mountain biking, education, and The Climb) have all been described. The potential of each has been explored. The amount of activities and ideas described here serves as a jumping off point for AO and STAB. It will be important for AO and STAB to take these ideas and cater to the specific group they choose. Even if each aspect of the curriculum were to be included in a pilot camp, camp staff can control the pace of the camp, to cater to ability levels and campers desire. Engaging with all three aspects of the curriculum provides a multi-tiered experience that will appeal to kids and parents based on variety and scope. The camp is meant to welcome all levels of fitness and mountain biking skill, and the variety of physical activity must be marketed with fun as the common factor. Camp staff will need to connect well enough with campers to understand their experience, and cater the pace, intensity and activity length to maximize fun and learning. To better understand this balance, AO and STAB should provide feedback forms at the end of the week for parents and campers.

Lastly, we developed a rough “To-Do” list, outlining the decisions that still need to be made to actually launch a pilot program. We provided research on ensuring the safety of camp

staff, reducing liability. We conducted research on liability insurance plans, suggesting a specific plan. We discussed staffing, pricing and bike curation. We also expanded on ideas of marketing, suggesting that AO and STAB should join forces with The Climb Fitness Center to reach as many people as possible when advertising for the camp program.

Chapter Three

Interpretive Trails

Meghan Christie

Charles Mack

Foreste Peterson

Ryder Stone

3.1 Introduction

In the fall of 2016, the National Park Service Rivers, Trails and Conservation Assistance Program awarded Ascutney Outdoors with a grant of technical assistance for the purposes of developing an interpretive trail system. Mount Ascutney currently provides outdoor enthusiasts with an expansive trail network that is used for a variety of recreational activities including mountain biking, hiking, snowshoeing, and skiing. However, trails that are universally accessible to all members of the population, serving people of all ages and abilities, do not currently exist at the mountain. In partnering with the National Park Service, Ascutney Outdoors, and the Town of West Windsor, it is evident that all stakeholders associated with this project wish to offer a trail system that is inviting to all user groups. To help achieve the project's long-term goals of community-based conservation and recreation management, the interpretive trail system is designed to serve both as a gateway to the 24 miles of trails at Mount Ascutney and to introduce visitors and community members to the ecological and cultural significance of the area. Specifically, Ascutney Outdoors asked us to explore solutions to the following challenges:

- What stories are unique to this setting that can be told in an interpretive trail?
- What are some resources and examples of how to tell those stories?
- How can the “upper” and “lower” parts of the area be linked, both physically and thematically?
- What could be a route for the trail, and what waysides/activities could be the focus of this route?
- Can any of the old ski area infrastructure (ski lift chairs, old sign posts, and snowmaking equipment) be re-used and/or re-interpreted by local artists for purposes of the trail?

By highlighting what is unique about Mount Ascutney, the interpretive trail system is meant to provide educational opportunities, create play areas, host contemplative spaces, and most importantly, promote positive and engaging outdoor experiences for all users.

Our community partners Laura Stillson, who is on the AO Board, and Jennifer Waite, with the National Park Service Rivers, Trails and Conservation Assistance Program have been critical in helping us accomplish our work. Because the National Park Service provided AO with the technical assistance to plan for an interpretive trail system, Jennifer has served as our main “point-person” and primary contact throughout the design process. By meeting with her and Laura, on separate occasions, we have learned what they envision for the interpretive trail system. Furthermore, each has led us around Mount Ascutney on separate occasions to provide us with a better understanding of the geographical area to begin the interpretative planning process. From these meetings and visits we co-developed a set of deliverables and objectives that meet both the goals of our community partners as well as our goals as researchers. In addition, we asked for input from Erin Kershaw of The Climb Fitness Center at Mount Ascutney. Erin has developed and led interpretive walks for visitors from the Mount Ascutney Resort (now part of Holiday Inn Club Vacations).

To help inform our decisions and guide our design process, we utilized place-based literature to draw inspiration from place-attachment theory and place-based education. Our methods section further discusses the place-based approach we took. To ensure that the interpretive trail system is grounded in the community and taps into the full potential of the area, we have centered our work products around our community partners’ desires, our own observations of the Mount Ascutney landscape, as well as our own research. We produced a list of recommended trail design elements that include a description and key considerations as well

as corresponding images of what the specific interpretive marker may resemble (some recommendations also include photos of specific places on the mountain in which pre-existing landmarks or infrastructure make for potentially unique interpretive stops). As a final deliverable, we will present a computer-generated map of the interpretive trail that identifies the proposed interpretive markers with the corresponding waypoints. Designs of these markers will be included. These products are designed to provide the information necessary to proceed with the construction of the trail. This chapter will not only elaborate on these products but also offer a deeper understanding of the relevant literature that has guided our approach to designing an interpretive trail system at Mount Ascutney. In the following sections of this chapter, we include the following:

- Theory of place and place-based education
- Place-based methods, including sub-sections about Mount Ascutney's various place-based attributes, defining its own sense of place
- An introduction to the Mount Ascutney interpretive trail including a background on interpretative design, the importance of accessibility, and observations from other interpretive trail systems
- Recommended trail design elements
- A trail outline with our proposed elements
- A brief discussion
- Concluding remarks about the project

3.2 Literature Review: Theory of Place

Given that elements of the interpretive trail will draw largely from Mount Ascutney's natural, historical, and cultural significance, we have dedicated this section to a literature review on sense of place and place-based education. This research will better inform our design ideas and ensure that our visitors fully engage in Mount Ascutney's unique sense-of-place.

3.2.1 Sense of place

Place can be defined as “any environmental locus in and through which individual or group actions, experiences, intentions, and meanings are drawn together spatially,” (Seamon, 2014, 11). Place attachment can thus be defined as the emotional bonds between people and a particular place or environment. Whether the place is a room, building, neighborhood, city, landscape, or region, what gives a particular place meaning is not the discrete physical environment but rather the “indivisible, normally unnoticed phenomenon of person-or-people-experiencing-place” (Seamon, 2014, 11). Therefore, humans and their places are inextricably linked. This interconnectedness, from a phenomenological perspective, has increasingly emerged into the phenomenon of place.

Place attachment is embedded in a larger synergy in which the various human and environmental dimensions of place reciprocally drive and sustain one another. According to Seamon, there are six interconnected “place processes” that have the power to undermine or uphold place-based meaning. These include place interaction, place identity, place release, place realization, place creation, and place intensification (Seamon, 2014). In well-used and well-liked places, each of these processes manifest themselves and contribute to the modes and intensity of emotional bonds of the place. These processes are important to consider in designing the

interpretive trail at Mount Ascutney, especially because a major motive behind the trail is to offer a more inclusive recreational area to not only increase trail use but also improve people's experience in this place. The design of the interpretive trail is thus meant to showcase Ascutney as a truly special place and foster place-based attachment.

3.2.2 Place-based education

Woodhouse and Knapp (2000) describe five key features of place-based education. The first and most fundamental tenet of place-based education is that it draws from the specific attributes that shape the place's identity, such as geographic, ecological, sociological, political, and other dynamics. The second is that it is not linear, but rather takes a multidisciplinary approach. The third is that it requires a hands-on, experiential learning style. The fourth is that it encompasses an approach to learning that implores genuine interest in the topic at hand rather than a "learn to earn" philosophy. The fifth is that it organically connects place with self and community as an ecologically-oriented framework. Place-based education therefore represents one approach to elucidating a place's deeper meaning, which can subsequently foster deeper connections between people and place. The educational elements on the Mount Ascutney interpretive trail will be designed to encompass the above-mentioned qualities of place-based education to facilitate these deeper meanings and connections.

As a method that increases "student achievement, community involvement and environmental responsibility," place-based education is utilized in several schools and programs in the local area (Appalachian Trail Conservancy). For example, Marsh-Billings-Rockefeller National Historical Park is part of a northeast collaboration of place-based education, which includes Forest for Every Classroom, Park for Every Classroom, and Trail for Every Classroom. The Trail to Every Classroom (TTEC) program, specifically, is a professional development

program that provides elementary, middle, and high school teachers with the resources for “place-based service learning” on the Appalachian Trail (Appalachian Trail Conservancy). In collaboration with the National Park Service, the program offers tools and guidance to not only help students progress academically and professionally, but also facilitate their engagement in the local community. Marsh-Billings-Rockefeller National Historical Park therefore serves as a useful model in terms of the place-based education partnerships that can take place at Mount Ascutney, especially upon completion of the interpretive trail system.

3.3 Methods

Traditional market-based decision frameworks did not fit well with the needs of our community partners and the goals of this project, since these often lead to under-representations of the values associated with nature and place. The framework that fits best for the newly-protected Ascutney Outdoors land, as discussed in Chapter One of last year’s ENV5 50 summary report, is the community model. Unlike a corporate resort model in which one major corporation manages the mountain as a for-profit business, the community model is geared more toward mountain recreation through the engagement of various stakeholders. Given that the ultimate goal for Mount Ascutney’s stakeholders is to create long-term nonmarket benefits to residents of West Windsor and other surrounding communities, the community model’s broader valuation approach to planning for recreation is the most compatible framework to use for designing an interpretive trail system at Mount Ascutney.

3.3.1 Sense of Place

Interpretive trail design by nature requires extensive knowledge of the area and audience that the trail is being designed for. Given these demands, our group has focused on utilizing

place and place-based planning. According to Kruger and Williams, “place and place-based planning are concepts that factor in public involvement, conflict, recreation management, recreation displacement, landscape planning and design.” Within place-based planning, there are multiple uses of the term “place,” one of which is sense of place. Kruger and Williams define sense of place as “individual or group identification with a place that comes from interacting with it” (Kruger and Williams, 2007). Sense of place is a social phenomenon based on the way in which people view how the land relates to human interaction, meaning that interpretive trail design can have a profound impact on an area’s sense of place. This can include the “emotions, experiences, benefits, and satisfaction people experience in places” (Galliano and Loeffler, 1999). Constructing the ideas and physical layout of an interpretive trail can impact the way that individuals view the area surrounding them, given that the nature of an interpretive trail is designed to help individuals gain a deeper understanding of the surrounding area.

As part of our research process we have worked to understand various historical and cultural values associated with Mount Ascutney in order to incorporate place meaning into our interpretive trail design. As part of our place-based approach we went on multiple visits to the mountain and hiked the potential trail routes to gain a better understanding of the area. In addition, we used a GPS unit to mark the coordinates of potential waypoints on the trails. These included notable sections of the trail that emphasized the sense of place at Ascutney, such as the “castle”, which is an old decoration from the beginner ski hill. Mount Ascutney has a rich history in downhill skiing, and many of the remnants remain intact from the days when it was a fully functioning ski resort. We have worked to incorporate the former ski area culture to help preserve this history as the mountain transitions to a multi-use recreation area.

Throughout this process our emphasis has been on engaging with our community partners to better understand what they value about Mount Ascutney and the attributes they believe gives this area its sense of place. We conducted informal interviews with our community partners to gain a better understanding of their values in the area and what they believed other community members thought made Mount Ascutney unique. This approach recognizes the “uniqueness of each landscape and situation”, and the values associated with the area (Kruger and Williams, 2007). Engaging in place-based research that involves the community directly has provided us insight into individuals’ values regarding the mountain and the importance of the community as we help design an interpretive trail system.

3.3.1.1 Mount Ascutney’s Place-Based Attributes

In the next section, we provide background information on five different attributes that inform Mount Ascutney’s sense of place. These include Mount Ascutney’s geologic forms, hydrologic presence, biodiversity, ski area history, and current stewardship under Ascutney Outdoors. We have included this information in our chapter summary so that we can incorporate this knowledge into the interpretive trail elements we designed.

3.3.1.1.1 Mount Ascutney Geology

Mount Ascutney is a monadnock, which is an isolated mountain of erosion-resistant rock that has risen above a surrounding area worn flat by water and ice. At 3,144 feet in elevation, it dominates the topography of the surrounding Town Forest and is considered one of New England’s finest examples of elevation-dependent topography (VT Housing and Conservation Board Application). Ascutney Mountain belongs to the White Mountain plutonic-volcanic series, which is a group of Mesozoic calc-alkalic to alkalic igneous complexes that occur in New

Hampshire, southern Maine, and Vermont (Schneiderman, 1991). The mountain is built on remnants of a volcanic fault line of three types of plutonic igneous rock: gabbro-diorite, syenite, and granite, all of which are at least 200 million years old (Schneiderman, 1991). Fragments of xenolith also exist at Mount Ascutney, which is rock that is found within igneous rock and thus signify volcanic origins. These formations inform what we see today: a lone mountain or monadnock. The significance of Mount Ascutney's geological form as a monadnock lies in the fact that it provides one of the most diverse vertical ecological gradients in New England (McClane and Roe, 2015). The 3-D Mountain Map (see section on *Recommended Trail Design Elements*) would thus provide users with a visual representation of Mount Ascutney's geological form as a monadnock, and therefore inform their sense of place from a physical perspective.

3.3.1.1.2 Mount Ascutney Hydrology

During the process of creating the conservation easement and the transfer of land between owners, the Mount Ascutney property was extensively catalogued. Many different characteristics were examined, including but not limited to soil types, hydrologic behavior, and watershed structure. Comprehensive knowledge about this subject is necessary for making plans to alter the land in any way, and is thus vital for management recommendations on the property. In speaking with Jim Lyall of Sport Trails of Ascutney Basin (STAB), watershed dynamics are always at the forefront of his mind during the construction of mountain biking trails, and will be for the construction of the interpretive trail system as well.

Average annual precipitation in West Windsor is 46 inches, and comes almost evenly distributed throughout the year, a phenomenon that is unique to this region of the country (Intellicast.com). Given every month of the year receives approximately 3.5 inches, watershed drainage is a constantly changing process. Only about half of the precipitation that falls onto the

land ends up, either immediately or eventually, in a stream catchment; the other half is evaporated or transpired back into the atmosphere. Cutting new trails into the hillside affects the drainage mechanisms of the water, especially in a setting such as Mount Ascutney where the soil layer is thin over bedrock, and can cause stark differences to erosion patterns. Sediment loss through erosion can cause changes in nutrient dynamics, choke out plant communities, and transport species to different areas of the mountain.

Returning to the definition of place as explained by Seamon, place can be defined “as any environmental locus in and through which individual or group actions, experiences, intentions, and meanings are drawn together spatially” (Seamon, 2014, 11). This definition, coupled with the previously mentioned “place process” of place interaction help to develop a sense of place specifically from a hydrologic perspective. As humans, we interact with the hydrologic landscape on a daily basis: through our consumption; use of water; and our observations of weather patterns such as precipitation and humidity. The water crossing waypoint at the perennial stream on the lower interpretive trail system (see *Recommended Trail Elements* section below) is designed to highlight specific features of the Mount Ascutney watershed and foster a hydrologic connection to the place. This marker will feature an engaging placard next to the stream, displaying relevant information. Increased knowledge will encourage better understanding of the watershed and the land in general.

3.3.1.1.3 Biodiversity

Mount Ascutney is a hotbed for biodiversity in the Upper Valley region, and is host to a wide variety of species of flora and fauna. The area is a critical part of a wildlife corridor connecting the White and Green mountains and contains habitats for bobcat denning. Mount Ascutney’s unique geologic form as a monadnock additionally gives it one of the “most diverse

vertical ecological gradients in New England” (McClane and Roe, 2015). There are 13 state-ranked natural communities, defined by distinct groups of biological organisms, their physical environments, and the interactions between them (Springfield Stewardship Team, 2015). Among these communities, there are several rare and endangered species, one of which is the *carex foenea*, or bronze sedge, which has been listed as endangered by the state.

Another key feature of Mount Ascutney’s ecology is the amount of core forest protected. Core forest is defined as any forested area that is greater than 100 meters from a non-forested opening. Mount Ascutney contains nearly 7,000 acres of core forest, which is one of the largest sections in the Southern Vermont Piedmont biophysical region (Springfield Stewardship Team, 2015). Such a large block of core forest plays a critical role in reducing forest edge, which is associated with increased predation of native bird species, increase in invasive species, and decrease of species that prefer large blocks of forest. These core forests are also home to many large mammal species, such as black bear, whitetail deer, moose, and coyote. Large mammal species tend to require larger expanses of land to thrive, making core forest essential to these natural communities.

Large mammal species tend to be of particular interest to individuals who are less familiar about the natural environment around them, which provides us with a unique opportunity to engage visitors with the greater ecological importance of the area. We have attempted to tap into this educational opportunity by recommending the incorporation of a wildlife sounds kiosk as well as creative wildlife waysides along the interpretive trail (see *Recommended Trail Elements* section below). These recommendations would therefore enhance users’ sense of place from an ecological perspective.

3.3.1.1.4 Ski Area History

Mount Ascutney has a rich, albeit tumultuous, skiing history. The first organized skiing on the mountain dates back to the winter of 1935-1936, when the CCC and Windsor Outing Club opened the Mount Ascutney Trail. Ten years later, a group of early skiing enthusiasts made lift-operated skiing possible, which ushered in large crowds during the holidays. The next couple of years were characterized by improvements in mountain operations through new and improved lifts, trail expansion, night skiing, and skiing served by snowcat. By the late 1940s, poor snowfall disrupted the ski area's growing momentum, and Ascutney went bankrupt for the first time in 1950 (NewEnglandSkiHistory.com, 2017).

After the mountain was bought and resold during the early 1950s, John Howland formed Mount Ascutney Ski Area, Inc. circa 1957, and Walter Paine became the first outside shareholder. This access to capital enabled the acquisition of a 2,250-foot T-Bar, a Larchmont chairlift for the beginner area, and snowmaking equipment. Despite the ski area being heavily marketed for the 1960-61 season, the Larchmont lift was plagued by mechanical issues and consequently removed. The ski area barely avoided bankruptcy and opened the West Slope Area for the 1962-63 season, served by another new T-bar (NewEnglandSkiHistory.com, 2017).

By the mid-1960s, Ascutney joined the "big leagues" when it increased the area's vertical drop from 620 to 1,470 feet with the addition of a double chairlift. Meanwhile, the expansion of beginner and intermediate terrain, as well as the installation of a new lodge, occurred during this time. The ski area proceeded to take a hit from a thaw in January of 1973 and a "rough" 1973-74 winter, which according to the assistant manager at the time, left Ascutney "mortgaged to the hilt" (NewEnglandSkHistory.com, 2017). The next ten years in the ski area's history was characterized by new ownership, minimal development, and a thread of rough winters. In March

of 1983, the Mount Ascutney Ski Area Corp. filed for Chapter 11 bankruptcy, with some \$2 million of debt (NewEnglandSkHistory.com, 2017).

Summit Ventures, Inc. purchased Ascutney for an estimated \$1.5 million and spearheaded a 10-year investment plan. In addition to developing condos at the base area, the new ownership led to more chairlifts and investments in snowmaking and grooming. Mount Ascutney experienced massive growth during this period until the Tax Reform Act of 1986, which affected deductions for real estate investments, and ultimately led to a downward economic spiral for the ski area. History repeated itself throughout the next two decades in what became a vicious cycle: mounting debt led to bankruptcy, new ownership reopened the mountain, investment plans brought mountain expansion and improvement, debt once again rose to unprecedented levels and forced the ski area to file for bankruptcy (NewEnglandSkHistory.com, 2017). Since 2010-2011, the last iteration in this cycle, Mount Ascutney Ski Resort, has not operated and has been deconstructed through the removal and selling of its chairlifts.

In 2015, the Town of West Windsor developed a plan with the Trust for Public Land to obtain 469 acres of the resort land and add the acreage to the current Town Forest. The Upper Valley Land Trust holds the conservation easement, and Ascutney Outdoors was formed in 2015 to “harmoniously manage, develop and protect the recreational, educational and environmental assets of the West Windsor Town forest and adjacent land on Mount Ascutney, while maintaining affordable access for all, for their year round enjoyment” (New England Ski History). Lift service to the upper mountain cannot be restored, however a rope tow now stands on the lower mountain, as part of Ascutney Outdoors’ efforts to bring modest operation back to the ski area. Backcountry skiers continue to utilize the upper mountain and its trails.

Highlighting Ascutney's skiing history is essential for understanding the sense of place that many people associate with it from their former skiing days there. After reading the "Visitor Memories" section on the New England Ski History website, it's easy to see that Mount Ascutney serves a very special "place" in many people's hearts. Based on the nostalgic memories shared, place attachment was strongly expressed. One woman's comments exemplify this:

"I basically grew up at Mount Ascutney in the 60's, worked the lifts in the late 70s, and continued to occasionally ski there until it finally closed in 2010. If it reopens that would be fantastic, if not then I'll still have many fond memories of Thunder Road, Fleet Street, Miller's Mile, and the cabin off of the 5th Ave!" (Tim Quinlan, NewEnglandSkiHistory.com, 2013).

We attempt to heighten Mount Ascutney's sense of place and foster these kinds of emotional bonds through our recommended interpretive trail elements (see *Interpretive Trail Elements* section below).

3.3.1.1.5 Ascutney Outdoors

As annual snowfall has gradually decreased on the mountain, users have been faced with the reality that Mount Ascutney cannot be sustained as a fully operational ski resort, as discussed in the previous section. Since the ski area's official closing in 2010, the mountain has taken a more versatile direction, and is now a multi-use recreation area for mountain biking, hiking, backcountry skiing, tubing and other activities. The community members of the surrounding Brownsville and Windsor areas have played a vital role in aiding this change of use and are heavily invested in the well-being of the area. Sport Trails of the Ascutney Basin (STAB) for

instance, has successfully built and maintained an extensive mountain bike trail network. Furthermore, when the Resort land came up for sale, voters at a West Windsor Town meeting voted overwhelmingly to move forward with negotiations to purchase the 469 acres as public land.

In the spring of 2015, a group of community members formed a non-profit organization named Ascutney Outdoors to “harmoniously manage, develop and protect the recreational, educational and environmental assets of the West Windsor Town forest and adjacent land on Mount Ascutney, while maintaining affordable access for all, for their year-round enjoyment” (Ascutney Outdoors, 2016). Through our recommended interpretive trail elements, especially the pre-existing rope tow marker and the mural (see *Recommended Trail Elements* section below), we hope to inform people on the evolving identity of the mountain and its recreational significance.

3.4 Introduction to the Interpretive Trail at Mount Ascutney

3.4.1 Interpretive Trail Design

To understand the essence of interpretive trail design, it is helpful to explore the National Park Service’s Interpretive Development Program’s discussion on interpretive themes. In this discussion, interpretation is described by Frank Tilden as “an art, which combines many arts, whether the materials presented are scientific, historical, or architectural. Any art is to some degree teachable” (Larsen, National Park Service). Perhaps the most powerful interpretive tool then is the interpretive theme. According to David L. Larsen, an interpretive theme should accomplish the following: serve as a tool that cohesively develops an idea or ideas, be a single sentence that expresses meaning, link a tangible resource to its intangible meanings, organize an

interpretive product or service, connect a tangible resource to a universal concept, express significance and meaning but not serve as a “take-home message” (Larsen, National Park Service). When designed well, interpretive themes encourage audiences to see a resource in a new light and appreciate it in ways that they have not before. Furthermore, they are most effective when audiences not only understand the meanings being explored, but are also able to relate them to their own lives (Larsen, National Park Service).

The purpose of an interpretive trail is therefore to tell a story through recurring themes, which enable users to better understand the messages of history, the environment, and surrounding culture. Jonathan Williams, an Interpretive Manager with California State Parks, describes the indisputable value of an interpretive trail: “It draws in the visitor, captures a curiosity, develops an interest, and leaves the visitor with an undeniable sense of place and a little bit more knowledge than he or she had before” (Westrup, 2002). In terms of physical attributes, interpretive trails are pedestrian trails that are relatively short and often designed as a loop trail. They are constructed similarly to greenway trails as shared-used trails that often have gentle grades, and are typically accessible to persons with disabilities, but are not meant for through traffic (NYS Office of Parks, Recreation and Historic Preservation, 2010). Interpretive signage is used along the trail to point out features of interest and educate users about those features, which may be natural, cultural, historical, or recreational. The following design plan is recommended for creating interpretive signage:

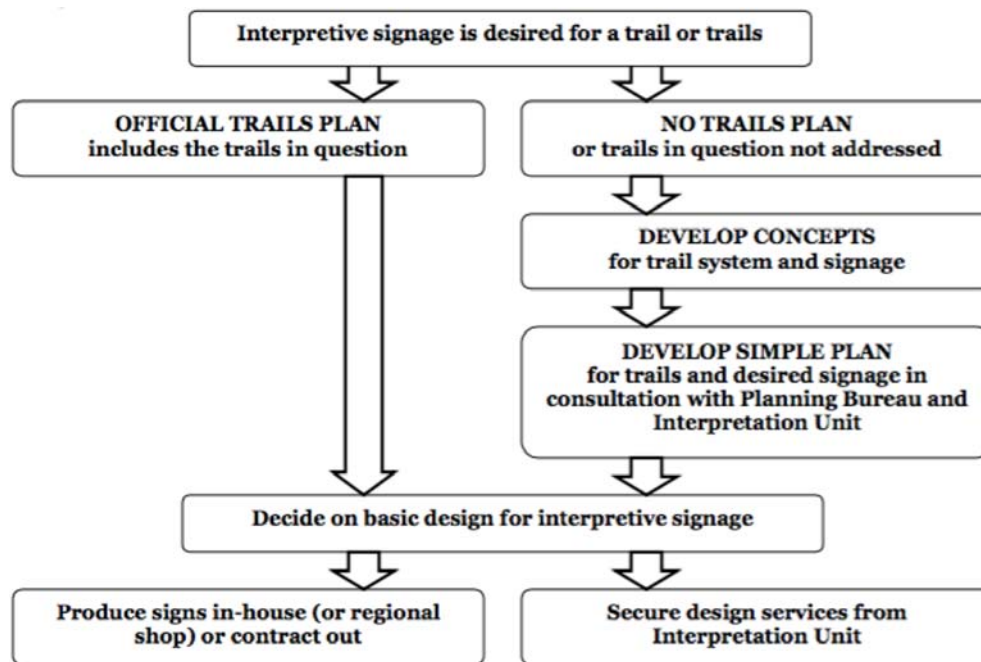


Figure 3.1: Source - Trails Signage Guidelines for the New York State Park System

3.4.2 Importance of Accessibility

As stated in the introduction, universal accessibility should be an integral attribute to the interpretive trail system at Mount Ascutney. Both the US Forest Service (in the Forest Service Trail Accessibility Guidelines) and the National Park Service (in their All In! Accessibility in the National Park Service, 2015-2010), as well as many organizations such as the Massachusetts Audubon Society, are committed to providing universal trail access options in all parks. Projects created using federal funds must follow both the ADA (American with Disabilities Act) and the ABA (Architectural Barriers Act) to maximize accessibility options while protecting unique natural and cultural resources. Standards and specifications for wayside exhibits are included for visitors with mobility, visual, hearing, and learning impairments, and guidelines for trail design ensure safe, sustainable trails for all. As designers of the interpretive trail system, we recognize each set of criteria and strive to meet as much of it as possible. For instance, if a certain

interpretive marker is inaccessible to one type of user group, we try to offer an alternative option that allows for greater access (see *Recommended Trail Design Elements* section).

3.4.3 Observations

The following images were taken during our visit to the Montshire Museum trails in Norwich, Vermont. We have included them in this report to illustrate different aspects of an operative and successful interpretive trail. These observations are meant to inspire our own ideas as well as those of our community partners for the Mount Ascutney interpretive trail system.



Figure 3.2: Wheelchair accessible markers to denote trails that are accessible to this population



Figure 3.3: 4-6 foot-wide trail so that two people can walk side-by-side



Figure 3.4: Use of stone path to diversify the trail



Figure 3.5: Use of images and vibrant colors to enliven waysides

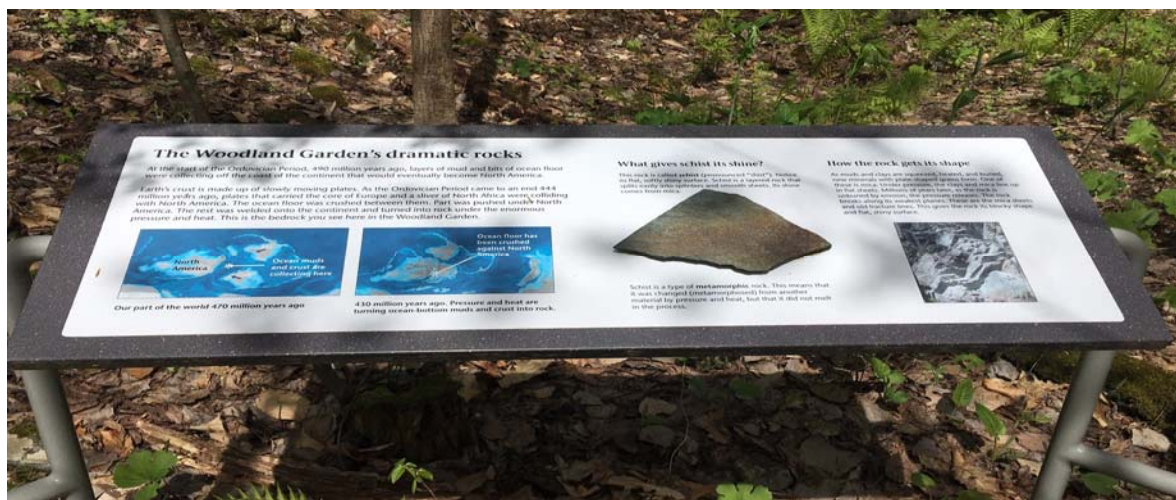


Figure 3.6: Three dimensional aspect of marker steers away from traditional placard and provides better sensory experience

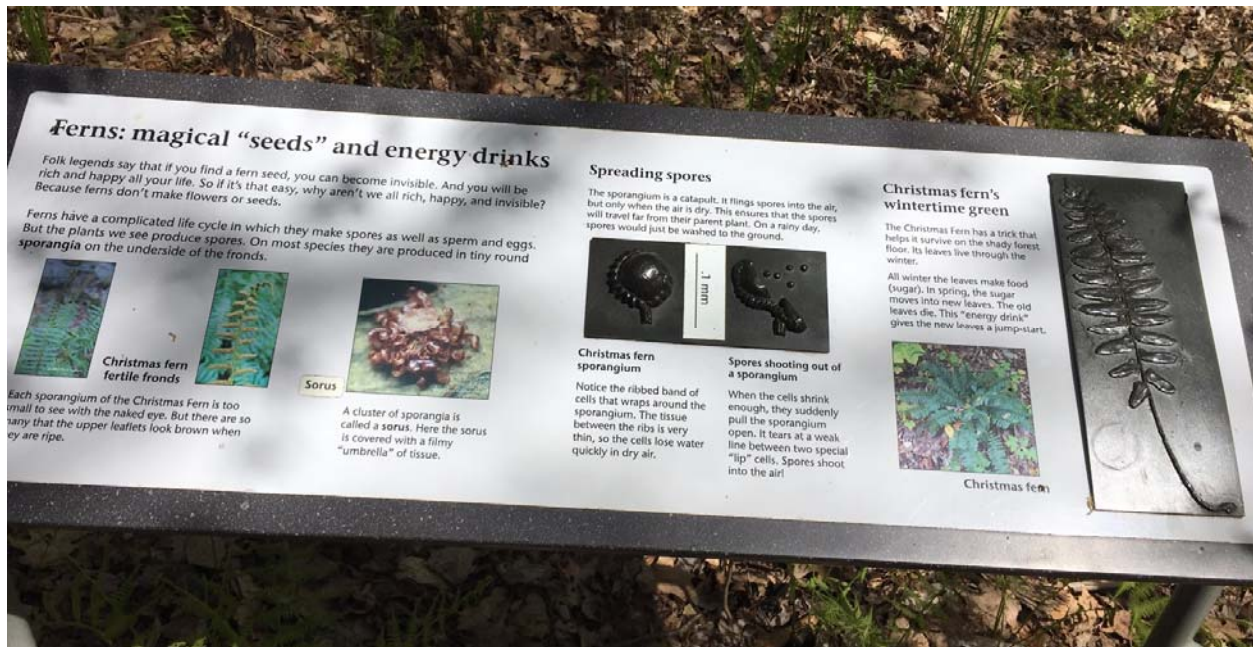


Figure 3.7: Connecting subject of waypoint to another (unexpected) topic, such as energy drinks



Figure 3.8: Illustrative interpretive trail map that highlights each element along the route

3.5 Results: Recommended Trail Design Elements

In an effort to showcase the pertinent features of Mount Ascutney (as described in the Methods section), we propose the following interpretive trail markers. Interpretive trail elements numbered 1 through 7 correspond with waypoints shown in the aerial photograph (see Figure

3.39). These are places on the trail that have a pre-existing landmark or piece of infrastructure that we recommend turning into an interpretive wayside. The other recommendations would require locating appropriate points for them on the trail.

In addition to brief descriptions that explain what each of the recommended markers would entail, each one includes factors to be considered in the design and implementation process, such as access, ecological impacts, cost estimate, and other relevant information. At several sites, the proposed interpretive trail intersects with the existing mountain bike trail network, so designing for safe use of both types of trail systems will need to be considered. Furthermore, we provide images of waypoints from outside sources to serve as examples or models of our ideas. For the markers with the attached waypoints already, we include the corresponding photograph of the specific landmark or piece of infrastructure on the mountain, taken during one of our visits to Mount Ascutney.

Interpretive marker: 3-D Mountain Map

3.5.1.1 Description:

We recommend placing a three-dimensional mountain map of Mount Ascutney at the start of the beginner interpretive trail, close to the hotel, accompanied by a brief description of “What You’re Looking At.” This should mention Ascutney’s geologic form as a monadnock, providing one of the most diverse vertical ecological gradients in New England (West Windsor Town Forest, 2015), as well as a “You Are Here” marker. By giving users a bird’s-eye view of the mountain, this 3D map would present the landscape in a realistic manner and mimic what people see while on the trail. 3D maps also provide the option for customizable viewing direction and position, make elevation changes easier to understand, and are more visually appealing

(Knapp, 2009). The three-dimensional nature of this marker would not only create a greater sensory experience, but serve as a means for the visually impaired to learn about Mount Ascutney's topography. Figures 3.9-3.12 represent images of 3D models from Mount Rainier, Yosemite Valley, Yosemite Lower Falls, and Half-Dome, respectively, that offer inspiration to Ascutney Outdoors for implementing one of their own. Figure 3.13 shows a cutaway version that provides a visual representation of layering of the mountain's geological forms.

What more effective way to connect to Mount Ascutney's sense of place than a 3D mountain model of it? Trail users, community members, and hotel guests can refer to this 3D map to point out specific aspects of the mountain that they have visited or somehow connected with. Furthermore, this model exposes the mountain's geological significance, which offers a place-based educational component.

3.5.1.2 Access:

- This option would offer considerable benefits in terms of ADA accessibility. Given its close proximity to the hotel, pedestrians would easily be able to interact with this 3D model without having to navigate the actual trail. It would only require a short walk from the hotel's back entrance.
- The model's height specifications should be considered for wheelchair accessibility. Figure 14 provides an example of an ADA accessible 3D map.

3.5.1.3 Ecological impacts:

- Implementation of this marker would cause little to no ecological impacts of the surrounding area. Given the currently flat and grassy landscape behind the hotel, no additional change to the site is necessary.

- Once implemented, the marker would cause little to no disturbance for surrounding wildlife. It would be a solid structure that should not inflict any harm should an animal come into contact with it.

3.5.1.4 Cost estimate:

- 200-400% more expensive than the price of a 2D map (Knapp, 2009).

3.5.1.5 Other relevant information:

- A National Park Service study confirms that 3D maps benefit most novice users. The same study showed that 3D maps are preferred over 2D maps by younger users, women, and non-native English speakers (Knapp, 2009).
- 3D maps have been found to be more effective in terms of getting users to actually read trailhead maps and keeps peoples' attention longer than 2D maps (Knapp, 2009).



Figure 3.9: Mount Rainier



Figure 3.10: Yosemite Valley



Figure 3.11: Yosemite Lower Falls



Figure 3.12: Half Dome, Yosemite National Park

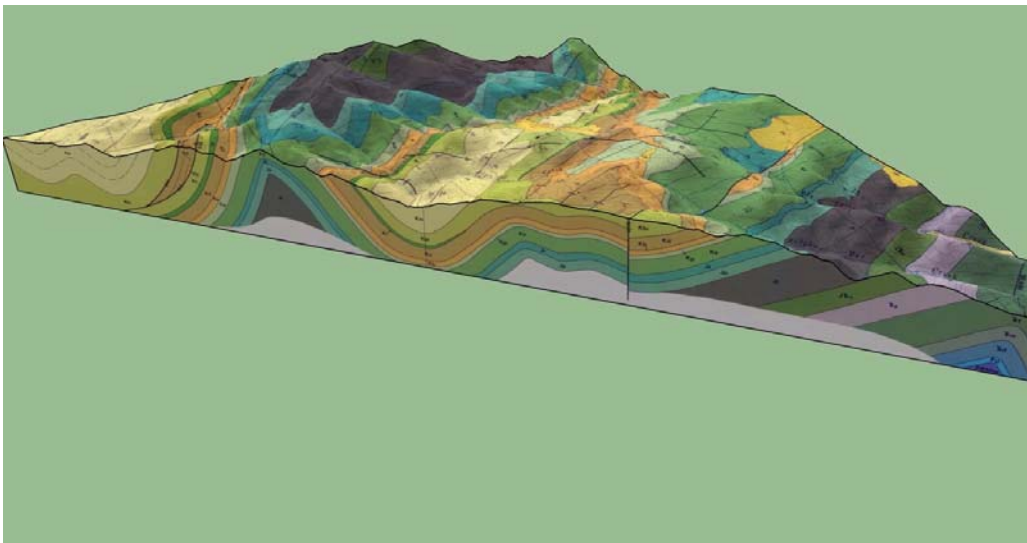


Figure 3.13: Geologic Formations of Mount Ascutney



Figure 3.14: Photo by Michael Paskowsky

Interpretive marker: Castle Fort

3.5.2.1 Description:

To give the younger trail users something to get excited about, we recommend revitalizing and incorporating the pre-existing plywood art figures around the cluster of trees into a fort-like play space. Given that this area stands on what used to be the beginner ski area, or the “bunny hill,” a potential name for this interpretive feature is “The Bunny Slope Fort.” Not only does this stopping point on the trail allow kids to use their imaginations in creating a fun play space, it may also serve as a way to educate users about Mount Ascutney’s ski area history. To help facilitate achieving both of these functions, we recommend using old skis to form an enclosure around the cluster of trees. The revitalized plywood relics would then be placed throughout the trees on the inside of the “fort.” A sign outside of the “fort” could include a brief description of the ski area history that particularly pertains to the beginner ski area.

3.5.2.2 Access:

- This fort is just a short walk from the hotel's back entrance – across flat terrain via the soon-to-be-constructed interpretive trail.
- In terms of ADA accessibility, the fort will be relatively accessible, although less accessible than the 3D map waypoint.

3.5.2.3 Ecological Impacts:

- The fort and accompanying structures will require some construction to assemble, however no major ecological functions should be impacted.

3.5.2.4 Cost Estimate:

- New paint job to revitalize the plywood relics
- Inquire about a deal or donation from Green Mountain Ski Furniture
(<http://www.recycledskis.com/index.html>) - their benches are over \$500

3.5.2.5 Other Relevant Information:

- Though we wish to create somewhat of a protected fortress type feeling, it is important for the children to be visible to parents while they play. There are several different options for increasing child-parent visibility within the fort. A base structure of wood is necessary for creating the fence in the first place, but leaving larger gaps between each ski would make the fence more transparent. Alternatively, placing the skis horizontally instead of vertically would drastically decrease the height of the fence. It is important to give the parents peace-of-mind while the children play.

- Green Mountain Ski Furniture, based in Waterbury, Vermont, specializes in creating Adirondack chairs and benches out of skis and snowboards, but their website also advertises custom construction abilities. Something like this would fit perfectly into the theme of the fort, and would also create a connection with a local business.
- Encouraging interaction with Ascutney's ski history could be more difficult with a younger audience. Old ski lift chairs could be used as swings, however this has already been proposed as a waypoint on the more advanced interpretive trail. The following images may help clarify our vision for this area:



Figure 3.15: Group members & the castle relic from the beginner ski area



Figure 3.16: Snowman - also from the beginner ski area



Figure 3.17: Fence made of old skis

3.5.1 Interpretive marker: Water Crossing Wayside

3.5.3.1 Description:

While surveying the lower interpretive trail area with Jennifer, we came across a small water crossing that could be utilized as a stopping point for educational purposes. Instead of

installing a traditional placard that is purely informational, we propose something a little different: on the first side of the crossing stands a placard that asks questions like, “Where do you think this water comes from? Where does it go? How long has this water been here? Etc.” On the other side of the crossing is another placard with the answers these questions. This approach not only forces users to initially stop and think, but also entices them to continue to the other side of the crossing to discover the correct answers and learn about hydrological forms and processes. Figures 19 and 20 are possible examples of the types of signs to use. We recommend installing two of these types of signs at the water crossing that crosses the lower trail; one on one side of the water crossing and another on the other side.

In addition to the educational signage, we propose adding a fun and challenging component targeted especially at younger users. This could take the form of evenly spaced stepping-stones that kids could use to cross the stream in a more exciting way. These stones could feature local types of rock, or could be molded steps that have animal tracks of different species, giving children a chance to learn about local rock types or animal species. Meanwhile, for those who want or need an easier access could use the regular bridge crossing. Figure 21 represents a large-scale version of our idea.

3.5.3.2 Ecological Impact:

- The suggested stepping stones could have a small impact on the stream flow. It would be important to ensure that the placement of the stones would disturb stream flow as little as possible.

3.5.3.3 Access:

- Currently, the bridge would not qualify as ADA accessible. Therefore, the bridge would need to be expanded and made sturdier to ensure accessibility.

3.5.3.4 Cost Estimate:

- Small walking bridges range from \$150 to \$350, depending on their quality and length. It would be best to receive an estimate from a local contractor to determine a more precise cost.
- Stepping-stones could be made using natural stone from the area, although we are unsure of the policy and state laws allowing for removal and relocation of stones of adequate size for this.
- Alternatively, steps could be made of concrete and feature imprints of animal tracks for another educational opportunity. Associated costs would be the cost of labor and materials.

3.5.3.5 Other Relevant Information:

- “Nature desires to challenge kids” said Greg DeFrancis, Associate Director and Director of Education of Montshire Museum. Small physical challenges on trails give children a chance to explore with a sense of independence while giving parents a chance to supervise from a distance without feeling their child is in danger.
- One issue with this section of the trail is its seasonal design. During times of heavy water flow and spring runoff, the bridge is not quite high enough and must be removed. We propose lengthening the bridge so that it can reach higher on the banks of the stream without affecting the flow of water during times of high water flow.



Figure 3.18: Proposed location of water crossing waypoint



Figure 3.19: An interpretive sign created by Pannier Graphics - the leading manufacturer of outdoor signs, panels, exhibit bases & frames



Figure 3.20: Another example of a placard created for an interpretive trail



Figure 3.21: A large-scale representation of our water-crossing proposal

3.5.4 Interpretive marker: Old Mount Ascutney Chairlift Swing

3.5.4.1 Description:

To help connect users with Mount Ascutney's ski area history, we recommend installing a chairlift swing near the top of the lower bowl that faces the hotel. Perhaps out-of-town visitors have never skied before, let alone seen the snow. Sitting on a real chairlift would create an entirely new and exciting experience for these users. Other users such as locals may use this chairlift as a chance to reminisce about their former skiing days at Mount Ascutney, which circles back to the importance of highlighting Ascutney's sense of place. Regardless, this chairlift would serve as a nice resting spot along the trail. To provide an educational component at this waypoint, (as well as provide an accessible option for those unable to sit on a chairlift), we recommend installing a nearby wayside that shows what the lower bowl area used to look like during Mount Ascutney's thriving ski area days. A brief description next to or below the image could inform users about this aspect of the ski area. Figure 3.22 illustrates what we mean by this "chairlift swing." Figure 3.23 is the type of sign we recommend installing at this waypoint. Figure 3.24 is a picture of the Mount Ascutney village area in the 1980s – an example of what could appear on the sign to give users an idea of the "old Ascutney." The hay's placement in Figure 3.25 gives our community partners a visual idea as to where in the lower bowl area this stopping point could be located.

3.5.4.2 Access:

- Given the chairlift swing may be inaccessible to some users, the wayside can serve as a supplemental "interpretive option."

- The trail's mild terrain leading up to this point on the trail should pose minimal issues for the more sedentary users.

3.5.4.3 Ecological impacts:

- The chairlift swing and accompanying wayside will require some construction to assemble, however no major ecological functions would be impacted.

3.5.4.4 Cost estimate:

- Inquire about chairlift donations at local ski areas.
- Associated transportation and installment costs.
- Manufacturing and installation costs of the wayside.

3.5.4.5 Other relevant information:

Given that the chairlift may not be accessible to someone in a wheelchair the complimentary wayside exhibit should be installed at appropriate heights and angles. For standard NPS low-profile exhibits, the recommended height is 30 inches from the bottom of the exhibit frame to finished grade (Visitor Accessibility for Wayside Exhibits).



Figure 3.22: An example of a chairlift swing



Figure 3.23: An example of a typical National Park Service low-profile exhibit



Figure 3.24: The village area of Mount Ascutney in the 1980s - source: New England Ski History



Figure 3.25: Current view of Mount Ascutney looking toward the Mount Ascutney Resort/base area

3.5.5 Interpretive marker: Wayside Showing Upper Ski Area

3.5.5.1 Description:

At the top of what used to be the novice skiing area, (the top of the lower bowl area), stands the remains of an old ski area sign as seen in Figure 3.26. We recommend refurbishing this sign so that it becomes an engaging interpretive marker, rather than what it is currently – simply a blank, bare board. One idea is to include one large image of what the upper ski area used to look like, as in Figure 3.27. Another idea is to create a visual timeline of the ski area's history. This timeline would include images and brief descriptions of Mount Ascutney's major events, from its inception in the 1950s to its closure in 2010 (see the *Ski Area History* section for a more comprehensive history).

3.5.5.2 Access:

- This interpretive sign would not be accessible to the visually impaired unless braille or other raised features were included.

3.5.5.3 Ecological impacts:

- This trail marker would have a minimal ecological impact because it will use existing metal posts from when it was formerly used as a ski area trail map.
- The new sign would be printed on some sort of plastic material, however, and could affect the immediate surrounding ecosystem because it would create shaded areas and restrict access to sunlight to areas directly below, as well as up and downhill from it.

3.5.5.4 Cost estimate:

- Cost of designing and printing the new placard.



Figure 3.26: The current, old ski area sign found at the top of the lower bowl/novice skiing area



Figure 3.27: Mount Ascutney as an Operating Ski Area - Source: New England Ski History

3.5.6 Interpretive marker: The Forest Nook

3.5.6.1 Description:

We recommend utilizing one cluster of trees in the lower interpretive trail area as a resting place, as shown in Figure 3.28. During our walk with Jennifer, we observed how quiet and peaceful this area is, and thought it would make for a great contemplative space. As inspired by our visit to the Montshire Museum in Norwich, Vermont, we recommend the addition of placards with raised, three-dimensional shapes that identify the surrounding tree species in the area such as in Figure 3.29. For example, the concept of feeling various needle versus leaf shapes can allow for interaction with the landscape at varying seasons, as well as increases accessibility for those who may be either physically or visually impaired. The nook is relatively closed off visually from the rest of the mountain, but it could still be useful to highlight visual differences between types of forest found in the region.

We believe the forest nook could also benefit from the installation of a wooden bench to serve as a resting place. Figure 3.30 shows a handcrafted bench on the Faulkner Trail on Mount Tom courtesy of a partnership between the ArtisTree, the National Park Service Rivers and Trails Program, Peter Jensen and Associates professional trail builders, and the Faulkner Trust. Perhaps a similar arrangement could take place with Ascutney Outdoors.

3.5.6.2 Access:

- Accessibility is improved when trails are wider. Because this trail was initially created as a mountain bike trail, the width is relatively fixed and would therefore require removal of more trees to widen it.

- The nook is a short walk, slightly uphill, away from the lodge on the beginner trail, so this may play a factor in terms of which visitors are able to access this specific waypoint.

3.5.6.3 Ecological Impact:

- Unless trees need to be cut down to widen the trail, there should be little to no ecological damage incurred at this stopping point.

3.5.6.4 Cost Estimate:

- The cost of the bench would depend on the prospects of establishing a partnership with a local artist such as ArtisTree.

3.5.6.5 Other relevant information:

- Greg DeFrancis, the Director of Education at the Montshire Museum, suggested the addition of alternative routes that feature obstacles for children to interact with. The forest nook is a perfect place for this, as there are already several smaller side trails and shortcuts that could benefit from the addition of a few stepping stones or a log tunnel to crawl through.

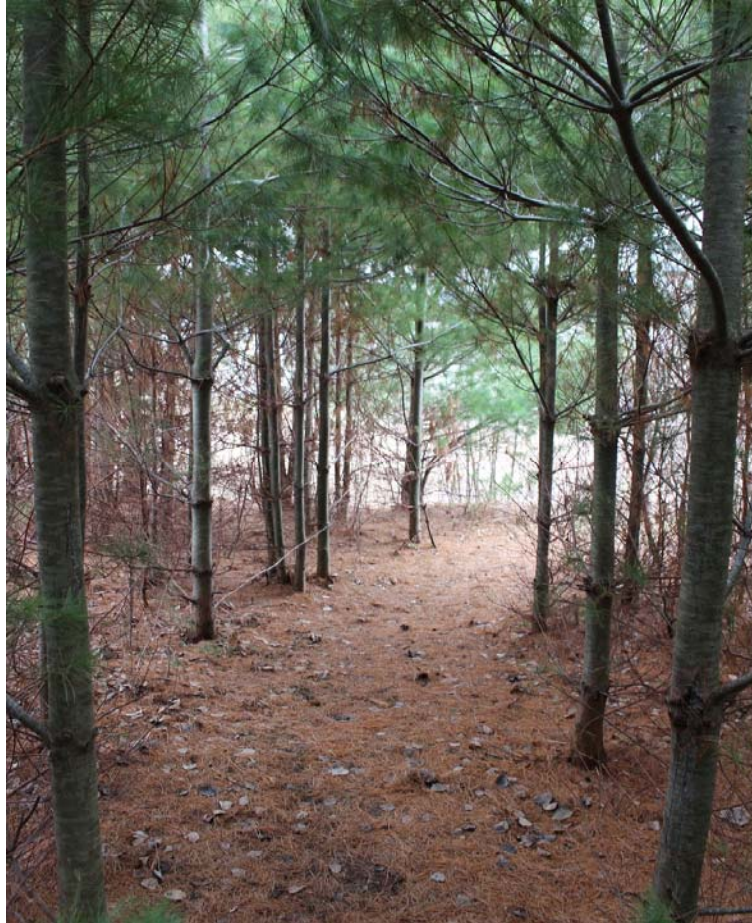


Figure 3.28: Proposed location of the Forest Nook waypoint - located on the lower trail system



Figure 3.29: Placard from the Montshire Museum trail system, featuring three-dimensional leaf molds



Figure 3.30: Hand-crafted ArtisTree bench on the Faulkner Trail at Mount Tom

3.5.7 Interpretive marker: Mural for the Tunnel

3.5.7.1 Description:

Though the tunnel may not necessarily be part of the interpretive trail system, we feel strongly that improving the current state of the tunnel is a necessary step to help revitalize the area as a whole. We recommend hiring a local artist to cover the existing graffiti (Figure 3.31) with a mural that stretches the entire underpass wall. Not only will this make the area more inviting to guests and community members, it will also help “bridge the gap” between the lower and upper trails. A third function of this mural could serve as a marketing platform for Mount

Ascutney through which it highlights the mountain's features. Perhaps it could showcase all the recreational activities possible on the mountain, including summer and winter activities (backcountry skiing, mountain biking, hiking, hang-gliding, etc.).

Figure 3.32 exemplifies the power of art on the aesthetics of pre-existing infrastructure. A mural in the tunnel at Mount Ascutney can have the same effect! The studio art department at Dartmouth College could be a wonderful resource for the completion of this mural, as well as art classes in local middle and high schools. These connections could foster a tighter sense of community, as well as an increased sense of pride upon the completed product.

3.5.7.2 Access:

- This is probably the most accessible interpretive waypoint we are proposing in that one does not even have to exit their vehicle to appreciate the mural. Otherwise, the parking lot which is a short walk from the underpass can serve as another easy access point.

3.5.7.3 Ecological Impact:

- This trail marker would have a minimal environmental impact as the mural will be utilizing the already intact bridge.
- Ideally, aerosol spray paint would not be used given that it contains greenhouse gases.
- Paint should be carefully picked as many paints contain volatile organic compounds (VOCs), pigments, and fungicides and biocides.

3.5.7.4 Cost Estimate:

- Paint and proper equipment to access the wall.
- Primer as a final coat to promote longevity.

- Ideally, painting the mural would be volunteer work and/or class credit so there would be no cost for labor.

3.5.7.5 Other Relevant Information:

- The flowers that are currently drawn on the underpass wall (see Figure 3.31) indicate the community's desire to see something more aesthetically pleasing there, which further justifies our recommendation for a mural.



Figure 3.31: The current state of the underpass at Ascotney



Figure 3.32: An underpass mural in Scarborough, Toronto (painted by DeAnne Lamirande)

3.5.8 Interpretive marker: Wildlife Waysides

3.5.8.1 Description:

Erin Kershaw noted that many of her visitors are excited to be in a place where larger animals live. To increase awareness of the larger wildlife at Mount Ascutney per Erin's suggestion, we recommend incorporating a wayside that showcases some of these animals, such as deer, coyotes, and bears. Figures 3.33, 3.34, and 3.35 are examples of creative interpretive materials that point to the different wildlife in the area.



Figure 3.33: Bird model on interpretive sign



Figure 3.34: Longwood Garden bronze frog

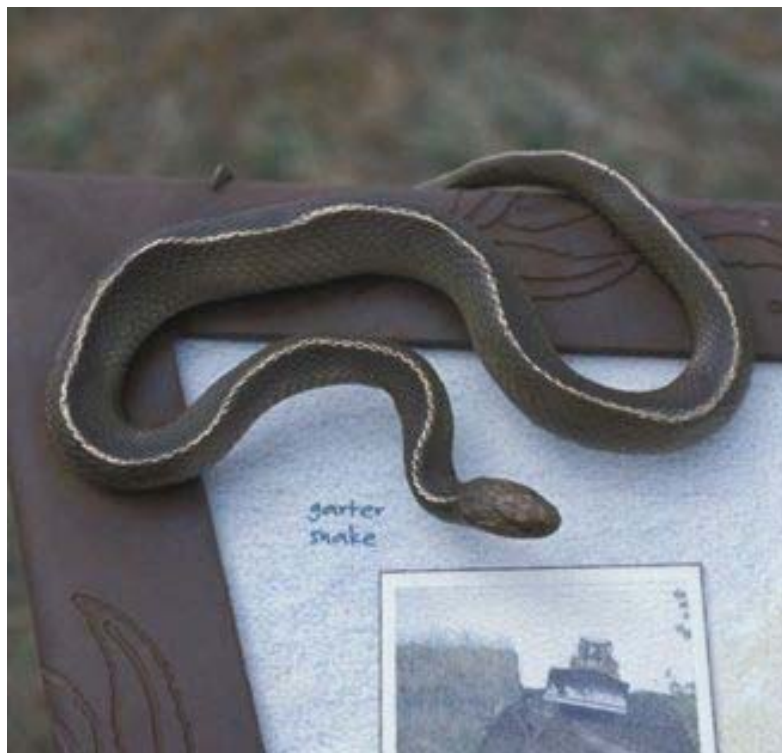


Figure 3.35: Tactile model of a garter snake on sign

3.5.9 Interpretive Marker: Wildlife Sounds Kiosk

3.5.9.1 Description:

A more concrete recommendation for a wayside that highlights the wildlife in the Ascutney area (as compared to section 3.5.8) is a “Wildlife Sounds Kiosk.” This kiosk should model the Montshire’s Meadow Sounds Kiosk on the River Loop Trail as in Figure 3.36, which plays different bird sounds corresponding to specific species of birds in the area. The kiosk itself allows visitors to listen to each sound, and in turn, gain knowledge about the different species’ songs simply by pushing a button. Incorporating a similar type of wildlife sounds kiosk that features the sounds of wildlife common to Mount Ascutney (moose, bobcat, black bear, a variety of warbler birds, and yellow-bellied sapsuckers) would serve as a highly interactive and engaging addition to the interpretive trail.

3.5.9.2 Access:

- A specific location for the wildlife sounds kiosk has not yet been chosen, but we are suggesting that it is located on the lower interpretive trail because it will be particularly appealing to younger children. The lower trail system is much more accessible than the upper trail, however we do not envision it being located too close to the resort, so some guests may have some level of difficulty arriving at this marker.
- This marker would be unusable to users who have impaired hearing.

3.5.9.3 Ecological Impact:

- Timber for construction would ideally be local because the use of natural looking wood creates more of a wilderness feel (The Appalachian Mountain Club, 2012).

- Solar panels on top of the kiosk will be used to power the speakers, as to avoid any sort of batteries or connection to the electrical grid. According to the Appalachian Mountain Club, “structures covered by a roof convey more of a ‘presence’”, which is an important connection to the sense of place discussion that occurred in a prior section of this chapter.
- Cement foundation will be poured, but should not have a major impact on any surrounding ecological systems.

3.5.9.4 Cost Estimate:

- The Appalachian Mountain Club estimates a total cost of one of their trailhead kiosks to be \$1,982 (based on 2012 pricing). Though their kiosks are much larger and more complex than what we envision for Mount Ascutney, the speakers, wiring, and sound system will probably be relatively expensive. Perhaps an educational grant could be applied to this cost.



Figure 3.36: Montshire’s Meadow Sounds Kiosk

Upper Interpretive Trail Marker: Rope Tow

3.5.10.1 Description:

We think that the rope tow serves as a great start to the upper interpretive trail because it combines both old and new aspects of Mount Ascutney. The wooden sign at the bottom of the rope tow shows off “old Mount Ascutney” by providing some information about the former ski area. We recommend installing one more sign of identical design (perhaps at the top of the rope tow) to provide some information about how the rope tow was built and by whom. This information is important not only to educate trail users about the “new beginning” at Mount Ascutney, but also to give Ascutney Outdoors credit for all the work they have done in recent years to keep Mount Ascutney alive.



Figure 3.37: The bottom of the current rope tow - located just uphill of the road overpass and near the site of the burned down lodge



Figure 3.38: Sign hanging over the bottom of the rope tow - Source: Nancy Nutile-McMenemy

3.5.11 Concluding note on interpretive markers:

This list of suggested waypoints is merely the beginning of what we hope to be a robust, engaging interpretive trail system. We predict that the final list of waypoints and their locations may be different than what was outlined above, but the overarching idea of ecological and cultural significance connecting to a sense of place will remain.

3.6 Interpretive Trail Map with Waypoints

The following aerial photograph shows where some of the above-mentioned markers could be placed on the mountain as determined during our walk with Jennifer.



Figure 3.39: An aerial photograph showing locations of proposed waypoints in relation to the hotel and mountain area

3.7 A Note about Accessible Trail Design:

Creating a truly accessible trail that meets standards for outdoor universal access is an important but significant undertaking. Vermont is lucky to have several nationally-known accessible trail contractors, and one of these contractors should be invited to the site to discuss final design options for the interpretive trail. In general, these contractors will provide an assessment, a trail work log, a construction strategy and a cost estimate for a trail for about \$3,500 - \$6,000 depending on the length of the trail. Construction costs vary considerably, and half a mile can cost \$200,000. Sometimes a community will use a “hybrid” approach to trail construction, where the contractor works with youth crews for construction. This provides youth training opportunities and increases community engagement in the process. An accessible trail requires this kind of planning and specialized trail construction to be truly successful and meet the needs of many types of users. The following images (Figures 3.40 and 3.41) show two different accessible trails in Vermont.



Figure 3.40: The Faulkner Trail in Woodstock, VT



Figure 3.41: Mount Independence State Historic Site in Orwell, VT

3.8 Conclusion

In designing an accessibly-oriented interpretive trail system that emphasizes sense of place, this project aimed to enhance the current educational and recreational management at Mount Ascutney. Though the mountain already possesses a vast network of multi-use trails for mountain biking, hiking, and backcountry skiing, trails for all user groups are currently nonexistent. Therefore, our work was geared toward filling this niche and addressing the demand for this type of trail. Besides collaborating with and drawing inspiration from our community partners, we looked to existing place-based literature to help inform our design process. To ensure that our designs were grounded in Mount Ascutney's sense of place, we targeted five integral aspects of the mountain's natural and social landscape: geology, hydrology biodiversity,

ski area history, and current stewardship under Ascutney Outdoors. Each one of our recommended interpretive trail markers reflects at least one of these aspects. The interpretive trail elements altogether thus provide a holistic view of Mount Ascutney.

Our priority was to create a trail that draws users in and also gives them a reason to complete the entire length of the trail. We listened to our community partners' advice and steered away from the traditional wayside placards that are full of text. After all, "people don't read labels" as Greg DeFrancis of the Montshire Museum, advised us. Thus, instead, we have recommended trail waysides that promote multi-sensory, hands-on experiences. In doing so, we hope that our work productively assists in the development of an interpretive trail system that catalyzes positive outdoor experiences through education, recreation, and community involvement.

Chapter Four

User Research and Monitoring

Robyn Chemago

Margaret Currie

Star Gulant

Mark Widerschein

Chapter Four: West Windsor Town Forest User Research and Monitoring Study

4.1 Introduction

This sub-project offers a mixed quantitative-qualitative discussion of usage rates at Mount Ascutney, and the effects of trail use on ecological quality. In managing the West Windsor Town Forest, Ascutney Outdoors (AO) and the Upper Valley Land Trust (UFLT) aim for proactive management. Indeed, this proactive management is required in the conservation easement that governs their management of the land. Several peer sites have struggled with the question of how to quantify use and avoid negative impacts until use has already reached that point of negative impact, a question UFLT hopes to answer before it becomes a problem. Our most important goal, then, is to answer the question of what user monitoring on Mount Ascutney would require, and how it can be implemented using sustainable practices. With that in mind, we have produced a series of materials describing all aspects of a proactive, not reactive, monitoring plan for the site. Our deliverables for the Upper Valley Land Trust (UFLT), in addition to this report, include:

1. An immediately implementable monitoring plan, to be utilized in Summer 2017 by the Upper Valley Land Trust UFLT and Dartmouth College interns, establishing baseline ecological metrics.
2. A cost-benefit analysis of monitoring, ensuring it is feasible to undertake long-term management within organizations that have limited resources.
3. A user-intercept survey form that can be implemented by the Summer 2017 research assistant, and in the future to maintain data consistency.

These three deliverables are supplemented with supporting research and materials. In this chapter, we begin by examining the academic literature of ecological management in mixed-use environments, as well as the economics of public land monitoring and management; both with a focused eye towards what makes Mount Ascutney unique.

Following this review of relevant literature, we provide background justification for the recommended monitoring plan, for the benefit of all relevant stakeholders. This comprehensive monitoring methodology is designed to achieve the values of ecological sustainability and optimized use required in the conservation easement governing the land. It offers a data collection methodology that is quickly and easily implementable - addressing required equipment, day-to-day study design, training protocols, and potential barriers to success. This plan includes a road-map to long term management, and a discussion of the potential challenges and tradeoffs inherent to this monitoring. Further, we offer a long-term management methodology and feasibility analysis, designed to maximize data collected while minimizing the required investment of time and resources. In conjunction with this methodology, we also include our cost-benefit analysis data, with an eye towards investment required to get monitoring running, and to sustain it over time.

4.2 Literature Review of Relevant Studies: Monitoring Background and Techniques

Mount Ascutney is a unique geological feature of Vermont that provides a variety of outdoor recreation activities to a variety of people from all over the east coast. It is known for its ski area history, challenging and extensive network of mountain biking, horseback riding, and hiking trails.

A number of studies have documented recreational trends, and the impact that they have on broader community life. Notably, “numerous studies have documented that quality of life plays an increasingly important role in community economic growth (Dissart and Deller, Halstead and Deller, Rudzitis).” Quality of life, here, refers to ‘amenities’ - which in rural areas includes quality recreational access.

“For the rural parts of America that are growing most rapidly the cause does not appear to come from traditional resource extractive industries and manufacturing. Rather, analyses by Nord and Cromartie and Beale and Johnson, among others, suggest that natural amenities and other non-market attributes that contribute to overall quality of life may be the driving factors. Beale and Johnson, for example, found that those rural areas classified as ‘recreational’ account for 12% of the nonmetro counties and 15% of the nonmetro population. They further found that population growth in these counties has consistently exceeded those in other nonmetro areas as well as those in metro areas.”

Hiking, biking, and other forms of recreational access, then, can provide a significant economic boost to a community.

A variety of methods have been used by researchers historically to assess user experience, volume, and use patterns at national parks and outdoor recreation areas like Mount Ascutney. Baseline data that would be acquired by this study on visitor use is essential for informed planning and management of outdoor recreation areas, as it allows managers to assess visitor impacts to the resource and estimate the quality of the visitor experience, key concerns for the Upper Valley Land Trust (Loomis 2000). In a similar small conservation region outside

Toronto, user intercept surveys were utilized successfully to assess factors negatively contributing to hiking experiences (Lynn and Brown 2003). A survey was also used at Antelope Island State Park in Utah to assess hiker and mountain biker perceptions of wildlife disturbance. This high level of participation in this study- over 600 respondents- illuminates the possibilities of data collection for Mount Ascutney (Taylor and Knight 2003). Another relevant survey study was performed at Acadia National Park, which is discussed in greater detail in section 4.4.8 (Manning et al. 2006). Automated visitor counters, heretofore referred to as trail counters, have been gaining popularity as a method of assessing user volume at national parks, like Yosemite. In a study by Pettebone, these counters have been shown to be statistically accurate at counting the users entering and exiting a source (Pettebone 2010). Studies like these have shaped the proposed methodology, in addition to the preliminary survey data acquired in October of 2016.

Recreational activities and in particular mountain biking play a significant role on the impact of invasive species spread on mountain ecosystems. These disturbances are proven to be highly correlated with the spread of invasive species, on a range of intensity (Lozon 1997). Fragmenting the natural habitat by building trails, roads, buildings and parking areas for recreational users also contributes to habitat destruction and species spread as a result of excessive or inappropriate use (Trombulak 2000). By going off-trail, there is the potential to pick up invasive species seeds in tires or shoe treads and carry them to a new, uncontaminated area on the trail network. This indirect spreading can be controlled by encouraging users to wash their tires and regularly cleaning shoes (Trombulak 2000). As mountain biking becomes increasingly popular, bikers are entering previously unused or lightly used areas creating disturbance and thereby advancing invasive species to higher altitudes (Pauchard 2009). Global warming impacts on niche range and details on specific invasive species are discussed in section 4.4. The

implementation of a cohesive monitoring plan that aims to promote the conservation of West Windsor Town Forest's ecosystem is crucial as recreational activity continues to grow.

4.3 Methodology

Our proposed methodology incorporates findings from previous qualitative and quantitative studies on social and ecological recreation areas, builds upon the Dartmouth user intercept survey of October 2016, and offers a specific and implementable plan for the interns executing this study in the summer of 2017 and beyond.

4.3.1 Data Collection Instruments

A combination of four data collection instruments and techniques will be implemented during the summer of 2017 at the West Windsor Town Forest for user research and monitoring. These include: GPS tracking units given to as many individual users as possible; one road traffic counter; three infrared trail counters; and a user intercept survey also given to every individual user on sampling days. The combination of all four instruments will strengthen the accuracy of the data collected by each instrument and will result in a larger representation of recreation use of West Windsor Town Forest.

4.3.2 Recreation User Study Design

4.3.2.1 Trail Counter Deployment & Calibration

Infrared trail counters will be installed at each of the three main trailheads to help calculate an approximation of the summer usage of West Windsor Town Forest. Since the Upper Valley Land Trust's main purpose is to track the total number of visitors to the trail network,

trackers will be placed near the bottom of the trail rather than the top, as not all visitors will go to the top.

These counters will be strategically placed such that any interruption of the infrared beam will count as a recreational user, and they do not require an end beam. Although the infrared trail counters can hold a significant amount of data, the data collected should be downloaded on a computer every day or two in order to decrease the risk of losing or confusing data. Additionally, it is recommended that the trackers' positions be checked every morning if possible, to ensure that their beams are effectively positioned to capture visitation use. If this is not possible for the interns, it is recommended checks are performed at a bare minimum of once per month.

Calibration of each infrared trail counter is critical to insure accurate data collection. Proper adjustments must be made in order to account for things that may interrupt the infrared beam but are not recreation users, for example, branches or animals. The best way to do this is to have on-site visitation count in conjunction with the counters to calibrate the raw infrared data. This combination allows for a much more accurate representation of the data than either approach on its own (Pettebone, 2010). The surveyor will need to pay particular attention to users to ensure that they are only counted once. Also, it is suggested that trail counters be operational for a minimum of 10 hours per trail counter per day.

If for some reason UVLT does not have access to the use of infrared trail counters, an alternative method would be to use on-site hand counters by a volunteer or intern. However, this human counting method would not be able to capture as much data as the trail counters due to limited working hours per day, and therefore would miss any users that visit very early in the morning or late in the day.

4.3.2.2 Traffic counter deployment

One traffic counter will be positioned as far up as possible along Coaching Lane for the entire summer of 2017. Traffic counters must be placed on a paved road, and ideally on a road that will capture mostly users of the recreation area. Coaching Lane was selected because it is paved and because the travelers along this road are almost certainly travelling to one of West Windsor Town Forest's isolated parking lots. While the traffic counter will aid in determining the visitor volume, it alone will not be accurate enough to predict user volume. It will serve mostly to provide background data and for pattern verification purposes. There is a possibility of acquiring a second traffic counter from the regional planning commission, which would be placed on the paved road just in front of the ski area parking lot.

4.3.2.3 GPS tracking of visitor use patterns

GPS tracking devices donated by Resource Systems Group (RSG) will be handed out at one of the three selected trailheads at a time, and given to individual trail users to clip on to themselves. Each day from July 1 to July 26 will be divided up into three time slots so that a part of each day of the week can be spent giving out GPS trackers and user intercept surveys at each trailhead. These timeslots will be rotated among all three trailheads such that data will eventually be collected for all times of the day at all trailheads. Table 1 shows one possible way to break up the timeslots among the three trailheads from July 1 to July 26. Adjustments may need to be made to the amount of time spent at each trailhead after the first few days of data collection depending on the amount of activity experienced at each trailhead. For example, the Mile Long Field trailhead is likely to receive fewer users than the ski area trailhead because it is a much

smaller parking area and fewer people are aware of it. Therefore, the intern may want to shorten the hours spent at the Mile Long Field trailhead and spend more hours at the ski area trailhead and Coaching Lane trailhead. It is important that GPS trackers and intercept surveys are used simultaneously because there is an overlapping component in the survey that asks the user to trace their route. The use of GPS units will give the researcher extremely accurate data on where each user goes to, and therefore can be used to estimate the reliability and effectiveness of users' corresponding hand-drawn routes included in the intercept survey.

Table 4.1: A proposal for the division of time spent at each trailhead for July 1 to July 26, 2017. Each letter represents a different trailhead: letter A represents the ski area trailhead; letter B represents the Coaching Lane trailhead; and letter C represents the Mile Long Field trailhead. The weekends will most likely bring in more users so monitoring hours should be extended in order to capture the earlier and later users. July 22 to July 26 should be used to make up for previous days in the month that experienced poor weather.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
						1 8-12: A 12-4: B 4-8: C
2 10-12: B 12-3: C 3-6: A	3 10-12: C 12-3: A 3-6: B	4 10-12: A 12-3: B 3-6: C	5 10-12: B 12-3: C 3-6: A	6 10-12: C 12-3: A 3-6: B	7 8-12: A 12-3: B 3-6: C	8 8-12: B 12-4: C 4-8: A
9 10-12: C 12-3: A 3-6: B	10 10-12: A 12-3: B 3-6: C	11 10-12: B 12-3: C 3-6: A	12 10-12: C 12-3: A 3-6: B	13 10-12: A 12-3: B 3-6: C	14 10-12: B 12-4: C 4-8: A	15 8-12: C 12-4: A 4-8: B
16 10-12: A 12-3: B 3-6: C	17 10-12: B 12-3: C 3-6: A	18 10-12: C 12-3: A 3-6: B	19 10-12: A 12-3: B 3-6: C	20 10-12: B 12-3: C 3-6: A	21 8-12: C 12-4: A 4-8: B	22
23	24	25	26			

Upon deployment, the user's activity type, group size, unit ID number, time in, time out, or reason for refusal of participation should be recorded in a log. There should be a drop box at the trailhead for when users leave the recreation area and there is no intern or volunteer present

to retrieve the GPS unit. In the event that a user forgets to return a GPS unit, a label with return instructions is attached, and users are not inclined to keep the GPS units because there is no interface for them to see the data collected.

Before deploying a GPS unit, staff must ensure that the battery is fully charged and will last as long as the user is active. When turning the GPS on, slide the power switch on the side of the unit to LOG mode and an orange light should appear on the front. However, if a red battery light flashes instead, the unit should not be deployed because it is not fully charged. Secondly, the GPS unit must acquire a “satellite lock” in order to collect spatially accurate data. Once there is a flashing orange light on the front of the unit, the satellite lock has been acquired. If the orange light is solid, you may need to move the unit to a more open area for a better location signal. The flashing orange light is critical and must be present before deploying the GPS unit. The GPS unit must be attached to the individual on the outside, not carried in a pack or pocket, if it is to collect the most accurate data. Finally, it is important to turn off the GPS unit immediately after it has been returned so that it stops collecting data. This can be done by sliding the power switch on the side of the unit away from LOG and towards OFF.

After the GPS units have been retrieved, the route data can be downloaded into the data log on a computer. This should be done daily such that the memory of the unit does not fill up. It is also important that any GPS units that were deployed are charged immediately so that they are ready for the next day of data collection. It is recommended that at least 30 tracks be recorded per entry point for basic data significance; however, the target should be 100 or more.

4.3.2.4 Parking Data Collection & Protocol

The purpose of collecting data on parking turnover is to determine the number of parked vehicles driven by users of the West Windsor Town Forest during a given period of time, and the duration of time parked. Duration may vary by location as well as time of day, and may be related to activity type. This data will allow future researchers to extrapolate user volume based on cars parked in the lots, drawn from this preliminary data. As a result of the variations in visitation times, parking turnover should be monitored at the same time as the user intercept survey and GPS trackers.

Parking turnover is best measured using the license plate method. At the beginning of each hour, if there is a car parked in a given parking spot, the license plate number and state is recorded, until the car leaves. The recording protocol is slightly different for striped versus un-striped parking areas. The West Windsor Town Forest has three parking lots, all of which are un-striped. As such, vehicles will park in random locations in these parking areas throughout the day. Thus, it is more important to focus on the vehicle rather than the space it is parked in.

Data collection should be in a consistent pattern, completing the circuit of the parking area in the same sequence and direction, regardless of how many vehicles are in the parking lot. Also, data collection should start at regular intervals of time, such as at the beginning of every hour. If a vehicle is parked in a space for multiple hours, instead of rewriting the license plate information again, it is easiest to draw an arrow across the number of cells on the data sheet that correspond to the amount of time parked. In un-striped parking areas like the West Windsor Town Forest, each car should get its own row in the log form, since rows cannot be assigned to specific parking spots. Be sure to record that the vehicle is not in the parking area before the vehicle's arrival and after the vehicle's departure. If a vehicle is encountered that is parked not in

the parking area, for example, on the roadside, still record the presence of the parked vehicle as you would for a regularly parked vehicle, however, make a special note of its parking location.

4.3.2.5 User Intercept Survey

User intercept surveys are extremely valuable for determining the overall user experience at a given place. They are used by collecting responses from visitors to highlight strengths and weaknesses to improve user experience in the future. This type of survey is more effective than a survey sent by email because immediate feedback is more accurate. Also, intercepts target all visitors equally giving every user an opportunity to respond to the survey, reducing nonresponse bias. If a user chooses not to participate in the intercept survey, it is important to ask them why they are choosing not to participate.

In the fall of 2016, a user intercept survey was deployed for two days (October 16 and October 30) at West Windsor Town Forest, which generated 38 responses in total, with a 100% response rate. The same survey, with a few adjustments, will be used in the summer of 2017 to measure trail users' motivations, activities, experience use history, and evaluations, by trail user type. The results of this intercept survey will be used to determine trail user-based indicators and thresholds related to crowding, trail etiquette, and recreation conflict. The survey will also collect trip characteristics by asking users to map out their activity routes, which can be used in conjunction with GPS trackers to determine the accuracy and reliability of user mapping. As mentioned earlier in the GPS tracking monitoring protocol, the intercept survey should be administered on a rotation between the three trailheads each day, for as many days as possible in order to have the best possible representation of the data.

4.3.3 Suggested Protocols

4.3.3.1 Summer 2017 Intern

To assist in the Summer 2017 user research and monitoring study at West Windsor Town Forest, an intern has been hired to assist the full time staff for the last week of June, through July, and for approximately 60 hours in August. The intern will be responsible for a large portion of the data collection, specifically the on-site trail counting in correspondence with the infrared trail counters, deployment of GPS trackers, and the parking data collection via license plate method. As mentioned above, data collection should be carried out as much as possible in order to validate the other data collection instruments, and must be downloaded to a computer regularly. The intern should check-in with their supervisor, John Roe, every other day to help keep the study on track.

4.3.3.2 Volunteers

West Windsor Town Forest, along with many other recreation sites in New England, heavily relies on its volunteers, and although the extra hands are extremely valuable, they require extra time and effort from the staff. Volunteers must be fully trained in their assigned task to ensure they are not inhibiting data collection, and they must be well educated on the study purpose, design, and goals if they are to interact with potential study participants. This requires an efficient chain of command, which is possible to achieve with diligent managers. Also, with many different people working or volunteering to help with a study, it is easy for information to be misplaced or lost. Excellent organization is critical to ensure things run as smoothly as possible, and so that volunteers can come and go, and easily pick up work where others left off.

4.3.4 Potential Study Challenges and Issues

4.3.4.1 Weather

Weather has a significant impact on outdoor activity, and as a result, we would expect poor weather days to bring fewer visitors to West Windsor Town Forest than good weather days. This means that the interns will need to take weather into consideration when collecting data using GPS trackers, intercept surveys and parking areas. For example, if every weekend in July happens to be bad weather, the data collection should continue into August until data can be collected for a weekend with good weather.

4.3.4.2 Coverage

The biggest weakness of this study is that it will be impossible to get 100% coverage of data collection at West Windsor Town Forest at all times. Having only two summer interns and limited data collection instruments, this is a large project that would ideally have many more workers to get full coverage of West Windsor Town Forest. However, this is not possible and as a result, we determined the most effective way to maximize our resources is by splitting the days up into three time periods, and spending part of each day at each trailhead. By doing this, we will have a good idea of the activity at all major entry points into the trail system on any given day.

4.3.4.3 Sampling Bias

As with any study, there is a risk of having sample selection bias. The best way to avoid this type of bias is by randomizing data collection. For example, by implementing an intercept survey with every individual user, there is no discrimination, because you are targeting all demographics (except sensitive population of minors). Bias may be present in parking data collection if the surveyor fails to adhere to the same circuit through the parking area because it

will create an imbalance in the timing of one parked car relative to another parked car, which is the entire basis of that data collection instrument.

As mentioned above, infrared trail counters capture not only human activity, but any motion that interrupts the infrared beam, such as a branch or animal. These random occurrences can lead to inaccurate data representation, which is why on-site human monitoring to compare with the trail counters is essential. Once there is sufficient understanding of the rate of random occurrences, the infrared trail counters can be calibrated to account for a certain percentage of infrared beam interruptions caused by these random occurrences.

4.3.4.4 Human error

Humans are fallible and errors are to be expected, which brings certain uncertainty into a study. The errors of individuals, such as forgetfulness, inattention, inconsistency or susceptibility to human foibles, all may be present as issues in data collection and protocol violations. Therefore, procedures are put in place to reduce unwanted variability in human behavior, like well-defined methodologies and increased self-awareness of intern mistakes.

4.3.4.5 Damage to data collectors

There is the possibility of a data collection instrument being damaged. This would be a challenge because the study would lose one of a small pool of data collection sources. Further, monitoring instruments are very expensive, so having to repair or replace a borrowed or donated item would quickly grow prohibitively costly.

4.3.5 Conclusions

This proposed methodology is designed to help implement a research and monitoring study for the summer of 2017. The data will provide us with a better understanding of user recreation activities, which will ultimately lead to better management of the recreation area. Ideally, this study should be conducted approximately every 5 years, however due to limited access to data collection instruments, a more realistic and feasible long-term monitoring plan will be discussed in the following sections. In the long-term, this study will provide West Windsor Town Forest with a solid foundation of data for which future collections can be compared to in order to monitor change.

4.4: Ecological Impacts:

In consultation with both the Upper Valley Land Trust and the West Windsor Town Forest management plan, our group decided to include ecological impacts, specifically trail erosion and invasive species spread, as foci in our chapter and as integral components of this summer's monitoring methodology. Initially, we sought to craft a methodology that would determine a predicted carrying capacity of the trail system, in order to mitigate ecological impacts through persistent monitoring, and to avoid exceeding the capacity. However, although it has been documented that hiking and mountain biking can contribute to the spread of invasive species into new ecosystems and increase trail erosion, evidence for a significant statistical relationship between user density and these phenomena has not yet been identified (Pickering et al. 2010). In spite of a lack of a numerical relationship, it is important to estimate and manage these factors appropriately, as they dramatically affect both the health of the ecosystem and the user experience at West Windsor Town Forest.

Trail Condition Classes

Class 0: Trail barely distinguishable, none or minimal disturbance of vegetation and/or organic litter

Class 1: Trail distinguishable, slight loss of vegetation cover and/or minimal disturbance of organic litter

Class 2: Trail obvious, vegetation cover lost and/or organic litter pulverized in primary use area

Class 3: Vegetation cover lost and/or organic litter pulverized within the center of the read, some bare soil exposed

Class 4: Nearly complete or total loss of vegetation cover and organic litter within the tread, bare soil widespread

Class 5: Soil erosion obvious, as indicated by exposed roots and rocks and/or gullying

Figure 4.1: Trail Condition Classes

4.4.1 Trail Erosion

Trail erosion is a particularly critical issue for both the UVLT and the future of West Windsor Town Forest. This form of trail degradation may have significant ecological impacts, in that it has the potential to disturb the aquatic system, widen trails, create consistently muddy trails, and create new, undesired trails. Eroded and muddy trails may also negatively affect user experience as well by severely impacting overall functionality of the trail for hikers, horseback riders and mountain bikers (Jewell and Hammitt 2000).

In many studies, trail slope was determined to be the most significant factor affecting erosion levels, while level of use played an insignificant role. Thus, because the trails of West Windsor Town Forest have already been constructed and are currently in use, the most effective course of action is to monitor trail erosion proactively through a combination of citizen science and active research, outlined below (Pickering et al 2010).

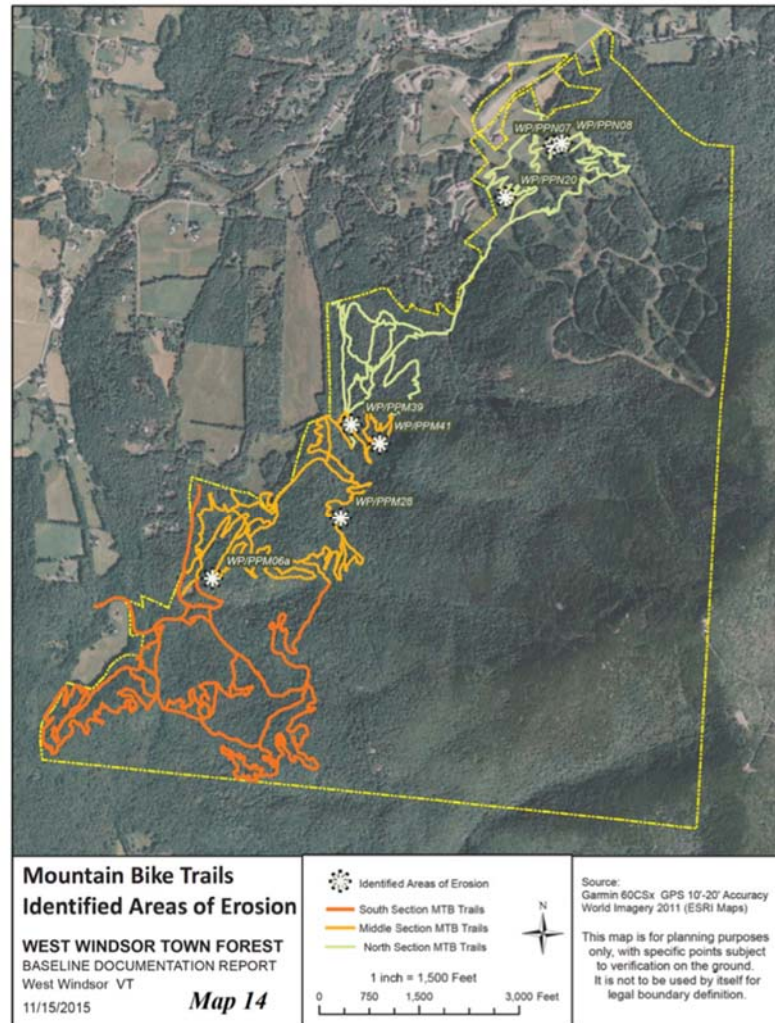


Figure 4.2: Mountain Bike Trail Areas of Erosion, Town Forest

4.4.2 Monitoring: 3-5 year interval of on-ground measurement of trail width, depth, and vegetation cover

There are many ways to assess trail erosion, both quantitatively and qualitatively. One of the most effective qualitative measures, the Condition Class method, is simple and easy to learn, and can thus be utilized by citizen science programs and researchers at West Windsor Town Forest alike. This method consists of defining specific descriptive numerical condition classes, which are visually determined at a site in a matter of minutes. This method is highly efficient and relatively accurate, though it has low management utility, and low cross-study functionality, so it

must be coupled with other measurement methods. For specific implementation, the interns should utilize condition classes listed in Figure 4.1, and modify them at their discretion, noting that there are typically five categories (Marion et al. 2011). Then, the interns or volunteers should randomly select 10% of the available trail sections defined in the 2016 study out of the 187 available choices, in addition to the identified areas of erosion indicated in the baseline documentation report of the West Windsor Town Forest (see Figure 4.2). The interns will determine an appropriate frequency for monitoring based on preliminary results and observed changes obtained during the summer of 2017.

Many other measurement types exist, but the census of erosional events method is recommended for more in-depth analysis in this system. This method consists of defining and measuring erosional events, and was chosen as the most preferable method by Jewell and Hammitt of the US Forest Service, a ranking which included measures of efficiency, accuracy, precision, training required, and management utility. For this method, terminology must be identified and defined in terms of exactly what will be considered an erosional event. This method is applied using a systematic sampling scheme, and it is accurate, and efficient, and the results are relevant to managers who must make appropriate and timely trail resource decisions. Limitations include the need for a high level of training due to the qualitative nature of an erosional event and the potential lack of inter-rater reliability. However, this method allows relatively rapid assessment of a trail system and produces information on the frequency, extent and distribution of erosional event problems (Jewell and Hammitt 2000). The interns will utilize this method to their discretion in order to assess the state of the system.

4.4.2.1 Develop a change threshold triggering remedial action

Based on the qualitative classification methods previously outlined, the interns will determine a threshold after which action must be taken to mitigate trail erosion. It is recommended that once an initial assessment is performed, if the majority of the sections rank at a condition class of 3 or below, the threshold be set at an average rank of 4 or higher. It has been documented that as of 2015, the vast majority of the mountain biking trails were in “excellent condition” (baseline report). When and if this threshold is approached, researchers and stakeholders will discuss steps with the UVLT and Ascutney Outdoors to address the issue, including possibly closing the trail completely, adjusting the slope of the trail, and altering the geology of the trail.

4.4.3 Results: Finding portions of the trail system that are not designed properly

Based on relevant literature and the interns’ knowledge of the system, if it is determined that the rate of erosion of trails is problematic, measures will be taken to reassess trail design and identify and mitigate weaknesses in the system, in consultation with trail designer Jim Lyle.

4.4.4 Invasive Species

Because the West Windsor Town Forest is such an ecologically diverse region, monitoring the spread of invasive species is critical for maintain the integrity of this ecosystem, especially as hiking and mountain biking increase in the system. Human hiking activity has been shown to spread animal and plant pathogens, invasive water molds, and other plant species. Horseback riding, which is also permitted on these trails, can spread invasive seeds through saddles, floats and vehicles. Horses also have the potential to spread invasive seeds via their coats, hoofs and dung. Seeds ingested by horses have been found to be viable up to ten days

post-ingestion, and therefore have the potential to end up in this system (St. John-Sweeting and Morris 1991; Pickering et al 2010).

4.4.4.1 Species spread is more a function of behavior on the trail than trail usage volume

Based on this information, it follows that the more people use the trails, the more likely these invasive species are to spread in the system. No relationship has been numerically identified with regard to user density and spread however, and spread is highly dependent on individuals, rather than group behavior (i.e. the introduction of Zebra mussels into the Great Lakes through one ballast tank) (Egan 2017).

In the system, the invasive species that have been identified as potential problems include buckthorn, garlic mustard, honeysuckle, Japanese barberry, multiflora rose, and in the near future, oriental bittersweet. Additionally, as climate change continues to affect the region and average annual temperatures rise, new invasive species may be added as concerns emerge. In order to ensure consistency with the previously collected data, spread of invasive species will be monitored via the method previously used by the West Windsor Town Forest (see section 5 A of the baseline documentation report).

4.4.5 Monitoring: 3-5 year on-ground measurement

If the invasive species are again determined to be at a minimal threat level as they were in 2015, we recommend reimplementation of this procedure every three years to monitor the potential spread. However, because the data collection is relatively simple, it could be implemented through a citizen science project on an annual basis, in accordance with the previously outlined methodology.

4.4.6 Results: close trails, or sections of trails, as needed.

If the spread of any of the five identified species is determined to be excessive, individual management plans may be implemented to attempt to mitigate this spread. For example, garlic mustard thrives in a disturbed environment, such as a trail edge. Thus, it should be monitored proactively from the trail through information dissemination, because once a foothold is established, it is very difficult to remove (Nuzzo 1991). For physically tougher species like Japanese barberry, a hand pulling method may be implemented through the use of volunteers (Wenning 2012).

4.4.7 User Experience

The current use patterns at the West Windsor Town Forest are not anywhere near the density that would be needed to have a meaningful impact on user experience. However, the UVLT wants to avoid a negative overexpansion like that of Kingdom Trails, so the methodology will include a mechanism for assessing user volume in the future and identifying problematic use patterns before they cause significant harm to the experience at West Windsor Town Forest and the physical condition of the mountain and trails. Regardless of user volume, if there are significant crowding or etiquette issues that come to light as a result of the user intercept survey, mechanisms for teaching proper bike etiquette and the promotion of the concept of sharing the mountain will be explored.

4.4.8 Chance of having a negative experience is not directly related to volume of users

At Acadia National Park, a relevant study of recreation experience was conducted on the famous carriage roads. Although Acadia is at a completely different level of user volume, beyond the number that could ever be sustained by West Windsor Town Forest (Acadia

accommodates around 2.2 million visitors per year), and the carriage roads are much wider and sustain two-way traffic, it is relevant to consider these results at this smaller scale, because they are from a comprehensive study of a similar issue, in a similar type recreation area. The study indicated that a very high number of people would be required to inflict a significantly negative crowding effects on other users, which would not be seen at West Windsor Town Forest.

Therefore, our proposed methodology is less concerned with purely numerical user volume's effect on experience. Interestingly, however, the researchers from the Acadia study identified "problem behaviors" that may be seen on trails, and asked users filling out their intercept survey to record how frequently they had experienced these behaviors. This method of surveying identified actual problem behaviors in practice, and at West Windsor Town Forest could assist the UVLT in identifying problems experienced by users on the trail at problematic levels, which could then be mitigated through proactive action (Manning et al. 2006).

4.5 Long-Term Monitoring

4.5.1 Easement

The final conservation easement granting management of the West Windsor Town Forest to Ascutney Outdoors begins with a broad statement of purpose, as reproduced below:

- A. Statement of Purposes.*
- 4. Grantors and Grantees acknowledge that the Purposes of this Grant are as follows:*
 - 4.5 Conserve native forest values and non-commercial recreation values over the long term within a community forest context:*
 - 4.5.1 Forest values include the conservation and enhancement of wildlife habitats, native flora and fauna, biological diversity, natural communities, riparian*

buffers, wetlands, aquatic habitats, water quality of surface water and groundwater, flood resilience, and ecological forestry designed to create large-diameter saw timber within an all-aged forest, along with the ecological processes that sustain these values over time.

4.5.2 Non-commercial recreation values include environmentally sustainable, non-motorized, outdoor recreation in a scenic, large natural forest and open space context, largely undeveloped without permanent structures, and based on and supportive of the forest values above.

The balance between forest values and non-commercial recreation values when making decisions within the context of this Grant will be determined by the facts of the issue, what location and proportion of the Protected Property may be affected, the context (such as but not limited to: regulations in effect at that time; ecological condition of the landscape; availability of similar recreation; and/or changes in technology) and the expected future trends of the specific issue, all as determined at the time of the decision.

The fundamental purpose of this grant, then is to “conserve native forest values and non-commercial recreation values over the long term within a community forest context.” This is to be done by way of appropriate management and balancing of ecological values that are sustained over time, and non-commercial recreational values that are supportive of those ecological values. In short, this long-term management in order to maintain basic values is a legal obligation for land management in the Windsor Forest. With that in mind, we have developed a low-impact, long-term methodology for required monitoring.

4.5.2 Methodology

Our proposed methodology incorporates findings from previous qualitative and quantitative studies on social and ecological recreation areas, builds upon the Dartmouth user intercept survey of October 2016, and offers a specific and implementable plan for the interns executing this study in the summer of 2017 and beyond. The study methodology, as presented in section two, offers a scalable baseline of data for future monitoring and management.

In an ideal world, the Upper Valley Land Trust would be able to run this study each year, gathering data on changes over time, and continuing to fine tune their management processes. However, that would be impractical and unsustainable. With that in mind, we propose a three-pronged monitoring system:

1. Replicate the GPS tracking and use intercept survey every 5-7 years and when systemic changes that render statistical relationships obsolete occur, such as systemic changes to trail network, new points of entry, or fluctuations in regional user base.
2. Undertake smaller-scale ecological monitoring of notable indicators every 3-5 years. In particular, this will focus on ecological indicators of note: trail erosion and invasive species spread.
3. Utilize interns, staff, and volunteer based citizen science for year-round monitoring of problem sites. This will be accomplished by leveraging the existing community of dedicated users, as well as potentially camps and educational groups on the mountain. Signs could be posted asking users to keep an eye for basic indicators – invasive species or major erosion - and report them to a tip line / social media page.

Data collected in each monitoring round will be compared to baseline data, and adaptive management will be deployed as thresholds for action are met. This data will be collected via long-term trail counter deployment, maintenance, download, and data analysis at each of the entry points into the trail network, which allows for assessment of:

1. Trends in hourly/daily/weekly/annual trail use
2. Segment-specific trail use based on GPS track route percentages
3. Indicators of quality
4. Parking accumulation

These intertwined monitoring processes will allow for the maintenance of a consistent dataset, and ease of training of new interns and employees. Instead of beginning from scratch in each monitoring round, all data that is collected will be useful.

4.5.2.1 Feasibility and Potential Problems

There are a number of potential roadblocks to undertaking long-term management; thus, an important consideration in this plan is feasibility. On a basic level, there is quite a bit of trail to cover, and limited resources with which to cover it.

We are cognizant that relevant stakeholders – the Town of West Windsor, UVLT, AO, and Dartmouth College – all have limited people power and financial resources that can be applied to monitoring. It is important that what resources they do have available are carefully considered to ensure they are maximized.

Importantly, the broader landscape changes over time. While the easement establishes management in perpetuity, it is impossible to account for all potential sources of uncertainty in a

monitoring plan. Potential pitfalls include shifting organizational leadership priorities, fluctuation of resources, and data management.

Shifting Leadership Priorities: Monitoring is a priority of the current AO Board, however, should there be leadership turnover, there may be a desire to shift resources or move to a new methodology.

Fluctuation of Resources: Much of this monitoring requires donated equipment, or a significant budgeting outlay to purchase new equipment. These pieces of equipment may or may not be available in future years, and by the nature of a non-profit, the money and staff available year to year may fluctuate. Partnership with Dartmouth College may allow for more consistent access to supplies and interns, but that remains up in the air.

Data Consistency and Management: It is crucial that the data be stored in a safe manner, and in a format that will continue to be accessible to whoever needs the data. This means collecting data in the same format year-over-year, and collating it in an accessible manner to those who may or may not be familiar with how exactly it was originally collected.

Requirement of Volunteer Commitment: In particular, the yearly citizen science aspect of monitoring requires consistent coverage to be a methodology and not just a tip line. It will be crucial to communicate what negative trail impacts look like through signage and educational efforts - making sure that users can identify erosion and major invasive species, for example.

This monitoring methodology requires a moderate commitment of resources every three to five years, and a greater commitment of resources every five to seven years – in practice, some sort

of concentrated monitoring activity would be undertaken every third year. A proposed timeline for monitoring is shown in Fig. 4.1, below:

2017	Initial Baseline Establishment
2018	Citizen Science Monitoring
2019	Citizen Science Monitoring
2020	Check Ecological Indicators of Interest
2021	Citizen Science Monitoring
2022	Citizen Science Monitoring
2023	Replicate GPS tracking and visitor survey, new baselines
2024	Citizen Science Monitoring
2025	Citizen Science Monitoring
2026	Check Ecological Indicators of Interest

This monitoring timeline, or a similar breakdown, would allow for consistent and actionable data without undue strain on the Upper Valley Land Trust and Dartmouth College’s resources.

Further, it would allow prior experience and invested time to be leveraged post-collection.

4.6 Financial Costs

4.6.1 Cost of Labor

For the summer of 2017, Dartmouth College has partnered with the Upper Valley Land Trust (UVLT) to hire one full time intern and one assistant intern. Under these conditions, UVLT has allotted \$1500 to the fund the intern assistant, in return for a total of 200 hours over the course of 10 weeks. The full time intern will work 40 hours per week, through June 26th to July 28th. Through August, the full time intern will curtail their hours, working approximately 25 hours per week until the limit of 320 hours has been reached. Certain weekends will need to be covered, as chosen by UVLT to acquire data on the high traffic weekends. For the full time intern, Dartmouth College is covering the cost through a grant, compensating \$15.00 per hour in the form of a stipend.

4.6.1.1 Transportation Costs

Another cost that will be included this summer is the cost of travel. Here, the federal travel reimbursement rate will be used, currently sitting at \$53.57 cents per mile. As Dartmouth College sits 25 miles from Mount Ascutney, the round trip will be a total of 50 miles. By dividing 320 hours by an 8 hour day, the total work days of the full time intern works out to be 40 work days, then assuming 40 trips that will be covered. With this estimation, the total budget for travel costs is \$1017.40. This also assumes that the assistant intern will share transportation with the full time intern when both are needed on site.

4.6.1.2 Cost of Monitor Intern Training

A training period will be required for interns to conduct a consistent study. For the full time intern, this will be included in the contracted work hours, with the last week of June allocated for training. During this time, they will be introduced to the basics needed to conduct the study, and the research methodology. Training costs will be included within the budget for the full time intern.

4.6.1.3 Future Cost of Labor

With the baseline study being replicated every six years, the cost of labor will not necessarily stay the same. To account for inflation, the total stipend for both full-time intern and assistant intern was compounded annually by 2.4%. This appreciation rate was taken from the United States Bureau of Labor Statistics as this year's employment cost index raised state and local government wages and salaries for workers for the 2016-2017 year (U.S. Bureau of Labor). With this, the \$4800 allotted for the full time intern would grow to \$5534 by 2023, the next time the study would run. For the assistant intern, the \$1500 stipend would grow to \$1730 by 2023.

This is assuming that the amount of hours needed from the interns would remain the same. If Ascutney Outdoors and/or the Town of West Windsor were to decide to hire the summer employees on their own it would be up to them to decide on how to compensate for travel, if they wanted to include such a clause.

4.6.2 Trail Design

Due to the fact that much of the trail system at West Windsor Town Forest has been well established, a heavy investment in the trail system is not necessary. Trail design and maintenance is being considered as a method to protect from and relieve erosion on the trails. Currently, West Windsor Town Forest is utilizing volunteer hours from Jim Lyle, eliminating most trail management costs from the budget for this summer.

4.6.2.1 Trail Design and Maintenance Cost

Currently, West Windsor Town Forest is relying on volunteer hours to maintain trails. If for some reason this were to become impossible, it would be necessary to consider hiring or training a member to manage trail design and maintenance. According to local businesses, trail design can cost up to \$150 per hour (<https://www.mortontrails.com/faqs/>). This includes the use of heavy equipment machinery and is on the high end of the price range. When considering the size and complexity of projects at West Windsor Town Forest, this type of investment will not be required. It would be assumed that the cost would fall much lower than this but it provides a baseline for estimation in our region.

4.6.3 Instrument Costs

To conduct the study, a number of technical instruments will be needed to collect the data. This includes GPS instruments, trail counters and one traffic counter. For now, UVLT is

borrowing equipment from Resource System Group (RSG), however, to replicate the baseline study being implemented this study without the donations from third parties, an initial investment in instrument costs will be necessary from Ascutney Outdoors, if they are to take on the study on their own.

4.6.3.1 GPS Costs for Summer 2017

In 2017, West Windsor Town Forest is able to use 30 GPS counters from a local consulting company, RSG, to run the study for free. This will considerably cut down the budget, and also increase the quality of data gathered this summer.

4.6.3.2 Replacement Costs of GPS Units

Since the units are being distributed to individuals who are expected to return them on their own, with no way to ensure a 100% return rate, there is some chance that GPS units will need to be replaced. To ensure this, it would be a safe precautionary measure to set aside \$100 to replace a portion of the GPS units. Considering that the number of field days in which the trackers will be utilized is low, and it is expected that not all 30 units will be handed out in one day, this number is merely precautionary, and the expense would not be expected to be recorded. On top of this, in previous studies RSG has run with the GPS units, it has been rare that a GPS unit has not been returned. Therefore, this cost is simply precautionary and would be unlikely to be expensed.

4.6.3.3 Future GPS Costs

If West Windsor Town Forest were to not be able to acquire a similar donation in the future, then the next option would be to purchase their own equipment. The GPS units that they are receiving from RSG are the BT-Q1000X Travel Recorder XT. Currently, the market price for

one new tracker is \$100 according to RSG and rates found online. To replicate the exact study going to be executed this summer, it would cost \$3000. It is important to note that this study is adaptive and that depending on the results of the research executed this summer, it may be deduced that it would be viable to use less or necessary to use more GPS units than the 30 that are donated currently. As a result, future GPS units are a floating cost and it would be up to the Ascutney Outdoors Board to decide on how much to invest for such units. Another important note is that there are grant opportunities outlined in the grantmaking chapter of this report that, if obtained, could cover some of these costs. The current grant that is being written by this group is referred to as “The Keen Effect Grant” and has allotted up to \$2125 for GPS units alone. Other grants may be available to help alleviate costs but have not been identified to this date

4.6.3.4 Trail Counter Costs for Summer 2017

As with the GPS units, three trail counters are being donated to West Windsor Town Forest for the duration of this summer’s study. Once again, this cuts costs for this year considerably, as it will not cost the organization anything.

4.6.3.5 Future Trail Counter Costs

In looking to budget for the future, there is some risk that this type of resource will not be available again. To combat this, the organization does have an option to purchase their own. The option of renting this type of equipment has been explored but did not provide a cheaper option than purchasing. To purchase three TRAFx trail counter package it costs \$2195, which includes the software program and 3 counters of choice (trail counters or traffic counters). This is a competitive price in terms of trail counters. To buy additional units after that costs is \$495 each. This will most likely not be required, as the first study will only utilize three counters in the

summer. Once again, this initial investment price can be minimized if AO is able to either acquire “The Keen Effect Grant” (the application for this grant has budgeted up to \$5750 to cover trail counter costs) or identify other grant options.

4.6.3.7 Traffic Counter Costs

Like other instruments that will be used in the summer of 2017, the traffic counter is being donated by the Regional Planning Commission of Vermont. Specifically, this is a buried tube traffic counter that will be able to record a vehicle count.

4.6.3.8 Future Traffic Counter Costs

If the donation of the traffic counter is not able to be secured in the future, it will be necessary to buy at least one traffic counter. The option of renting this type of equipment has been explored but did not provide a cheaper option than purchasing. The package offered by the TRAFx for three counters at \$2195 does give buyers the option to purchase any combination of trail counters and/or traffic counters. Therefore, depending on the needs of resources, the traffic counter could be included in this package. Although this is an option, if 3 trail counters are needed, it would be cheaper to choose 3 trail counters in this package and purchase traffic counters from another source. From other sources, tube traffic counters can be found at a cost for \$399 (<http://www.countingcars.com/wayCount-Road-Tube-Traffic-Counter-p/4019.htm>). This is cheaper than buying the additional pieces from the TRAFx package at \$495.

4.6.4 Budget for Summer 2017

For Summer 2017, the only survey cost is labor, currently \$1500 for the assistant intern, coming from UVLT, approximately \$4800 for the full time intern and approximately \$1017 for travel costs, all covered by Dartmouth College. This assumes that the donations of technical

equipment will be guaranteed and that the intern can translate the proper techniques of the study to the assistant in the field, minimizing required training time and maximizing survey time.

4.6.5 Forecast for Future Studies

When assessing a long-term budget, it is important to note that the costs are identified with the assumption that the volunteer hours and equipment that were provided this summer will not be available in future years. With these assumptions, the cumulative costs of equipment, labor and training are \$12,876 as an initial investment. Although this is a high number, it is necessarily an inflated, ‘worst case’ number. There is a high probability that volunteer hours and other costs will be similarly low-cost in future years.

This number also only represents the first repetition of the study in 2023. Therefore, the second repetition would cost less as investments as the technology would already be established and that cost would not be duplicated. Therefore, from the third survey round onward, the only required funds would be for labor and training. Variable costs will be trail design and repair, as trail quality naturally varies. Below includes a summarized table for costs this summer and future replication of the study.

Expense	Summer 2017	Summer 2023
Full Intern	\$4,800*	\$5,534
Assistant Intern	\$1,500*	\$1,730
GPS Units (30)	\$3000*	\$100/ unit **
Trail Counter (3)	\$2195*	\$2195
Travel Cost	\$1017*	N/A
Trail Design/ Maintenance	N/A	<\$150/hour**

*donated through third parties to Ascutney Outdoors

**Costs that may vary depending on success of the survey.

4.7 Results and Conclusions

The outcomes of this project will help shape the future of this resource in both the immediate and long-term future, while promoting community involvement, proactive thinking, and careful research. By establishing baseline data and protocols for monitoring changes in the system for years to come, the UVLT and Ascutney Outdoors will have the information they need to make informed decisions that promote the interests of the ecology of the resource and its longevity as a suitable recreation area. Specifically, the study will provide interested parties with much needed data, including:

4.7.1 The successful division of mountain users into relevant user groups and the determination of subsequent usage patterns to assist Ascutney Outdoors and the Upper Valley Land Trust.

One challenge that was outlined by the Upper Valley Land Trust is the broad diversity of user groups in the recreation area; both in terms of activity choice (hiking, biking, horseback riding, dog walking, etc.) and in terms of goals on the mountain (purely exercise or intent to summit, etc). Through conversations with both John Roe and RSG, it is recommended that once the data is acquired, demographics of users should be divided into the following groups:

1. Novice/Intermediate Mountain Bikers
2. Advanced/Expert Mountain Bikers
3. Non-Mountain Bikers

Our data will allow us to divide users into these groups, and thus allow AO to target specific groups more effectively, if West Windsor should seek to increase or decrease user volume in these specific communities. For example, if the data shows there are few advanced

bikers and it is decided that the resource should cater to more advanced bikers, Ascutney Outdoors could organize an outreach program to serious mountain biking organizations, and increase out of state advertising.

Additionally, this study is highly integrated with the goals of other sub-groups of this project, further promoting the future of West Windsor Town Forest, outlined below.

4.7.2 Connections with and implications for other sub-groups

Mountain Biking Group

The mountain biking subgroup plans to implement a donation solicitation project through the use of paper slips and envelopes at various trailheads, supplementing the system currently in place at trail head 1. The donation slips will include questions we have determined in conjunction with the mountain biking group, aimed to add supplementary information to our data set. Specifically, the data acquired is potentially representative of a specific target demographic - those who are willing to donate money for the preservation of West Windsor Town Forest, allowing us to gain information about this type of user, which could be of use should West Windsor seek to fundraise or otherwise interact with these users.

Camps Group and Music on the Mountain Group

The assessment of peak user times, days of the week, months, and seasons which will be garnered from our volunteers, interns, and trail counters could be of use to the Camps sub-group and the Music on the Mountain sub-group, helping them determine when people are likely to want to come to the mountain for recreation activities, in addition to identifying potential times for user conflict or user outreach at the mountain.

Grantmaking Group

As evidenced in section 5, our research plan has a long-term financial plan that accounts for changes in the methodology or changes in the system that may affect long term goals of the project. Thus, should we receive grant money as a result of the grant-writing group's efforts, it will be effectively utilized. The technology that would be purchased would assist not only our project, but will be an incredible resource to the UVLT and all the trails they are responsible for. In the long term of West Windsor Town Forest, this money is necessary to maintain the research goals of this project and ensure the consistency required to protect and monitor this resource effectively.

Interpretive Trails Group

After erosion data is collected, the reassessment of the sustainability of current trails would be highly relevant to the Interpretive Trails sub-group, and it may cause changes in a target area or interfere with their long-term plans.

4.7.3 Implications of Data

Better knowledge of visitor use patterns gleaned from the variety of data collection methods can allow AO to identify target groups for outreach, successfully implement educational programs to relevant users, identify peak times of user engagement for activities or planned events, and gain insight about how to successfully manage parking lot capacity.

The ecological monitoring incorporated in our plan will allow AO and the UVLT to determine exactly when problems such as erosion and invasive species become significant, and they will have historical data for comparison, which contributes to understanding the success or failure of mitigation measures. The study will also provide an understanding of visitors and their

experiences from the user intercept survey, which will allow AO and the UVLT to address potential concerns from users both proactively and better reactively, in addition to granting AO a better sense of fundraising capability of users, and a variety of other applications. Consistent monitoring of visitor use will allow them to identify excessive use of the mountain, which is critical for protecting the resource in the long-term.

Chapter Five

Grant Research & Composition

Connor Clark

Zachary Shank

Eleni Tebano

Camille Wang

Chapter Five: Grant Research and Composition for Mount Ascutney

5.1 Introduction

Ascutney Outdoors (AO) is a nonprofit organization which manages and develops community recreation. It not only works towards conservation on the mountain, but also preservation of the economic and social vitality of the West Windsor area. For nonprofits, development is essential to revenue, fueling daily operations and productivity. Well-funded, nonprofits can then carry out their mission through running programs the best they can. A small percentage of nonprofit revenue goes to staffing needs, which in turn ensure that the organization makes the most positive impact in the community. Sound financials and relatively steady, predictable revenue can help nonprofits better focus on the good they do.

Grants and individual donors are the two main sources of funding for nonprofit development. In 2016, AO had about 20% of their revenue from grants. We work with our community partners Ascutney Outdoors, Upper Valley Land Trust (UVLT), and Sport Trails of the Ascutney Basin (STAB) to learn about, seek out, write, and apply for grants to fund several different types of projects at Mount Ascutney. Many of their projects requires volunteer efforts, community fundraising and local support to lay groundwork for future success in grant writing and fundraising. Since most AO projects and activities are self-sustaining and involve significant volunteer support, AO works hard to develop successful fundraising campaigns and strong community engagement.

Our group facilitated communication between our AO partners and class project groups to find grants that benefit the community and fit AO's goals. We focused on three types of projects: the Education and Community grant, the Mountain Infrastructure/Recreation grant, and

the Trail Monitoring Technology for Conservation grant. We developed a grant for each project type based on the project's priorities and the project's fit for a certain grant application. The Education and Community Grant is for providing visitors and community members with educational and recreational opportunities through an interpretive trail system. The Mountain Infrastructure/Recreation Grant targets funds for the development of a flow country trail to expand upon the current mountain biking trail network and economically benefit the community. The Technology and Conservation grant seeks funding for technology that will monitor use on the mountain. Technology includes GPS trackers, trail counters, trail cameras, and tablets.

5.2 Education and Community Grants

This category includes grants that would fund the interpretive trail system, educational camps and music on the mountain infrastructure (ex. stage/amphitheater infrastructure for summer concert series). Through meetings with community partners over the course of the term, we decided to focus on the interpretive trail project. We realized this project is so distinctive that it would most likely qualify for its own grant.

AO proposes an interpretive trail project to bring together community members and visitors in nature. Through professionally designed educational signage, artwork (ex. mural and/or sculptural pieces) and other interactive components, this project will enrich the trail experience with knowledge about local species, natural history and environmental stewardship. Given that AO already hosts visits from local schools, primarily for recreational skiing on the mountain, the interpretive trail could provide an additional venue and attraction for local conservation and science organizations to host educational programs. Some examples of education program ideas include a music playhouse for kids and a youth bridge building program for high schoolers. In order to acquire funding for these projects, we will apply for the Vermont

Community Foundation Small and Inspiring Grants Application. See Appendix D for the full application.

5.2.1 Grant Description

Mount Ascutney has served as a centerpiece of community recreation in and around the Town of West Windsor. However, since the closure of the privately owned ski resort in 2010, the town endured a decline in economic and social vitality. In response, the town rallied around building a future with mountain biking and hiking, affordable community skiing and alpine activities, educational programs, events and arts on the mountain. The nonprofit Ascutney Outdoors (AO) is formed to revitalize Mount Ascutney under a new, community-centered model.

So far, it has already brought back winter sports and outdoor events for the community. Mount Ascutney's story has been featured on the *Land and People* magazine. One particularly representative moment was when a local resident remarked to his young son learning to ski, "It's good to ski in our own backyard again, isn't it?"

Now, AO continues its work and proposes an interpretive trail project to bring together community members and visitors in nature. We will create an interactive component to a Mount Ascutney trail, bringing environmental education to the local community. Through thoughtfully designed signage, locals and visitors alike will learn about the biodiversity, natural and cultural history of Mount Ascutney while enjoying the outdoors. Given that AO already hosts visits from local schools, primarily for recreational skiing on the mountain, the interpretive trail could provide an additional venue and attraction for local conservation and science organizations to offer educational programs. The interpretive trail could therefore provide a venue for local conservation and science organizations to host educational programs. Additionally, the

interpretive trail aims to provide greater accessibility to young children and the elderly, two populations often barred from the strenuous, pre-existing trails on Mount Ascutney.

5.2.2 Relevant Past Grants

AO has previously received two grants from the National Park Service Recreational Trails Project.

5.2.3 Our Key Contacts

We communicated with Laura Stillson, who identified the need for funds for the interpretive trail project, and specifically identified trail planning assistance at the top of AO's wish list. We also reached out to Jennifer Waite, AO's contact from the National Park Service who oversees all trail projects for AO.

5.3 Mountain Infrastructure/Recreation

5.3.1 Grant Description

The second project in which we plan to apply for external funding revolves around recreational infrastructure, particularly for mountain biking use. Recreation serves as a key source of economic development and community building within the Ascutney Mountain Resort and surrounding area. Ascutney Mountain's current trail systems are considered some of the most noteworthy courses by New England mountain bikers. However, the high demand and success experienced thus far simply reveal an opportunity to provide significant economic benefits to the community through the expansion of user options and capacity on Ascutney's mountain biking trail system. "Ascutney trails could be considered the best (mountain biking) trail network in New England," claims local mountain biker, Pete Rose. DirtRag Magazine, a

national mountain biking publication, even had something to say about Ascutney Trails: “Our favorite area in the southern half of the state turns out to be West Windsor/Ascutney... It’s got a young feel to it - instead of avoiding the rocks, the trail simply rolls down over them” (Hempsall 2013). The mountain already presents an ideal landscape and trail system for bikers, but given AO and STABs goal of creating a continuous trail system around the mountain, the trail network hasn’t even come close to tapping into its full potential.

In order to meet the demands of bikers, Ascutney Outdoors hopes to develop a new flow country course on the mountain within the next two years. A flow track is often considered the roller coaster of mountain biking tracks. The International Mountain Bicycling Association defines flow country trails based on four qualifying characteristics. First, the track must have some sort of “synergy with the landscape” that allows riders to explore the natural, rather than constructed, terrain. Second, the trail must include modified features, such as “bermed turns and cambered tread surfaces” that “counteract forces that direct the user off-trail.” Third, flow country trails are designed to maintain the biker’s momentum, which is achieved by avoiding momentum-killing features such as sharp turns, and instead implementing momentum-conserving features such as smoother wave-like straightaways and cambered turns. Fourth, the trail must include a diversity of features that eliminate any sense of repetition while also promoting the bikers forward momentum. (imba.com). This particular flow country trail will be constructed on a former ski slope on Ascutney Mountain, and will be accessed via a two-mile hiking trail. In order to acquire funding for these projects, we will apply for the Recreational Trails Program (RTP) grant administered by the State of Vermont Department of Forests, Parks and Recreation, and include a variety of organizations that fund outdoor recreation-focused projects in our grant database.

The primary benefit provided by this project, as described in the grant application (see Appendix D), would be economic growth in the town of West Windsor and surrounding area. This is a region that has suffered from economic hardship in recent years, as exemplified by the Brownsville General Store and Queen's Cafe going out of business. Ascutney Mountain has proven to be a valuable asset for the area in the face of such hardship as an increase in real estate and apartment rentals has been significantly attributed to homebuyers' interest in the recreational amenities. The flow country trail will greatly contribute to this influx of economic activity as it is an up-and-coming style of mountain biking that has a particularly large following among younger riders.

Furthermore, the flow country trail will attract a wider diversity of bikers, and therefore a broader consumer base for the local economy. In 2014, PinkBike, an online platform that serves as the "largest mountain bike community" in the world, compiled data from 33 local and regional economic analyses from around the world, and used this collection of data to determine the average economic benefit provided by mountain biking operations. The study found that, on average, visiting bikers will spend 3 to 5 days at each mountain biking location, where they contribute an average of \$60-\$100 per day to the local economy via housing, food, recreation and transportation. (Lau, 2016) Additionally, a nationwide survey, conducted by Singletracks.com, of more than 1400 bikers found an average spending of \$382.25 per biker per trip (Barber 2015). Given these statistics, any additional influx of users would significantly contribute to the economic well-being of the towns of West Windsor and Windsor.

In conclusion, AO needs external funding as much as the community needs this flow country trail. The development of this trail differs from other trails that AO has constructed and maintained as it will require the hiring of a contractor and use of heavy machinery, rather than

volunteer labor. Before the construction of the project can begin in August of 2018, several studies must be conducted and several permits acquired prior to applying for this grant in the winter of 2018, including a storm water impact review and archeological site analysis (as mandated by the federal government). Although this project is currently still in its early planning stage, we have been able to determine that its completion will require a significant financial expenditure, as highlighted in the next section.

5.3.2 Budgetary allocation

The first aspect of this project's budget to be considered is the cost of obtaining permits and conducting associated studies. The most notable permit that must be obtained prior to construction is the Act 250 Permit, as required by the state's 1970 Land Use and Development Act. This permit essentially requires the completion and submission to the State of an environmental and social impact study that accounts for such factors as air pollution, water pollution, potential impact of soil erosion, and impacts on various components of the municipality such as education and government services (anr.vermont.gov). The most significant part of this study for the flow country trail will be the analysis of its potential impact on soil erosion. Given the long-term scope of this project, the cost of acquiring the permit cannot yet be determined.

The second component of this project's budget will be the construction of the trail itself. The construction of this flow trail requires work that extends beyond the capabilities of volunteer physical labor. Therefore, AO plans to hire a local contractor that specializes in the development of such trails through the use of heavy machinery and professional skill. The Vermont-based trail development company, Sinuosity LLC, will take on this role, and will cost about \$7/foot of trail,

or a total of about \$36,000. The combination of these two components mean that the requested amount of funding will likely push the RTP limit of \$50,000.

5.3.3 Contacts

The primary contact for this project was Jim Lyall, co-founder of Sports Trails of Ascutney Basin and trail designer for Ascutney's Mountain Bike Trail Network. Jim provided our group with guidance and information regarding the general plan and budget of the flow trail project, as well as connecting us with other useful sources like Brooke Scatchard, founder of Sinuosity LLC. Brooke provided us with information on flow trails that Sinuosity had worked on in the past. Both Brooke and Jim guided us towards useful statistical sources regarding use and economic benefits of mountain biking operations. Additionally, we worked with Steve Carihfield, Chairman and Head of Development and Fundraising at AO, Laura Stillson, Head of Conservation and Education, and John Roe, Vice-President of Stewardship and Strategic Initiatives at the Upper Valley Land Trust.

5.3.4 The Recreational Trails Program Grant

The grant AO will be applying for is the Recreational Trails Program Grant, which is federally funded through the Department of Transportation's Federal Highway Administration (FHWA) and administered at the state level by the Vermont Department of Forests, Parks, and Recreation. This grant funds up to \$50,000 for projects that promote "a wide range of outdoor recreational activities such as hiking, biking, walking, running, water-based trail use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicular riding, or using other off-road motorized recreational vehicles, in-line skating, and equestrian use" through the development and maintenance of trail and trail-related infrastructure. (fpr.vermont.gov). This

description, as well as the potential funding amount provided by this grant, fit all of the demands of Ascutney Outdoors flow country trail project. The RTP grant is geared towards projects that promote recreation, but the program also seeks out projects that promote trail connectivity, sustainability, and community involvement and stewardship. Although the country flow trail, as a stand-alone trail, will not fill a physical gap and contribute to the connectivity of trails on Mount Ascutney, it will fill a skill gap for mountain bikers whose skill levels exceed what is required for current Ascutney trails, or for those who simply seek a new adventure.

In terms of sustainability, Sinuosity LLC, the contractor who will build this flow trail, has pledged, and proven through experience, a commitment to sustainable trail design standards that take environmental sensitivity into account, and fosters trail longevity. Several of the trails that Sinuosity has built in Vermont with this sustainable approach have had success with the RTP grant, including several beginner trails at Killington Resort, and two more proposed intermediate level flow trails at Killington. In addition to its physical sustainability, the RTP program also seeks out sustainable projects in terms of finance, labor, and partnerships, which is present in the flow trail project through the heavy involvement of volunteer work and partnerships with local NGOs like STAB.

Regarding community involvement and stewardship, AO has a designated board member in charge of marketing that will continue to emphasize the importance of sharing trails, and respecting the land and landowners. Additionally, distributed maps and kiosks along the mountain will have signs and educators encouraging guests to treat the trails with these same values. Given the implications for the community and its economy, a significant amount of support has already begun to orchestrate the flow trail (the Brownsville General Store, the local school district, and town select board have already pledged to support the project either through

labor, money, or material). The RTP program also favors grantee projects that meet the goals of the local town plan. Fortunately, the proposed flow trail fits very well with the town plan as it calls for the promotion of economic development, recreational opportunities, and even the reopening of the resort for year round recreational activities.

5.4 Trail Monitoring Technology for Conservation

5.4.1 Grant Description

The third area of focus in need of grant support is defined as trail monitoring technology for conservation. The mission of Ascutney Outdoors is to harmoniously manage, develop, and protect the recreational, educational, and environmental assets of the West Windsor Town forest and adjacent land on Mount Ascutney, while maintaining year round affordable access for all. With ongoing projects to increase access and further develop the Ascutney trail system, AO and its partner, the Upper Valley Land Trust (UVLT), are working together to sustainably allow increased numbers of trail users. Carefully tracking this increase in recreation and the effect it has on the mountain ecosystem is a top priority of this partnership. Critical to these tracking efforts is trail-monitoring technology for conservation. If awarded funds from the Keen Effect, AO and UVLT would direct them to the purchase of technology for this innovative and effective approach to conserving the mountain ecosystem while complementing AO's mission of providing sustainable outdoor recreation.

The use of trail monitoring technology for conservation of our mountain recreation space is an innovative approach to achieving long-term sustainability of our mountain ecosystem. This specific technology includes trail counters, GPS units, a trail camera, and interactive tablet. The plan for the trail counters is to plant them underneath the four main trail entry points. Each

counter accounts for hikers and bikers by sensing both weight and the presence of metals.

Planting counters under the trail in this way also eliminates the need for excess infrastructure that might otherwise impede access to the trail and disrupt the natural landscape.

GPS tracker units are necessary to identify which sections of trail experience the most traffic. A trail camera will also aid in the monitoring of high traffic areas. Lastly, the interactive tablet will be located at a kiosk at the main entry point for the mountain. This will allow trail users to access an interactive map of the trail system and participate in surveys that will help AO and UVLT management better understand user experience and any areas, on or off the mountain, that need to be addressed.

The combination of these technologies allow for a baseline use to be determined for comparison to future high and low volume periods. Once identified, particular trail sections of high traffic can be given the necessary attention for trail maintenance and protection. These technologies will also aid in identifying the carrying capacity of Mount Ascutney and the other 22 trail systems that the UVLT manages. Knowledge of the carrying capacity of a trail system is critical to ensuring sustainable use of any mountain ecosystem. The adoption of these technologies on Mount Ascutney will serve as an important case study for UVLT in regards to using innovative strategies for trail monitoring and ecosystem protection in the future. While this project is specifically meant for Mount Ascutney, it has much broader implications for how sustainable use strategies and proactive management is conducted by UVLT throughout New England. Ultimately, we hope this project can serve as an innovative approach to balancing recreation and conservation in ecosystem services management.

5.4.2 Budgetary Allocation

The budget for this project was inspired by the Keen Effect Grant. This grant offers a \$10,000 sum and requires a budgetary allocation section. The budget described below reflects this allocation with additional details.

Keen Effect Budget (\$9,970)

First Priority: Trail counters (\$4,050)

Trafx package of 3 plus software at (\$2,200)

3 more counters plus IR converters (\$1,700)

IR conversion kit \$150

Second Priority: GPS Units (\$3500)

30 units each at (\$100)

2 Garmin GPS Map 64 each at (\$250)

Third Priority: Two Tablets (\$2,670)

iPad mini 4, 7.9 inch at (\$400)

Lifeproof case at (\$100)

Bad ELF GNSS receiver at (\$600)

External RAV 26,800mAh Battery Pack (\$35)

Software Package (\$100)

Fourth Priority: Two Trail Cameras (\$500)

Bushnell Trophy Cam HD Essential E2 Trail Camera (\$150)

CamLock Box (\$35)

Python Cable (\$30)

Extra batteries and SIM cards (\$35)

5.4.3 Contacts

The primary contact for this grant project was John Roe, Vice-President of Stewardship and Strategic Initiatives at the Upper Valley Land Trust. Other contacts included Steve Carihfield of AO and Jim Lyall of STAB. To learn more details about the Keen Effect Grant process, we exchanged emails with Ivan Levin, Deputy who is the Director of the Outdoor Foundation and helps coordinate the Keen Effect Grant program.

In addition to receiving feedback from our primary partners on the specifics of this project, Kate Wanner of the Trust for Public Land (TPL) shared two past grants, one written to the Vermont Housing and Conservation Board and the second to the Bafflin Foundation. Each was written on behalf of the TPL and UVLT, respectively, and provided useful language in describing the mountain ecosystem and biodiversity at Mount Ascutney.

5.4.4 The Keen Effect Grant Details

The Keen Effect grant program was started in 2013. Each year in October they announce the grantees receiving a total sum of \$10,000. Keen is an outdoor shoe and clothing company with the mission to inspire outdoor adventure. Through their grant program, they aim to give back to communities while staying “committed to preserving and protecting the places we play” (<http://www.keenfootwear.com/grants.html>). Keen gives to official 501(c)3 nonprofits that meet five main criteria points: 1) funded projects must seek to protect and preserve life outside; 2) projects must be innovative and creative - funded projects will think outside the box, have clear goals and measurable objectives; (3) projects will work collaboratively with KEEN to tell their project’s story, provide updates, and complete a grant report; 4) funded projects will provide engaging photos and stories to share, therefore the nonprofit must be socially savvy and willing

to engage with Keen's social program known as #keeneffect; 5) funded projects engage diverse audiences and/or different locations around the world.

Because the official grant application does not become available until August 1st each year, we acquired the 2016 application from Ivan Levin and were told that each year's application is very similar in the questions asked. Each question engages one of the different criteria points listed above. Responses are limited to character counts, typically at 2,000 characters.

Below is the combined responses to the first and second question of the 2016 Keen Effect grant application. The first question asks for a two sentence abstract of the project and the second question asks for a more detailed project description. Without getting into too many details, these responses highlight the partnership and innovative conservation efforts that make this project unique and attractive to a grant donor such as Keen.

Ascutney Outdoors (AO) and the Upper Valley Land Trust (UVLT) operate and maintain Ascutney Mountain in West Windsor, Vermont for local and regional community outdoor recreation all four seasons of the year. In order to conserve and maintain the trail system that runs through the unique mountain ecosystem, AO and UVLT request funds for the purchase and installation of trail monitoring technology to aid its conservation efforts.

Founded in 2015, Ascutney Outdoors mission is to harmoniously manage, develop, and protect the recreational, educational, and environmental assets of the West Windsor Town forest and adjacent land on Mount Ascutney, while maintaining year round affordable access for all. With ongoing projects to increase access and further develop the Ascutney trail system, AO anticipates increased numbers of trail users. Carefully tracking this increase in recreation and the

effect it has on the mountain ecosystem is a top priority of AO. Critical to these tracking efforts is trail-monitoring technology for conservation. If awarded funds from the Keen Effect, AO would direct them to the purchase of technology for this innovative and effective approach to conserving the mountain ecosystem while complementing AO's mission of providing sustainable outdoor recreation.

The technology for this project includes trail counters, GPS trackers, a trail camera, and monitoring tablet. With help from our experienced partners at the Upper Valley Land Trust (UVLT) and the Sports Trails of the Ascutney Basin (STAB), we have identified the specific technologic tools necessary for our trail monitoring and conservation efforts. These tools would establish an initial carrying capacity and baseline metric to be used for all future tracking. The direct benefit that these technologies will have is a long-term ability to measure the impact that our outdoor recreation has on our mountain ecosystem. For best practice management solutions to be identified and implemented for the health of this unique outdoor space, the collection of baseline use metrics through technology is essential.

As mentioned, the remaining questions in the application engage the criteria points described on the Keen Effect website. For example, the third question asks, "How will your project preserve and protect access to the places we play around the world?" The response to this question highlights the biodiversity of Mount Ascutney while also describing the goals of UVLT, as well as how trail monitoring technology for this project will be used at more than one site. The fourth question asks, "What is the demographic of your audience? Describe your participants and let us know if any of them are new to the outdoors." The response to this question focuses on the community driven aspect of the larger Mount Ascutney project. The fifth question asks, "How is your project innovative? How will it be sustainable in the future?" Our response emphasizes the

integration of technology and conservation as the frontier of adaptive management strategies. Furthermore, this question provides the opportunity to address how these technologies will continued to be used by UVLT on all their trail systems under management, including those at Mount Ascutney. Before ending with questions that address the project timeline, budget, and social media, the application asks to identify any key partners involved in this project. The collaborative work taking place between AO and the ENVS 50 grantmaking group underscore the importance of partnerships. While the partnerships with STAB, Orange Lake Resorts, Ascutney Trails Association, and the Climb Fitness Center at the Mount Ascutney Resort are each mentioned, the most relevant partnership for this project, between AO and UVLT, is the primary focus (See Appendix D for the full grant application).

5.5 Methods

5.5.1 Grant Methods

Before we began the grant-searching process, we met with our partners at AO, Steve Carihfield, Jim Lyall, John Roe, and Laura Stillson, to better understand their projects and respective grant needs. Collectively, we placed AO's projects into one of three categories: education and community, recreation and conservation. To some extent, the flow trail project encompasses all three of these classifications, however for purposes of clarity, we classified it as a recreation project. After this productive collaboration, we set up the grant database via a shared google spreadsheet and began our search to match our three projects with grant sources.

For all three of the projects, we started with grant templates that we then developed into specific grants. To better tailor our grant to the needs of our community partners and receive guidance on our grant-writing, we hosted a grant-writing workshop with our AO partners.

Based on our current grant database, we picked out a few grants that might fit the interpretive trail project. From there, we considered the size of the application pool, the main focus or objectives of the grants, past grantee projects and other factors. The Vermont Community Foundation Small and Inspiring Grant (See Appendix D) caught our attention as it encourages novice grant-writers to apply, and also heavily focuses on small projects for Vermont towns. The goals of the grant seem to be a good fit for Mount Ascutney's narrative and its interpretive trail project. Specific goals that the Vermont Community Foundation listed on their website include the following:

- Connect people in deep and meaningful ways that is grounded in acts of generosity
- Connect people to the environment around them in ways that encourage stewardship and respect
- Connect people with opportunities for positive social interaction and benefit

The RTP grant was among the first grants added to the database (Sport Trails of the Ascutney Basin (STAB) had successfully applied for the grant for a previous year's project). Given the abundance of similar mountain biking trail projects throughout the country, we focused on more local and regional grants. Ultimately, we decided on the RTP grant given our partners' former experience with it, its similar criteria to the flow country trail project, and the large size of the grants matching the amount of funding needed for this particular project.

As mentioned, one of those three categories involves trail monitoring technology for conservation. While there was certainly overlap in the use of the technology for recreational, educational, and ecological purposes, it was decided with the partners that the most effective way to get funding for technology would be to approach it from a conservation management angle. With many grants available that list conservation as a main motive or criteria, it became apparent

that describing the technology as a means to identify carrying capacity and trail use to ensure sustainable practices and the long term health of the mountain ecosystem would be an effective course of action.

From here, as was the case for the other two grant proposals, a template was created using language provided by the Mountain Biking Group and from conversations with John and the other partners. This template was presented to John during the grant writing workshop meeting held on May 3rd. Although a preliminary selection of a grant source was identified at this time, it was discovered during this workshop that the New England BioLabs Foundation would no longer be a viable option from which to receive funding. At this time, a few new leads were discussed, those being the Keen Outdoor Fund, L.L. Bean, and the Hypertherm Hope Foundation. Each of these grant sources include similar criteria relating to environmental conservation and recreation use, and therefore, subsequently became the new focus of the trail monitoring technology for conservation grant project.

Our most recent conversation with John left us unclear on the Keen Outdoor Fund to acquire trail monitoring technology through The KEEN Effect grant. So, sent an inquiry to the Keen Footwear Company to ask more about their grant cycle and application process. Ivan Levin, the Deputy Director of the Outdoor Foundation, sent us last year's application, which includes specific questions with a limited character/word response. He said that this year's Keen Effect application, which becomes available August 1st and is due September 30, will be very similar to last year's. This seemed like an ideal timeline for us, as we can respond to the grant questions from last year and AO can use the grant how they see fit in September 2017.

5.6 Overall Project Methods

The purpose of designing the grant-writing workshop was to better inform our grant writing process and ensure that we are aligning our writing with our partners' goals. We wanted to be able to develop our own language in the grant templates using our baseline understanding of each project. Our partners were able to offer us critical evaluation and clarification based on their wealth of knowledge and the vision they have for the projects at Mount Ascutney. Further, this allowed us to have a clearer idea of the message and goals for each project and how to portray that information to the possible grantors. See Appendix D for a detailed outline of the grant writing workshop.

If we ever reached a roadblock in our grant writing, our group could try the Brainwriting exercise in the "Facilitator's Guide to Participatory Decision-Making" by Sam Kaner. The following steps show how the exercise would be structured:

- Seat members around a table.
- Have someone state the problem to be solved.
- Ask each person to silently write down four ideas for solving the problem on one sheet of paper.
- Explain to the group that as soon as anyone has listed four ideas, he/she should exchange that page with someone else.
- When someone has obtained a new sheet of paper, he/she should add one or two more ideas to it. Then trade this page for another.
- Repeat for 15 minutes or until people run out of ideas.
- Compare notes and discuss.
- (Kaner, pg. 84)

This structure could be modified in our group based on our problem. For example, we reach a problem with writing one of our grants and are unsure how to frame our writing to showcase the longevity and importance of an interpretive trail system on Mount Ascutney. Instead of listing four ideas on a sheet of paper, we each list one or two and then compare each of our papers to hopefully spark new ideas and language surrounding the interpretive trail.

The previously mentioned grant writing workshop (See Appendix D) also allows for an open discussion on how we want to move forward from templates to grants. Kaner expresses the importance of facilitating an open discussion to make it as effective as it can be (p. 100). In our grant writing workshop, we transformed the Brainwriting exercise to fit our meeting by having each of us pair up with a partner. For about 5-10 minutes, each pairing went over the templates we wrote as well as the introduction/key considerations regarding Mount Ascutney. Then, we shared the ideas of each pairing to help us better understand the main ideas and synergies of the projects. Through this process people will be able to add their thoughts on each project and hopefully the conversation will spark new ideas and fresh language regarding our project topics.

We used some of the techniques Kaner suggests, such as balancing, finding like minds, and using the clock, for efficient open discussion in our weekly meetings with partners. Since we only got to be in-person with our partners for an hour once a week, we needed to be certain we use our time well. The "using the clock" technique is useful for us to keep everyone on track and aware of our time constraints. Our group and partners had a lot to say most days and it was important to hear from everyone and keep track of time. The "balancing" and "finding like minds" techniques were good for gaining every person's point of view and figuring out where we agree and disagree. As we developed more goals for our project, it was necessary to keep our partner's perspectives clear, so that we could put forth the proper effort and in the right way. It

was also critical that we were able to get all our questions about the details of the grants answered.

5.7 Key Considerations and Next Steps

In our grant writing process, we were able to showcase Mount Ascutney's exciting project ideas and provide an executable plan to grantors. By highlighting the importance of each project type, we successfully wrote grants that are enticing to our possible grant sources. Another key aspect of our grant writing was to deliver each project as a project with many years of impact in the future from the jumpstart of the grant fund. This allowed grantors to see the opportunity in investing in Mount Ascutney and to make a lasting impact with their grants.

We had continuous contact with some of our local support, beyond our partners, for grant writing. As we started to go from our templates to our actual grant writing, it will be helpful to have examples and more resources. We contacted Courtney Dragiff, who is part of the Hanover Conservancy, and she was able to get us some information and guidance on our grant project ideas. We also contacted Natalie Starr, from DSM Environmental Services Inc., to provide us with further guidance in grant writing and research as well. We also reached out to Kate Wanner, a project manager for the Trust for Public Land, who sent us a copy of the Vermont Housing & Conservation Board grant for Ascutney Outdoors. These contacts helped us provide new ideas to how we go about framing the projects for each of our grants.

After our grant workshop meeting we were able to figure out who to reach out to next, whether its other partners like Jennifer Waite or other class groups like interpretive trail group to advance and sharpen our language to match their overall goals. Since we are an over encompassing group maintaining communication with other groups is extremely important. As

we reached the middle portion of our term, we checked in with groups to see if their goals changed from the beginning so that we can properly represent their projects in our grant writing. It was helpful that we had weekly meetings with four different community partners to be able to receive updates and advancements on not only our grant projects, but also on Mount Ascutney.

We were also able to fill in our missing information on budget allocations of the projects, the language around each project, and other specifics about the future of the projects and where our partners see each project going. We learned more about the specifics of the trails and what goes into making a trail and the labor involved. There have been successful work days for the trails at the mountain with large groups of volunteers, but funding will also be useful for other forms of trail building and maintenance beyond volunteer work. We gained more direction from the 2016 RTP grant information.

We were exposed to advice on how to write grants by doing less copying and pasting information. Our partners urged us to take a step back and take a look at our materials to find a key theme to exhibit in our grant. This theme helped us to provide a consistent method of conveying our projects and made it easier for grantors to understand what this project is and why it is worth the grant funding. We worked to digest the language of all our resources and then write what we feel about the project is important and will be inspirational to the grantors. Our partners were able to tell us which points to elaborate on in our templates to make our project clear and makes the case for why this project is important.

Based on the grant application for each project, we had to be attentive to the main criteria when writing the grants. We were able to use our grant database to find other grants to apply for if our original idea did not fit the project. For example, we originally tried for the New England BioLabs grant for our Technology/Conservation grant but it turned out we were not

eligible for that grant source. So we will try for the Keen Footwear grant, L.L. Bean grants, Hypertherm, and other grant sources. We must continue to search for appropriate grant sources as we narrow down our goals and other specifics for each grant project.

Chapter Six

Music on the Mountain

Nevin Cunningham

Eli Harrison

Ryan O'Hanlon

Luka Pejanovic

Kepa Police

Chapter Six: Music on the Mountain

6.1 Introduction

The Grantees, The Trust for Public Land, assigned the land to the Town of West Windsor with the ‘limits principle of sustainability’ in mind. This principle recognizes the natural assets of the land to be a limiting factor that is unable to be fully replaced by man-made capital, and thus boundaries must be put in place to ensure that the economy and ecosystem can be sustained and continue to develop (Daly 2005). For AO, this boundary manifests itself in the form of perpetual easement restrictions. Pursuant to the easement, AO must conserve native forest values and non-commercial recreation values within a community forest context.

As mentioned in earlier chapters, AO operates with the mission “to provide exceptional recreational activities on Mount Ascutney and promote economic vitality in our community.” With this mission in mind and working closely with community partners Steve Carihfield and Laura Stillson, our group set out to create a community-building space where people could gather together and enjoy the mountain. At the request of Steve Carihfield, we began to assess the feasibility of constructing a musical venue at the mountain. To have a space where local residents and artists could come and play music during the summer months would add another level of seasonal dimensionality while further "providing expectational recreational activities." When developing a method for creating such a space at Mount Ascutney, we recognized that it is the people of West Windsor who will be using this space, and as such their level of involvement and support in its growth is essential to AO’s vision of music on the mountain. Thus, we incorporated the following community-based strategies into our initial music venue concepts:

- Identify and tap into community strengths

- Become aware of and attend to diverse needs
- Emphasize the benefits
- Use history

(Clayton et al. 2016)

During our initial planning process for a musical venue, we reviewed significant literature on both musicianship as well as community development. The majority of literature consulted agreed that community music projects are an effective and frequently utilized tool in which to foster cultural and interpersonal growth. Notably, musical meaning and engagement serve as a "fundamental building block for healthy communities" (Dillon, 2007). The artistic expression allowed for by community music programs allows for any individual, regardless of their own musical talents, to foster an increased sense of belonging through group expression. Furthermore, "community musical performances provide a public forum for musical therapy" (Stinge et al. 2010), thus facilitating a healing process for any individual in need within the community. As there is significant evidence in support of music's positive benefit on local communities, we believe that it would be excellent for the greater Windsor area were Mount Ascutney to serve as a summer music venue.

As there are numerous elements involved in constructing a music venue, we believed the best way to synthesize our individual research was to assist Ascutney Outdoors in planning a theoretical summer concert series to be implemented sometime in the future. The premise of the series is as follows: on Sunday afternoons throughout the summer, Mount Ascutney would host local artists to play a free concert for anyone interested in attending. The shows would provide an excellent form out of outdoor recreation for families in the area and allow them to engage with their environment both culturally and as a community. The following subchapters

breakdown the research performed for each aspect of the concert series and provide a recommendation to Ascutney Outdoors on how to proceed with the concert when they wish to begin implementing the Music on the Mountain program at a later date.

6.2 Stage Design

In terms of finding the right stage design for Ascutney Outdoors, we want to compile a collection of different options complete with rough cost-benefit analysis of each, so that when Ascutney Outdoors made a decision about the type of event that they are planning on hosting as well as how much capital they could invest into the project, they would have a fully planned out CBA to refer to. They are currently undecided about whether or not they are looking for one large concert event or a series of smaller summer concerts or some combination of the two. Regardless of type of event we recommend and what style they end up choosing it is clear that stage itself needed to be a non-permanent structure that could be set up and taken down without a lasting environmental impact.

Obviously the potential stages needed for these two types of events vary significantly in cost and impact, as well as how many man hours Ascutney Outdoors would need to invest. For a large concert venue, it would make much more sense to rent the stage then to buy it for a variety of reasons. Rental companies cover the cost of setup and takedown, which can require a large number of people and represents a significant time investment. For a smaller stage, the possibility of ownership is more realistic as it would set up the stage for multi-use opportunities, as well as leaving the option of renting the stage or the entire venue out to interested parties, which could be a source of reliable income for Ascutney Outdoors.

One large factor that must be considered when picking a stage design for Mount Ascutney is the conservation easement on the mountain itself. In discussions with John Roe, it became clear that if the stage were located next to the rope pull, which exists within the conservation section of the easement, then the structure would have to be non-permanent and leave no significant lasting impact on the area it occupied. This could be slightly problematic with a large stage as the setup and takedown of the structure can be significant. If the stage was located nearer to the Basecamp structure, this problem doesn't apply, because those two acres are owned entirely by Ascutney Outdoors.

For larger scale stage, price estimates for stage rentals in Vermont and New Hampshire vary from \$1,500-\$4,000 and this depends on several factors:

6.2.1 The Duration of the Rental

Most companies in Vermont and New Hampshire have minimum of 2-day rentals for large stages as well as sound equipment.

6.2.2 The Presence and Quality of the Sound Equipment

The most cost effective way for AO to acquire the sound equipment necessary for a large concert that would be playing to a crowd of around 1,500 people would be to rent it from the same company they use to rent the stage. Almost all of the stage rental companies in Vermont and New Hampshire have package deals with sound equipment.

6.2.3 Additional Lighting

Depending on which location is decided on for Mount Ascutney, additional lighting may not be necessary. If the stage is installed in the area adjacent to the rope pull, then the lighting on

top of the posts there should be sufficient to light the audience, while minimal lighting would be required for the stage.

6.2.4 Insurance

For large stages, most companies in Vermont and New Hampshire charge anywhere from \$200-\$500 for insurance on the stage, which is highly recommended as otherwise the renter is liable for any damage that occurs on sight.



Figure 6.1: SL100 Stage Design

6.2.5 Total Large Stage Cost Estimate

In terms of renting a stage that would be large enough to support a large concert with around 1,500 people in attendance, the estimated price range for the stage rental would be between \$3,000-\$4,000, with insurance and transportation included. Some drawbacks aside from cost that are associated with renting a stage of this size would be the environmental impact of setting it up and taking it down and the noise pollution that would come from a larger concert. The conservation easement on Mount Ascutney would make it difficult to hold a concert of this size without emitting too much sound. In addition to violating the easement, the noise pollution could potentially disturb owners of the condos that are adjacent to AO's property. An additional drawback to pursuing a larger stage rental is that it limits the potential locations for the stage on Mount Ascutney.

If AO seeks to pursue the more viable option of purchasing a smaller stage for smaller concerts and other multi-use opportunities, the price estimates decline dramatically. A simple platform design would fulfill the requirements laid out in the easement as well as service potential multi-use needs. There are a variety of companies in Vermont and New Hampshire that sell portable platform stages, with the price of the stage being a function of its square footage and the materials it is comprised of. For our uses, an optimal stage size would be somewhere between 8' by 14' to 12' by 20'. These stages come in various types of coverings, from all-weather industrial materials to carpet. This type of stage design is also relatively easy to set up and take down and this could potentially be done by only a few people. Owning a stage like this would allow AO to rent out the stage and the venue, and as a result it could end up paying for itself in a relatively short amount of time.

A smaller platform stage would grant us more options about the location of the stage on Mount Ascutney. For larger concerts, or as a venue for background music for one of AO larger events, the stage could be set up on the AO property, which would grant us more freedom from the easement. If the stage was being rented out to the Mount Ascutney Resort, then it could just as easily be set up adjacent to the rope pull because that location has a much better view of the Resort and the town of West Windsor, which the Resort could use to market it to guests.



Fig 6.2: Adjustable Platform Stage Design

6.2.6 Total Small Stage Cost Estimate

The cost for this type of stage design is in the range of \$1,500-\$3,000, depending on the material of the stage, add ons such as steps and handrails, the elevation of the stage, and its size. Additionally a tent canopy would also be advisable in order to put on a summer concert series. We are in talks with AO about these specifics about trying to narrow down how many of these add ons are necessary and the exact size of the stage will be.

Additional costs that may apply to the purchase of a smaller stage would be the investment in a tent canopy to cover the stage so that it could be used in inclement weather. The cost of these types of canopy tents is very dependent upon its square footage. Also, the storage of

the platform panels would be another potential issue to consider, they would need to be put away during the winter ski season.

6.2.7 Alternative Stage Options

One option we had briefly discussed with AO already was potentially including Dartmouth engineering and woodworking programs to build a stage for AO as a form of class project. The benefits AO would receive from this are obvious: a stage free of cost that could be built to exact specifications that would suit the location on Mount Ascutney. As far as the Dartmouth programs, they would be helping a local non profit create a multi-use recreation venue. There is also the opportunity to include local high school woodworking and engineering programs to contribute to the construction project. This option is more in keeping with AO's budgetary constraints, as well as the spirit of the project.

We have been in contact with teachers and administrators from several high schools in Vermont and New Hampshire about the potential for this kind of collaborative project. If local high schools were included in the production of a summer concert venue, this would also serve to help promote the concert series itself. It would foster local, community based collaboration and bring more awareness to everything Mount Ascutney has to offer.

An additional option for AO to construct their own stage is to use community collective action. Once a stage design has been decided on, AO and their partners can spread the word about the need for volunteers and materials needed to build a stage. Depending on the stage design, lumber costs would be relatively low, and would certainly be much cheaper than purchasing or renting a stage from an outside company. We have been in communication with David Clark from Yellow House Media, a company that has a newsletter, which reaches over

5,000 people in Vermont and New Hampshire. He has expressed a lot of interest in cooperating with AO and said that he would be willing to email out to his subscribers asking for volunteers to help build a stage once a design is agreed upon. If more incentive is needed, we can promise volunteers who show up free admittance to the first concert AO hosts.

6.2.8 Recommendation

Given AO's resources and the current infrastructure at Mount Ascutney, the best stage design for Mount Ascutney would be either a small platform stage between 8' by 14' to 12' by 20', or to pursue the community stage building possibility discussed above. Building a stage with volunteers would require a more significant time commitment from certain members of AO but if it was successful it would set up Mount Ascutney as a more inclusive and accessible venue to the surrounding community. Many people that we have been in touch with have been very excited about the idea and more than willing to help it become a reality. Purchasing a small platform stage would require a slightly more significant financial investment from AO, but it would also be easier to facilitate and would require less of a time commitment from AO and would not need to rely on outside volunteer efforts.

6.2.9 Additional Resources

Several local businesses, including School and Community in Partnership and Go Play Outdoors have raised the funds to purchase a tent canopy that they would be willing to let AO utilize to put on concerts. The tent shell is a saddlespan design that would function very well for a small outdoor performance. This tent, coupled with a platform stage or a stage constructed by the community, would create an ideal venue for AO to host a summer concert series.

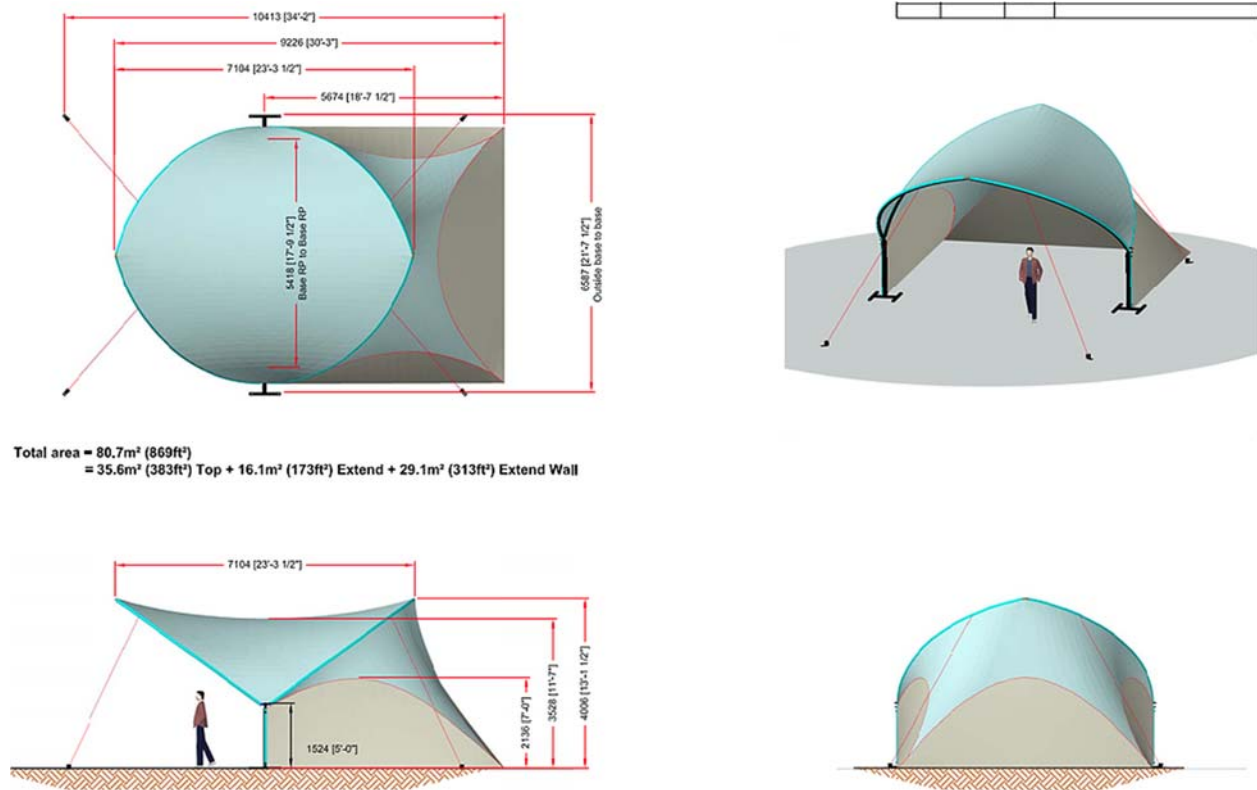


Fig. 6.3: GoPlayOutdoors Tent Design and Dimensions

6.3 Concert Production

In addition to cost of the stage discussed above, a general cost breakdown for equipment is as follows. Microphones cost \$5 to \$50, and speakers can be rented between \$25 and \$200. For full setup and takedown of a concert, a private company will likely rent and set up all equipment for an event for \$1000. It is possible that power can be acquired by running cables to the basecamp house. Ascutney Outdoors also has a generator that is strong enough to provide power for a concert. Advertising for a concert is likely to increase attendance and promote a more well-received production. If Ascutney Outdoors were to advertise for a concert series, color printing 250 flyers to distribute around the Upper Valley would cost around \$80.

Factor	Option 1:	Option 2:	Option 3:
Stage	Stage Depot Adjustable		
	All-terrain stage	SL100 Mobile Stage	Community-built Stage
cost	\$5,500	\$3,000	materials
Speakers	Event-by-event basis		
	sound setup		
cost	\$1,000		
Advertising	Semi-glossed colored		
	posters	No advertising	
cost	\$80	\$0	
Signage	Printed signs	Handmade signs	no signs
cost	\$120-\$160	\$40	\$0
Bathrooms	in basecamp building	Porta-potties x 2	
cost	\$0	\$390	
Hiring Artist	Small, no name artists	well-known local artists	
cost	\$0	\$0	
Concessions	Food truck		
revenue	20% of money made		

Fig. 6.4 - Cost Benefit Analysis

Depending on the scale of concert being held, the cost of hiring artists can vary. Many local artists that would be asked to perform in a weekly concert series might offer to perform free of charge to promote their music. Those who do charge would likely ask \$100 to \$300 per event. More popular artists would likely charge a much higher rate, at which point it would be in the best interest of Ascutney Outdoors to rent the venue to a third party. As seen below, we have reached out to several venues that hold smaller-scale concerts, such as the Skunk Hollow Tavern and the Canoe Club, and create a price range for hiring artists, as well as a list of performer names and contact information so Ascutney Outdoors can reach out to these artists to invite them to play at the mountain.

Holding large concerts on the mountain must incorporate sustainability practices to be in alignment with Ascutney Outdoors' mission. During these large concerts, porta-potties will be rented for \$195 per unit. For a concert of 1000 people, 10 should be rented. Including a \$75 delivery fee, the total cost would be \$2025. If Ascutney Outdoors hired a third party to put on a

concert, it would likely include cleanup and concert waste management afterwards, but an effort by the community might also be put forth to help return the concert site to its original aesthetic.

Outreach options to the West Windsor community are still being developed. To increase interest in the Dartmouth community for traveling to Mount Ascutney, one option is to hold a ‘battle of the bands’ type festival on the mountain. There are a number of student bands that are eager for venues to perform at, and inviting multiple student bands would ensure that many members of the Dartmouth student community would be excited to travel to the mountain. Operationalizing this event would likely model the following example.

Although student bands will likely compete and perform in a battle of the bands just to get their name out to the public, band participation will increase even more if there is a prize for winning. An easy way to provide a prize to the winners is by involving a music store. The store could provide a guitar, amplifier, drum set, or something similar as a prize for the winning in exchange for advertising rights. Spreading the word could be done totally electronically, through campus listservs. Flyers might also be effective. The most effective way to spread awareness about a battle of the bands is to get students talking about it. A representative from Ascutney Outdoors (a younger intern perhaps) could sit in on an ENVIS class, for example, and give a quick rundown of the event to the students in the class. If none of the students in that particular class are in a band, they likely have friends that play music in a group, or have musical experience and would form a group. A few presentations like that is a low-cost and effective way to increase interest of bands and attendees alike. An entry fee for competing bands would cover most of the costs of setting up the venue for performances. The same music store providing the instrument prize might be able to rent equipment for the event at a discounted rate. A panel of judges from the community could provide feedback to the performing artists, and the bands

would move on to the next round based on audience voting. A service such as TallySpace can provide text message voting with immediate feedback for around \$80.

Hiring a shuttle, potentially from the Dartmouth Outing Club is an easy way to provide transportation while also spreading awareness to another group on campus. Because liquor permitting is a complicated and potentially expensive process, it makes sense not to allow alcohol during the event. If alcohol is not involved, students might also be encouraged to drive themselves to and from the event.

The ‘battle of the bands’ concept is easily monetized to provide revenue for holding other events on the mountain. An event geared towards Dartmouth students would profit immensely for charging even a \$5 entry fee though it is unlikely that local, weekly concerts would thrive while charging an entry fee. Renting the space out for larger events is another way to provide capital for community events. Finally, allowing vendors to set up on the mountain for large mountain bike races or concerts would provide a somewhat consistent revenue stream that would allow for future events to be held. One particularly practical idea for providing nourishment on the mountain is inviting food trucks to drive up for events. Their mobility makes it easy and most attendees of any concert would be happy to have food and drink while they are listening to music.

6.4 Additional Usage for the Designed Space

The main purpose of acquiring the stage is organizing music concerts, however the community partners have the vision for multi-purpose use of the stage. They have the same thing in the mind for natural-amphitheaters. The main purpose behind this idea is to make Mount Ascutney more attractive for broader population, to help with advertising the resort and also introduce new revenue streams for the community, which could also help with funding the stage

and supporting equipment. Also, it is important to keep in mind that concert series would have substantial environmental impact, so offering some more environmentally friendly options could be beneficial for Mount Ascutney. We predict that, cleanup and waste management of these events would be less intensive and cheaper compared to concert series. Some additional uses that our team gauges feasible are cooperation with Mount Ascutney Resort, bringing in traveling theatres for shows, using stage and natural amphitheater for summer camp's educational purposes, considering the option of open air cinema and renting the space out for weddings or other type of activity.

Mount Ascutney Resort has already expressed their interest in cooperation with community partners. They are attracted by the possibility of offering a variety of outdoors fitness classes that utilize the space, such as yoga. This opportunity provides room for bilateral benefit for both parties. This would make their resort more attractive for tourists and community would have an additional revenue stream. Also, since these would be morning classes, they wouldn't overlap with community's interests for using the venue for other activities. The only unanswered question is whether the resort should pay a fee to use the venue or it could offer something in the return from its offerings that community would be interested in using and could benefit from.

Vermont offers a great variety of summer theatre shows. According to the number of theatre companies operating in Vermont, theater is a viable option for Mount Ascutney to improve its offerings and get an additional stream of income. Theatre's offer comedies, dramas, musicals, classic plays, new and experimental plays. After assessing the interest of the community through surveying, we could work on getting in touch with theatre companies that offer certain type of play and work on getting them to come in. According to Burlington Free Press, price range for tickets goes from \$10 to anywhere around \$60.

One of the groups is working on organizing summer camps for children. The stage and natural-amphitheater provide an opportunity to work with them and see how interests of children could overlap with using the stage. This could be beneficial for multiple activities, including outdoors educational purposes, place for children to express their artistic capacity by organizing plays, concerts and a place for opening and closing ceremony.

Another viable option for using stage space is having an open air cinema projections. This is something that would have a substantial upfront cost, however could present a reliable source of additional income. With systems ranging anywhere from \$1,000 for ordinary ones to \$10,000 for more professional ones, we believe that the system would pay off quickly for itself. The professional one is predicted for events expecting 75-250 people, so assuming ticket price of \$10 and max occupancy, the system could be paid off in four projections. This is oversimplified calculation, but even after including the cost of hiring an operator (~\$15/hr), buying plastic chairs (\$10-\$12/chair) and electricity cost, which is negligible for one projector, open air cinema seems like a viable option. Also, there is room to increase revenue by selling snacks and refreshments for the projections.

Our last recommendation is to rent the space out and let people use it as they wish. The price range for renting venue out depends firstly on what kind of stage community partners decide on getting/renting and community's willingness to pay. We will be looking further into this option by assessing community's interest and exploring if there is similar offering at some other resorts in the state.

6.5 Artist Selection

In accordance with Ascutney Outdoors' mission to sustainably develop the recreational assets the mountain has to offer, we sought to provide Ascutney Outdoors' Board with a list of

musical acts who could feasibly perform at the first Music on the Mountain Series. The largest challenge facing Ascutney Outdoors is, obviously, that their status as a non-profit limits them from collecting the income necessary to hire many artists. As per David Pack, the director of Music at Dartmouth's Collis Student Center, even small musical trios would "cost typically around \$500 to \$1000, depending on if they can book multiple shows at the venue" (David Pack, 5/9/17). With a limited budget that does not extend to a musical program, such booking prices are completely infeasible for Ascutney Outdoors. As such, Music on the Mountain must be able to attract artists without a financial incentive.

While it is true newer acts would be more likely to play a show for exposure rather than financial incentives, seeking out established musicians with ties to the Mount Ascutney area would allow for a higher quality show while upholding Ascutney Outdoors' core values. David Clark, a local promoter who runs the Yellow House Media music site, advised that "many local musicians are deeply tied to the area and would jump at the chance to play a show that would support their local community" (David Clark, 5/24/17). As such, below is a table of local artists and their contact information who Mr. Clark mentioned would be very interested performing at an initial Music on the Mountain concert series.

Local Contact	Music Affiliation	Contact Information
David Clark	Owner of Yellow House Media	dave@yellowhousemedia.com
Rick Davis	Local Rock Musician	rickdavismusic@yahoo.com
Brooks Hubbard	Local Rock Musician	brookshubbardmusic@gmail.com
Jason Kahn	Local Rock Musician	jason@jasoncann.com
Gerry Grimo	Local Jazz Musician	gerry_grimo@yahoo.com
Katie Trautz	Local Bluegrass Musician	katietrautzmusic@gmail.com

Fig 6.4: Potential Musical Acts

In addition to the referring the artists included above, Mr. Clark has also agreed to include any shows at Mount Ascutney on the Yellow House Media website and in a newsletter he circulates to approximately 5,000 residents of the upper valley. We recommend that Ascutney Outdoors reach out to all of the above artists when planning a summer music series to maximize the quality of the performances.

By working in conjunction with both Mr. Clark's promoting agency as well as the musicians who record with Rick Davis at his studio in Windsor, it is possible for Mount Ascutney to plan a high quality concert series using exclusively local musicians. To do so would fulfil Ascutney Outdoors' vision of developing the entertainment assets the mountain has to offer while still strengthening the local community and revitalizing the area.

6.6 Outdoor Amphitheater

While the main stage area is the primary source of musical entertainment, the natural terrain at greater elevations on Mount Ascutney also offers an exciting location for music to be incorporated into Ascutney Outdoors' recreational offerings. The greatest limiting factor for developing natural amphitheaters on the mountain is the language of the conservation easement, which states that "no buildings or structures shall be constructed." As such, Ascutney Outdoors is limited in the action it can take to improve upon the already existing locations. In an effort to aid Ascutney Outdoors in their planning an amphitheater series, included below are several examples of commonplace amphitheater design.

6.6.1 The Open Clearing Approach



Figure 6.5: The Dartmouth “BEMA”

One of the simplest forms of amphitheater, open clearings in the woods provide a functional and noninvasive meeting space for communities. In such an amphitheater, the natural beauty of the space is able to stand on its own to establish the atmosphere for any type of performance. The maintenance cost for such an area is relatively low as only seasonal brush trimming is necessary to preserve the space. Depending on the prevalence of ticks or poison ivy, additional land management may be necessary on a case by case basis. Such management techniques usually include the spraying of insecticides or the wedding of poison ivy plants.

The drawback of such an amphitheater style, however, is apparent with a lack of any permanent seating or stage fixture. As such, performers and visitors to the space must be able to play and sit on the grass. Figure 6.5, above, showcases the Dartmouth “BEMA,” or “big empty meeting area,” which is characterized by a large field and small stone stage.

6.6.2 Incorporating Seating



Figure 6.6: The Palmer Woodland Theater at Monticello

It would require additional permission from the grantees, however, incorporating seating has the ability to enhance the performance value of any outdoor venue. The seating would prove especially valuable for the disabled and elderly who may have difficulty sitting on the ground for the duration of a musical performance. The material of the seating is up to the discretion of AO, common seating materials include plastic folding chairs, wooden benches, or stumps. Figure 6.6, above, depicts the Palmer Woodland Theater at Monticello and their use of wooden seating in an effort to blend the seating with its surroundings.

6.6.3 Natural Structures Approach



Figure 6.7: Norris Dam State Park Stadium Seating

An additional design concept that could work for AO, provided it was approved by the grantees, is relocating stones already found in the area to try to construct a “natural” stage area. As the stones are already features of the mountain, it may be possible to arrange them in a formation which would enhance the performance value of any amphitheater. Figure 6.7, above, provides an example in which the organizers of the Norris Dam State Park in Tennessee relocated stones already within the park’s property to construct a “natural” stage.

A combination of the three aforementioned styles has the ability to maximize the outdoor amphitheaters’ performance value. However, it is possible some of the styles are conflict with the grantees’ interpretation of the easement. As such, these styles are provided as guidelines meant to aid AO in their later design of amphitheaters around the mountain.

6.7 Recommendations

As Ascutney Outdoors is particularly limited in what physical changes they are able to implement on the mountain, it is critical to be cognizant of the language of the conservation easement when planning for a possible outdoor amphitheater. Most relevantly, the easement specifically prohibits the “disturbance of the surface, including, but not limited to, filling, excavation, removal of topsoil, sand, gravel, rocks or minerals, or change of the topography of the land in any manner.” As such, any amphitheater design that relies upon shifting rocks for either a stage setup or to create pavers cannot be pursued with the current easement in effect.

Fortunately for the planning of a potential outdoor amphitheater, the easement also does include language that expands Ascutney Outdoors’ options. Specifically, the easement provides Ascutney Outdoors “the right to create small openings through removal of a few trees or trimming the height of some for the purpose of creating scenic views.” As such, Ascutney Outdoors has the liberty to landscape a few trees should it be necessary to create a large enough space on the mountain for an amphitheater or to improve upon the already existing view at some of the potential amphitheater locations.

With the aforementioned stipulations in mind, we recommended that Ascutney Outdoors pursue an amphitheater design most similar the open meeting area approach best exemplified by the Dartmouth BEMA. Such a design would allow for visitors to the mountain to gather in a designated area while still operating within the language of the easement. Ascutney Outdoors would be able to clear a few trees from the area should it be necessary to widen the space or improve upon the view of the surrounding area. The space could be further improved upon through the addition of seating, which would be especially beneficial to the young and elderly. The seating could be created naturally, using the logging remains from clearing out the area as

benches and individual seating. Should Ascutney Outdoors opt for more transportable seating, plastic chairs could be brought in and out of the space for any planned events on the mountain. By clearing the area and including seating, Ascutney Outdoors has the ability to create high-quality, natural amphitheaters for musical, theatrical and spiritual gatherings at various locations on the mountain.

6.8 Conclusion

The aforementioned logistics will provide a foundation for AO to design an outdoor music venue and concert series when they are ready. By working with individuals in the local community, be it to build a stage or play the shows, Ascutney Outdoors can continue working towards its mission to revitalize the mountain via engagement from the community. A concert series at Mount Ascutney presents an excellent opportunity to build community and foster a thriving local culture.

Summary of Recommendations

Through a term of highly collaborative work with community partners and fellow classmates, the 2017 ENVS 50 cohort gained hands-on experience creating recreation, conservation and education solutions to a real environmental management scenario. To better focus our efforts on specific aspects of Mount Ascutney's management, we worked in five different subgroups, each undertaking a distinct project at Mount Ascutney.

First, we addressed the need to improve and expand upon the current trail system, as well as create a revenue source to sustain the nonprofit's community programs. In collaboration with AO and STAB, we developed two mechanisms for promoting membership and donations: a paper donation form to be distributed at the trailheads and central locations around the mountain, and a blueprint for an iPad Point-of-Sale software that will serve the same purpose in the long-term. Additionally, we have developed a plan to improve community outreach through social media efforts, improved signage, and partnerships with local businesses and organizations.

In order to determine the most effective and suitable revenue model for Mount Ascutney, we conducted extensive research on willingness-to-pay models, psychological aspects of charitable giving and signage, as well as several case studies including the pay-to-play model employed by the Vermont-based Kingdom Trails Alliance, and donation-based model used by the Vermont Mountain Biking Association. Given the recent increase in popularity of mountain biking in the state of Vermont and short-term success of the Ascutney trail system, we have devised a plan that will provide AO and STAB with a much needed additional revenue source. This revenue stream would help increase the recreational, conservation, and educational opportunities provided by Ascutney, lead to a multiplier effect for the community of West Windsor and Windsor as more visitors are drawn to the area, and foster a sustainable future for

the mountain and its amenities. The expansion of the opportunities provided by the mountain will also promote more active lifestyles within the community, generating beneficial health impacts.

The camps and events project is the one of the essential pieces to help Ascutney Outdoors get more people outside and enjoy all that Ascutney has to offer. Through research on existing camps in the area around Mount Ascutney, we realized there was a need for affordable camps for younger kids that offer enticing programs. Since this is an untapped market for kids ages 8-12 and camps in the area are usually expensive, AO can use their resources and partnerships to create successful camps. Knowing that AO has a way to fill this niche, the camps and events group created a skeleton model for a mountain biking camp.

The significance of this development for AO is that camps can offer some revenue for the organization, an introduction to the outdoors for children, and a form of childcare for working parents. AO is partnering with Sport Trails of Ascutney Basin (STAB) to help organize and run the mountain biking camps. These outdoor education programs strive to enhance environmental stewardship, physical fitness and overall well-being for youth through mountain biking and spending time in nature. Through the help of STAB, the camp is designed to teach mountain biking skills as well as maintenance of bikes and trails. Another camp idea is to make use of the Climb Fitness Center located at the resort near the mountain. This will augment the camp experience with additional activities such as swimming, basketball, tennis, mountain biking training and nutritional education.

Furthermore, we planned for the future by creating a camp database, which AO can use to see other price points and camps in the area. The members of the group also researched information on staffing and how to certify their volunteers and employees. Additionally,

promotional campaigns are a key portion to this project, as this affordable community program would be more accessible to more people when effectively advertised.

Similar to the camps and events project group, the interpretive trail group aims to bring the beauty and wonders of Mount Ascutney to more community members and visitors. Specifically, the group worked on preliminary ideas to design an interpretive trail near the base of Mount Ascutney, close to the Ascutney Outdoors Center to be built on the site of the old ski lodge. AO has expressed the hope to provide access especially to the elderly and young children, people who are often barred by strenuous terrain from enjoying Mount Ascutney. The interpretive trail will accomplish that aim while also enhancing the trail experience by highlighting local fauna and flora, natural history, hydrology, geography, land management and regional history. Through professionally designed signage, art projects, sound booths and interactive components inspired by those at natural history museums, the interpretive trail project will engage, educate and inspire visitors to become stewards of nature. Based on our background research, we suggested creative solutions such as a 3-D mountain model, water-crossing and wildlife waysides, a ski fort and an underpass mural. These creative ideas help propel the beginnings of another exciting project to enliven Mount Ascutney.

Since Mount Ascutney has a unique setting of recreation and conservation as a part of the land easement, the User Research and Monitoring Study group worked to help develop monitoring strategies and research to maintain the health and sustainability on the mountain. With Mount Ascutney gaining traction in the number of mountain bikers, hikers, and other recreational activities, it was a priority for the Upper Valley Land Trust (UVLT) and Ascutney Outdoors (AO) to be proactive in obtaining user data to better understand user experience and the mountain's carrying capacity. This was desired in order to prevent future damage to its

ecology and maintain the mountain as an economic resource. Starting off, the goal of the study was to track the number of users on the mountain at any given time and find the correlation of the number of users to the amount of damage Mount Ascutney was facing. After intensive research and discussions with experts, it was determined that the correlation between users and ecological impacts was non-existent. Instead, the most effective solution for UVLT was to devise a proactive monitoring plan in order to maintain the integrity of the West Windsor Town Forest.

After literature review and assessing previous ecological monitoring plans used across the country for other national parks, we were able to successfully write our own methodology and monitoring plan for the West Windsor Town Forest. This plan addressed user data and proactive environmental censoring measures. Through our methodology, the group was able to implement a data collection plan for the summer of 2017 that UVLT could use that would give them insight to what users were doing on the mountain, when they were on the mountain and their overall satisfaction. From equipment donation from RSG and funding for interns from Dartmouth College, we allocated resources and equipment to achieve just this.

Another key component to the plan was the monitoring of erosion and invasive species. For the enjoyment of the users and the integrity of the trail and vegetation, volunteers and citizen science were relied upon to ensure trails were not getting to the point of being unusable. On top of this, interns that were scheduled to be hired were recommended to use a classification system to determine the health of the trails. Throughout the term, we learned that Mount Ascutney's trail system is currently in excellent condition. Through this program of research, planning and development strategies, we became responsible for addressing ways to maintain this status.

UVLT also expressed a focus on monitoring of invasive species. As the West Windsor Town Forest holds a healthy level of biodiversity, AO and UVLT strive to keep it this way.

Through research and discussion, invasive species have the power of taking this unique attribute away from the mountain and with number of users growing, this inherently becomes a greater threat. Similar to the way in which erosion is dealt with, citizen science, volunteer work, and interns were allocated to be the most effective tactic to prevent future intrusion from invasive species.

Although it was somewhat unhelpful that no correlation of number of users to ecological health had been established, we were still able to find a way to be proactive and pragmatic in maintaining the unique values Mount Ascutney has to offer. By creating the protocols for user research for the summer of 2017 and developing a long term plan for future years, the integrity of the mountain and user experience will remain intact despite the expected increase of use in years to come.

In partnership with AO and UVLT representatives and their contacts, the grantmaking group participated in one of the most crucial processes that nonprofits undertake: development. We learned fundraising skills from experienced community mentors through weekly meetings, a special grantmaking workshop and guest speakers that the AO partners had brought in. The environmental studies department's Practice-Based Learning Specialist, Karen Bieluch, provided additional literature and support as well.

Working closely with community contacts tied to specific projects, we produced three grant applications under three project areas. The project areas are: community and education, mountain infrastructure/recreation, and trail monitoring technology for conservation. Additionally, we put together a grant database to aid future development of the young nonprofit. We are especially excited about building on the planning of our classmates and writing grants to fund the projects they have been designing.

Under the community and education project area, we worked with the interpretive trail group to compose a narrative about their project to our potential funder, the Vermont Community Foundation. Though the specific grant we applied to is a small grant that would only help a part of the interpretive trail project, the narrative we developed can inform future grant applications for the interpretive trail. For the mountain infrastructure and recreation project area, we wrote a grant on a flow country trail, to answer the demand for an improved mountain-biking trail system as well as diversify the local outdoor industry. This application is for the Recreational Trails Project Grant, a relatively large grant with an upper limit of \$50,000, in part because it is a government grant administered by the State of Vermont. If approved, the grant will ease the burden of an expensive but worthwhile flow country trail construction, including preliminary studies and assessments required by federal law, and professional trail building using heavy machinery. Finally, recreation and development must always be mindful of environmental impact, and our grantmaking solidly reflects this principle. We drafted a grant application to Keen Footwear to fund trail counters, tablets, cameras and GPS trackers that help monitor trail use intensity. These tools can carry out the trail use study designed by another subgroup, in an effort to foster sustainable and responsible recreation at Mount Ascutney.

One of our primary goals throughout the course of this project has been to develop ways to draw all parts of the community, not just the avid outdoorsmen, to Ascutney Mountain. Music on the Mountain effectively addresses this need. After conducting a literature review on strategies for promoting community building through musical and other artistic prospects, we worked with our community partners to develop a plan for a stage design on the mountain for events, such as concert series, as well as potential concert series at this venue. In order to gauge the possibilities for such a concert, we worked with our partners at AO and other local

organizations to determine potential artists that would be willing to perform at the venue, including local groups like Yellow House Media, and the Rick Davis Band. In the process of developing this plan, we conducted a cost-benefit analysis of the various components of coordinating a concert, including those associated with the performers, food, and venue. Additionally, we explored alternative uses for the proposed concert venue, such as after-school theatre programs, in order to create new social networks, expand upon existing ones, and promote community education. Finally, we researched various amphitheaters that encompass natural designs in order to promote the sustainable use of such a venue, and to maintain an emphasis on the ecosystem services that the mountain provides.

Throughout this senior capstone class, the 2017 ENVS 50 group has benefited from experiential learning by working with Ascutney Outdoors and other local community partners. More importantly, we began to understand the importance of Mount Ascutney to its local people. This mountain fuels incredible recreation and life to the West Windsor community and beyond. Our groups not only worked to further engage the community with our projects, but also developed ways through which the mountain can sustain its community-building components. By fostering recreational and educational opportunities on the mountain, while preserving its ecological foundation, we have essentially worked on a long-term, practical sustainability plan for Mount Ascutney. Given the dedication of the hard-working members of AO, STAB, the UVLT, and the communities of West Windsor and Windsor, followed by the contributions our class collectively made in ENVS 50, we believe the impact and fruits of this collaboration will live beyond the short time of an academic term. In the next few years, we look forward to hearing about the implementation of the multifaceted projects we helped with, as we bring to our

new working lives a multitude of transferable skills, gained from working in an organization/company-size team to tackle a real world environmental management situation.

Appendix A: Camp Website Recommendations

Ascutney Outdoors is optimistic about their ability to independently run camps in the coming years. They are growing fast and have a dedicated group of volunteers that often surpass what is expected of the organization. The timeline for camps is difficult to determine, but in the meantime, Ascutney Outdoors can still work toward the vision of promoting youth education through the mountain.

Ascutney currently welcomes the local school district to the mountain for field trips, utilizing the mountain's unique ability to work as an outdoor classroom. While Ascutney builds its infrastructure and prepares for the moment that it can launch its own independent camp, we recommend that it continue to open itself up to hosting local camps and other youth organizations in the same way that it hosts schools for field trips. AO states on the website that "It is our vision to cultivate school and summer programs, e.g. drama/arts/music day camps, as well as provide a welcoming environment for local conservation and science organizations to host informational and educational programs." This vision gets at the goal of engaging children in recreation that promotes their education. We felt that there was a concrete way that we could help Ascutney achieve that goal and open itself up to these organizations even more.

We chose to focus on an area that could be easily altered and have a strong effect. We decided, with our community partners that an effective place to start was with the website.

Currently, the website states that vision of providing a welcoming environment for existing organizations to engage the community with informational and educational programs. We felt that this was portrayed as a futuristic goal, that it was a vision of AO, and it implied to website visitors that this vision was not yet true. With that, we decided that it would be effective to provide recommendations to slightly alter the website so that it reflects a view of Ascutney Outdoors as an established organization that has the capacity to achieve this vision of welcoming existing organizations to host events. This pointed us toward the 'Event Resources' (ER) page where site visitors can view the events policy document and apply to run an event online.

We felt that this page would be an important and effective one to focus on. First, we suggest that any page on the site that discusses events ought to provide a link to the ER page. So, both the 'Community Arts' page and the 'Education' page should direct potential event

holders to the ER page. So, at these pages there should be a very obvious link that says something along the lines of “Click here if you are interested in holding an event at Ascutney”. This brings interested website visitors to the ER page where they can make a decision on either applying to hold an event or learning more about the possibilities. The ER page is thus very important for capturing potential business. We viewed this page as an opportunity to secure new business through effective positioning of Ascutney.

Positioning is positioning is a “marketer’s effort to identify a unique selling proposition for the product. It is arranging for a product to occupy a clear, distinctive, and attractive position relative to competing products in the minds of target consumers.” They explain that to best position a product or service a company needs to ask three questions: “Who are the customers? What is the set of needs that the product fulfills?” and “Why is the product the best option to satisfy those needs?” They explain that to be well positioned, a company must consider “how it would approach serving that group of customers, and how it would want to be perceived by those customers.” These insights offer guidance for the process of altering the website. Ascutney Outdoors would benefit from positioning itself in a slightly different manner. Specifically it may help to consider how it would want to be perceived by organizations that would hold an event there. We want to use this idea of positioning to guide suggestions for altering the website so that potential customers can better understand Ascutney as a space to engage with (as an educational space, a space for endurance sports, a space for fundraising..etc). So while Ascutney occupies a unique space economically, as a community resource run by a non-profit, it can still be viewed in economic terms. That said, as one looks at the ER page, we hope to position Ascutney to fulfil the desires of a potential customer. We suggest that AO use that page to show potential customers the ‘product’ they would get if they engage with Ascutney.

We consulted with marketing students and professors and discussed potential marketing techniques that could better position Ascutney as an event space on the ER page. We decided on the idea of sampling. In the same way that one walks down the aisle of a grocery store and samples a product, we believe that the best way to attract business is to provide a sample of Ascutney. Companies often use this tactic. The point is that educating consumers on exactly what the product is so they can envision what it will be like to consume it. This all applies to Ascutney as an event space. Ideally, if we were looking to bring local

campers to the mountain for day trips, we would reach out to all local camp directors and invite them to experience what Ascutney has to offer. That is unfortunately a difficult task to accomplish. The ER page can provide a platform to achieve the same end goal of providing a sample without having to host actual people at the mountain.

The goal is to revamp the ER page so that it adequately reflects exactly what Ascutney provides as an event space. This must be done through effective storytelling and visual aids. Because Ascutney is such a dynamic space, it has the ability to host a number of events. We recognize the dynamism of the space and recommend that the webpage reflect the possibilities for events. We recommend that the page be split up with different spaces that cater to the different possibilities. A possible arrangement would entail a drop down area under each event type where text and pictures can be used to explain what the mountain has to offer and why it would be so effective. For each type of event or each service Ascutney caters to, there should be an effective proposition statement that adequately explains the benefits of using Ascutney for such an event. Here is where storytelling is important and effective language must be used to convince page visitors that this is the ideal option for holding an event. With this, pictures should be included that serve the same purpose of portraying the unique and effective aspects of the mountain. We recommend that the ER page do a bit better job helping those who have never been to the mountain envision the mountain. It is possible to use a different and more clear map that shows where potential events could be held and which spaces are significant to the possible organizations they represent.

For youth events, we recommend using pictures that show groups of students or campers out on the trails. We recommend using text to highlight the benefits of using the space to engage children. It would be very effective to use a quote from a school official that has already taken students on field trips there and has positive feedback. Working to understand how the mountain is viewed in the eyes of the local school district will help AO be able to portray that vision of Ascutney on the ER page. The text should convey a message of confidence, refraining from discussing the vision to partner with organizations. Instead, the text should explain the significance of Ascutney, tell of the ways it could be useful for youth engagement, and discuss the ongoing success with Ascutney and the local school district. The text and pictures should work to show what is possible. AO wants site visitors to be able to envision the way their camp/organization could fit in at Ascutney. They should leave the site

wanting to ask more questions about what is possible there, so text and visual aids should point them toward spaces on the page where they could inquire further.

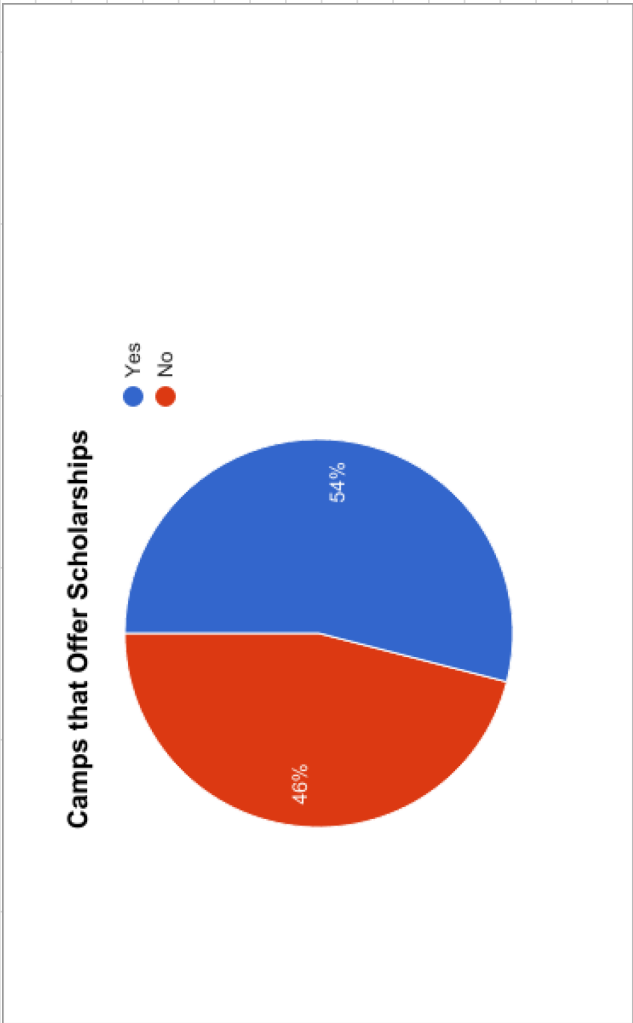
In the same vein, attention should be paid to portraying Ascutney in a way that reflects its current state. Ascutney hosts numerous endurance sports races that raise money for nonprofits. Another space on the ER page should be dedicated to this as well. It is easy to explain the benefits of hosting an event at Ascutney and there are numerous photos available to portray the effectiveness of using Ascutney as a place to host an event of this nature. Again, word choice is important. Though Ascutney is not a large organization, it can and does effectively host very successful events. The text should portray this success and position Ascutney as an experienced and well tested event space. Ascutney Outdoors ought to apply the same process to areas like the arts. Using the ER page to portray Ascutney as an ideal space for a concert, as evidenced by a successful Brownstock 2016, will be a step in increasing the number of these events.

Overall, these changes are fairly minor, but they provide a different face for Ascutney and instill a confidence in potential customers/event-holders. The goal is to draw potential customers in through providing a platform for them to envision their own event at Ascutney. We want them to be able to sample the mountain and understand what it has to offer, and we want them to know the value it brings. Lastly, we want to portray Ascutney Outdoors as ready and willing to assist and answer any questions that come about. Overall, these minor changes may be helpful in hosting new events and bringing in more revenue. These changes also can be replicated across the website as Ascutney portrays itself in ways that it wants to be seen, and in ways that appeal to potential hikers/runners/bikers and more.

Appendix B: Local Camps Database

[illegible]

Carnegie Hall	Bow, NH	Hiking on mountains, birdwatching, waterfalls, backpacking, canoeing, fishing, and more (if needed, we can provide a tent and a sleeping bag)	6/26-7/28 7/27-29, 8/6-8/12 (day/weekend)	5/season	Entering 6/69 8-12, 8-13, 10-14, 12-16, 13-16, 14-16, 8/6-8/30	8:30-9, can drop off 7:30, pickup until 6	1/4-2/5 (alternating for siblings, singlelight sessions, first 4 camps)	No	1.5 h	12, Pk by 5/15	ashburn@camp001.com
Carnegie-Suffield	Suffield, NH	Traditional outdoor activities, soccer, survival skills, Christian	7/27-29, 8/6-8/12 (day/weekend)	5/season	Entering 6/69 8-12, 8-13, 10-14, 12-16, 13-16, 14-16, 8/6-8/30	8:30-9, can drop off 7:30, pickup until 6	\$250 (for day camp), sibling discount Yes	Yes, all meals, Yes book fee and lunch	1 h		
Adventure Day Camp	East Montpelier, VT	Traditional outdoor activities, Christian Free outdoor play, packed lunch, and a variety of games	7/8-8/11 (4 day camp week of 7 days)	5/season	4-6, 7-11	5-10, 8-13/30, the pick-up option	\$250 (for day camp), sibling discount Yes	No	1.5 h	5/1 (preferred)	
Oakland Valley Waldorf School Camps		Art, crafts, & movement Free outdoor play, packed lunch, and a variety of games	7/8-8/11 (4 day camp week of 7 days)	5/season	4-6, 7-11	5-10, 8-13/30, the pick-up option	\$250 (for day camp), sibling discount Yes	No	1.5 h		
Quebec House, Penikese Island, Penikese Island, Penikese Island	Quebec House, VT	Traditional outdoor activities, Christian Free outdoor play, packed lunch, and a variety of games	7/8-8/11 (4 day camp week of 7 days)	5/season	4-6, 7-11	5-10, 8-13/30, the pick-up option	\$250 (for day camp), sibling discount Yes	No	1.5 h		camp@innish.org
VT Institute of Natural Science, Maine State Museum, Concord, NH & Auburn, NH	Concord, NH & Auburn, NH	Nature, forest week-long programs Forest for animals, learn about animals in wild, nature crafts, short hikes, etc.	6/18-8/23	5/season (from short weeks)	4-6, entering 6/13, 6/14-6, 6/16-6, 6/18-6, 6/20-6, 6/22-6, 6/24-6, 6/26-6, 6/28-6, 6/30-6, 7/2-6, 7/4-6, 7/6-6, 7/8-6, 7/10-6, 7/12-6, 7/14-6, 7/16-6, 7/18-6, 7/20-6, 7/22-6, 7/24-6, 7/26-6, 7/28-6, 7/30-6, 8/1-6, 8/3-6, 8/5-6, 8/7-6, 8/9-6, 8/11-6, 8/13-6, 8/15-6, 8/17-6, 8/19-6, 8/21-6, 8/23-6, 8/25-6, 8/27-6, 8/29-6, 8/31-6, 9/2-6, 9/4-6, 9/6-6, 9/8-6, 9/10-6, 9/12-6, 9/14-6, 9/16-6, 9/18-6, 9/20-6, 9/22-6, 9/24-6, 9/26-6, 9/28-6, 9/30-6, 10/2-6, 10/4-6, 10/6-6, 10/8-6, 10/10-6, 10/12-6, 10/14-6, 10/16-6, 10/18-6, 10/20-6, 10/22-6, 10/24-6, 10/26-6, 10/28-6, 10/30-6, 11/1-6, 11/3-6, 11/5-6, 11/7-6, 11/9-6, 11/11-6, 11/13-6, 11/15-6, 11/17-6, 11/19-6, 11/21-6, 11/23-6, 11/25-6, 11/27-6, 11/29-6, 12/1-6, 12/3-6, 12/5-6, 12/7-6, 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Camp Offers Scholarships	Number of Camps						
Yes	47						
No	40						
<div><h3>Camps that Offer Scholarships</h3><table><tr><th>Response</th><th>Percentage</th></tr><tr><td>Yes</td><td>54%</td></tr><tr><td>No</td><td>46%</td></tr></table></div>		Response	Percentage	Yes	54%	No	46%
Response	Percentage						
Yes	54%						
No	46%						

Appendix C: Pilot Camp Deliverable

The purpose of Mt Ascutney Outdoors is to harmoniously manage, develop and protect the recreational, educational and environmental assets of the West Windsor Town forest and adjacent land on Mt. Ascutney, while maintaining affordable access for all, for their year round enjoyment.

From <<http://ascutneyoutdoors.org/story/>

Ascutney Outdoors may not be ready to implement a camp program independently, but the prospects for the future are bright in this area. Ascutney Outdoors has a dedicated staff, a strong following and most importantly, a dynamic space. Despite the fact that a camp program may not be possible in the near future, there are steps that can be taken now to prepare for that moment. With our community partners, our group decided that the most meaningful contribution to the goal of an Ascutney Outdoors run youth camp program was to provide a pilot camp. The pilot camp is intended to act as a 'skeleton' of sorts. Through this skeleton, we have identified an effective course of action that AO could take in the near future to initiate the process of implementing a camp program. We have laid some of the ground work that would go into creating a camp, and have provided AO with a document that identifies areas where decisions will need to be made and objectives that will need to be accomplished to run a pilot camp. Of the many things Ascutney Outdoors needs to consider when running a pilot program, some of the keys are creating a low-risk environment where AO has little chance to lose money or damage its reputation. AO must view this pilot program as a trial run, and as a first step to build off of.

Partnership

Background

Creating an effective camp program is a process that occurs over a number of years. The first camp will never be perfect, and it will be important for AO to reflect on each program, through feedback from campers, parents, and counselors. From our discussion with community partners, we learned that before AO can arrive at the opportunity to begin this process independently, there is a number of steps that need to be taken internally.

We began brainstorming with community partners as to how we could expedite the progress toward the goal of independently running camps, and we were turned on to the idea

of running a pilot camp with an existing organization. Running an initial camp program with a partner allows Ascutney Outdoors to begin the process of creating an effective camp without being completely prepared to do so independently. Our group and the community partners felt that this would better prepare AO to run effective camps that served both the community and AO as soon as they were able to run a program independently. Obtaining a partner also presented the possibility of more infrastructure, experience and ability to effectively begin a camp.

Before we could decide on or look for the outside organization with which to partner, the focus and overall idea for the camp needed to be decided. Mount Ascutney is such an interesting and diverse mountain it is important to AO that the kids who participate in the camp are outdoors and on the mountain as much as possible. Because Mount Ascutney has recently decided to focus its efforts on creating amazing mountain bike trails, we agreed that a mountain bike camp would be a perfect fit for both AO and the mountain itself. Mountain biking camps for young children are also hard to find in general but especially in this area. There are only two camps in a one hour radius of Mount Ascutney that focus on mountain biking. Once we decided on a focus we could continue our search for the perfect partner, and we came across Sports Trails of Ascutney Basin (STAB).

STAB

We facilitated the partnership of Ascutney Outdoors and Sport Trails of the Ascutney Basin (STAB) in the pilot camp process. STAB fit well with AO in that a very feasible potential camp is a mountain biking camp. The space is a popular mountain biking destination, and STAB is closely affiliated with AO, working as its partner in trail creation and maintenance. STAB's expertise in mountain biking will help AO effectively begin a pilot program. Partnering with STAB opens up an entire market of potential customers, as many of the community members that interact with STAB are mountain bikers. Harnessing this base of mountain bikers and their families, it will be easier to attract potential attendees. Through STAB it will also be easier to identify potential camp instructors. This partnership allows AO to coordinate with familiar faces, who have similar goals for the mountain.

STAB board members were extremely helpful in providing input as our group planned a possible camp. Leah Gartner has experience in running women's mountain biking clinics, and they are well prepared to further design and execute a mountain biking camp. STAB

operates a chapter of Vermont Mountain Bike Association, which provides another avenue into the Vermont mountain biking participant base. STAB provides even more expertise in trail maintenance, a facet of the conservation and recreation curriculum of our proposed pilot camp. We are confident that STAB's far reaching connections and current members provide expertise and promise for the ability to effectively operate, market and build a mountain biking camp.

The Camp

Intro

Ascutney Outdoors is limitless in its potential for hosting youth camps. The mountain and its trail networks could foster a number of different types of camps. Ascutney Outdoors' mission is to manage, develop and protect the recreational, educational and environmental assets of the West Windsor Town forest and to maintain access to the forest for the public. Following this mission, it is important to plan a camp that encourages the use of these recreational, educational and environmental assets. Our community partners expressed a desire to facilitate fun, active, and educational interactions between youth and the mountain. This process could be achieved in a number of ways, and a sports recreation camp is an ideal way to reach the goals of Ascutney Outdoors and the vision of our group.

The planned pilot camp has three facets: sport, conservation ecology, and alternative athletic education. These three areas provide a well-rounded, wholesome camp that will have the ability to keep children engaged without losing their attention. It is attractive to parents, children, and AO because of this variety including the educational aspects to the camp. Through our market analysis of youth summer camps, we identified only 12 of the 88 surrounding camps as educational in nature. Of these, none of the camps mixed sports recreation and education. Some involved hiking and nature exploration, but none focus on learning and improving in a skill-based sport such as mountain biking. The third facet, alternative athletic education, is especially attractive (it will be explained further) because it provides more in depth fitness and nutrition education. The most important aspect that is the common thread between these facets is fun. The pilot camp is intended to cover these many bases, but take place with a relaxed, enjoyable atmosphere that is open to all levels of mountain biking skill and fitness.

Mountain Biking

A mountain biking camp makes use of some of Ascutney's best qualities, while providing a fun, active and constructive environment for kids. Launching a mountain biking camp is in line with a STAB partnership, as STAB is planning to run a women's program at the mountain in the summer of 2017. The mountain is a playground for riders, and a camp offers kids a chance to explore this area as well as learning a skill that could carry through to adulthood.

Mountain biking is the main focus and draw for the camp, but it will be crucial for AO and STAB to plan the 'right' amount of bike time meaning that the kids do enough to learn the basics of the sport but don't do too much they get too tired or even injured. This timing will depend on age and skill level of riders and can vary greatly. We suggest that STAB and AO plan a mountain biking program geared toward beginners, offering kids a chance to become more comfortable on the bike and increase their ability throughout the week without becoming worn out. It is crucial that the partners and AO find the right balance between mountain biking and the other activities in the camp without forgetting that the first couple of days are so important for the kids to get used to this new skill and for the volunteers and workers to assess the ability of each individual camper. While the mountain biking sessions are first and foremost fun, the goal is to foster confidence and improvement in each rider while staying as safe as possible.

To help balance the mountain biking agenda and provide an educational experience, the pilot camp ought to include various sessions that cover basic bike maintenance. This curriculum can differ depending on age and ability as well. Some possible topics to cover are changing and patching flats, cleaning and lubricating bike mechanisms, and tuning bike gears and breaks (for older and more able groups). The hope is that while riders increase their confidence on the bike, they will also increase their awareness and understanding of their bikes and how to take care of them, and there are many ways to make this topic fun and interesting. We propose things such as competitions for fastest maintenance task completion or maybe 'bike-puzzles' where campers have to work together to solve issues with a bike. It is possible to cater a camp-long project toward the age and ability of the group, perhaps having younger groups assemble a bike over the course of camp, or, for older groups, digging into more difficult projects such as maintenance or building of gear mechanisms. This aspect of

the camp is meant to be a small, fun and useful educational experience.

Education

Both Ascutney Outdoors and STAB have made stated a clear interest in the inclusion of an educational aspect of the camp. Engaging kids in the outdoors offers a great chance to educate them on the environment. The mountain and its story are the greatest teachers available for these kids. A goal of the mountain biking portion of the camp is to instill an appreciation for the physical place. If kids can engage in mountain biking, experience the fun, and get to know certain trails and areas of the mountain, this will elicit a sense of connection to place. This can be fostered by camp staff as well through a number of different ways. One idea was the possibility of creating trail identification games, using a camera to film or take photos of a noticeable area from a trail that the campers frequently use. In teams or individually, campers could compete to identify places. Camp staff could engage campers to come up with their own ‘nicknames’ for trails, in an effort to instill a sense of connection and belonging. Campers ought to be encouraged to pay attention to trails, and entrusted to lead the group on their own favorite runs. It may be a smart and very feasible idea to do a scavenger hunt, hiding objectives along trails, encouraging campers to use maps to identify fastest routes.

As campers become more knowledgeable with the space, and more connected to it, the story behind Ascutney Outdoors and the acquisition of the mountain will hopefully resonate with campers. Through storytelling, camp staff can portray the vision of the original AO members as they decided to tackle this massive feat. Hopefully, through this place based connection, camp staff can instill and teach the principles of AO that have led to such incredible, community-centered management of the mountain. Camp staff can instill AO’s values through teachings like the leave no trace mentality. Campers ought to learn what an invasive species is and take part in removal of various species found. A past ENVS 50 class has provided AO with an invasive species field form (See 2016 ENVS 50 Report, <http://envs.dartmouth.edu/undergraduate/major-and-minors/envs-50-archive>). Using this as a model, and catering the data collection process to different ages, campers can engage in important field work to gather data on the mountain. The 2016 ENVS 50 Report also provides a National Wildlife Federation document outlining a “Habitat Hunt” activity for grades 3-6. Activities like these engage kids in active outdoor scientific exercises that educate them on

ecology and conservation.

Ascutney's story moves past ecology and conservation though, and for campers to truly engage and understand the mountain, education in recreation will be important as well. A love for outdoor recreation has kept this mountain the incredible space that it is, and recreation fuels the hope for an increase in tourism revenue within the community. Campers will learn about the importance of recreation at the mountain, and the hopes for the community that accompany an increase in mountain use. A hands on way to teach this is through trail maintenance activities.

Keeping with the active nature of the camp, it would be effective to incorporate actual trail maintenance and perhaps foster creativity through a trail design curriculum. An effective way to foster a connection with the mountain, while maintaining a mountain-biking theme is to have campers make a physical impact on the mountain. Trail maintenance could achieve this. An even more exciting proposition that may be more difficult to put into action is having campers contribute to new trails or create new features. There are time and skill constraints to this, but if campers had the chance to construct a fun feature on an existing trail, this would foster the sense of connection to and responsibility for the mountain.

The Climb

The last aspect of the proposed camp involves a partnership with The Climb Fitness Center that is located within the resort. Erin Kershaw, the manager of the Climb Fitness center and a STAB board member, is an enthusiastic advocate of a possible camp partnering with the fitness center. The fitness center offers numerous resources for the camp, and provides even more variety for campers. There are two different aspects of The Climb that are appealing to a pilot camp. The Climb offers physical spaces and resources, and Erin and her team offer invaluable athletic educational resources.

This pilot plan stresses variety. The challenge is balancing activities and keeping campers' attention. Mountain biking and the outdoor educational curriculum engage campers with the mountain space. The Climb offers an alternative space to entertain campers. There is a pool and basketball and tennis courts. The ability to make use of these resources and constantly provide different activities for campers is very valuable. The campers will be outside often and the access to a pool will be very appealing on hot days. The space also provides an extra blanket of security in times of inclement weather. AO has a warming hut that will suffice as a

gathering space, but the availability of the Climb is a helpful addition.

The other exciting aspect of partnering with the Climb is making use of their expertise. Erin Kershaw stated that one of the more important things in developing young athletes is providing them with the fitness education specific to their sport. Erin and her staff can educate campers on effective and safe exercises catered toward their individual ability and age. Campers can take part in workouts and leave camp with an increased knowledge in staying fit and healthy through exercise. Along with this, Erin and her staff can educate campers on making smart decisions when it comes to nutrition as well.

Pilot Conclusion

The most important thing to understand when looking at this framework is the flexibility that it entails. Here, three facets of camp (mountain biking, education, and The Climb) have all been described. The potential of each has been explored. The amount of activities and ideas described here serves as a jumping off point for AO and STAB. It will be important for AO and STAB to take these ideas and cater to the specific group they choose. Even if each aspect of the curriculum were to be included in a pilot camp, camp staff can control the pace of the camp, to cater to ability levels and campers desire. Engaging with all three aspects of the curriculum provides a multi-tiered experience that will appeal to kids and parents based on variety and scope. The camp is meant to welcome all levels of fitness and mountain biking skill, and the variety of physical activity must be marketed with fun as the common factor. Camp staff will need to connect well enough with campers to understand their experience, and cater the pace, intensity and activity length to maximize fun and learning. To better understand this balance, AO and STAB should provide camp feedback forms at the end of the week for both parents and campers.

Camp Database

Our group surveyed camps within a 1.5 hr driving radius of Ascutney to better understand the camp market. We identified 87 youth camps and recorded the following: camp name, website, location, variety of activities, dates, dates and hours, age groups, cost, availability of scholarships, size, admission deadline, distance from the mountain, whether lunch was provided, and contact information. Among these 87 camps were only 4 that provided mountain biking, all of which were 40+ minutes from Ascutney. Two of those camps were for girls only, focusing on mentoring young girls. One of these girls' camps and

another mountain biking camp were periodically scheduled, either once a week or once every 3 weeks. That leaves only one camp that provides a similar service to what AO and STAB's pilot outlines (coed, week long day camps). This camp costs \$295. Geographically, AO and STAB would not have to compete with that camp as it is a 30 minute drive from the mountain, warranting a long commute for parents in the local community surrounding Ascutney. Along with this, it is the hope that AO and STAB could provide a more affordable price for their community. The hope is that this database can aid AO as they plan for their future. The database offers the ability to analyze and compare camps and different aspects of these camps. This should serve to help AO as they make decisions.

To Do

The pilot camp skeleton provided takes into account that there is work to be done to run a camp. We have identified a few main areas AO will need to focus on when the time comes to execute a camp. We have researched some of these areas to make things easier for AO when the time comes to plan for a camp. Fortunately, the State of Vermont does not require any permit for day camps, nor do they require criminal background checks. Despite this, AO and STAB should certainly perform background checks on camp staff. This process can be started at <https://secure.vermont.gov/DPS/criminalrecords/> and

http://sheriffalerts.com/cap_office_disclaimer.php?office=55275&fwd=aHR0cDovL3d3dy5jb21tdW5pdHlub3RpZmljYXRpb24uY29tL2Nhcf9tYWluLnBocD9vZmZpY2U9NTUyNzU=.

These are the links to the Vermont Criminal Convictions records and to the Vermont Sex Offender Registry.

AO and STAB should also purchase liability insurance. Though it is not required, it should be seen as necessary. Markel Corporation offers a camp insurance plan known as The Counselor, <https://www.markelinsurance.com/camp/camp-target-classes>. This plan is currently in use by an established lacrosse and adventure camp operating out of Stowe, VT. It is especially appealing for AO and STAB because it covers volunteers as well. Depending on how AO and STAB staff their camp, whether it is with a paid individual or a volunteer, they will be covered. The insurance plan has a number of other coverages that fits a camp like the one proposed here.

When the time comes, AO and STAB should request a quote from Markel, and possibly continue this research. There are resources such as those found here through Markel

<https://www.markelinsurance.com/camp/camp-resources-and-web-sites> and through organizations like the American Camp Association: <http://www.acacamps.org/>.

As mentioned above, AO and STAB will need to make decisions about staffing. Determining the status (volunteer or paid) and size of their staff will factor into pricing. With so many undetermined factors, it did not make sense to analyze costs and profits, which would be determined by very specific, undetermined factors such as labor costs and costs of insurance. We do however recommend that AO and STAB attempt to keep the tuition cost under \$200, mirroring costs for local recreation department camps. Windsor and Rutland's recreation departments offer camps from \$33-\$200. AO and STAB will have to determine the amount of revenue they intend to bring in per camper, and determine a price based on this and on their cost per camper. We suggest, as a way to keep tuition low, that campers be required to pack their own lunches and bring water bottles to refill. AO and STAB will also need to determine whether campers will be able to rent a bike for the duration of the camp.

We suggest that for a pilot camp, campers be required to bring their own bikes. We suggest that AO work to secure a fleet of bikes through donation. Until then, if it is desired that campers without personal bikes be able to participate, AO should partner with a local bike shop to provide a bike at a heavily discounted rate. Paradise Sports Shop in Windsor offered weekly rentals at a price above \$100, which would significantly affect tuition.

Another area that will require attention is marketing. Luckily, AO and STAB have membership bases that they can push camps to. We suggest that they create a flyer, posting it at their different entry points on the mountain. We suggest that information regarding camps be pushed through AO and STAB's media outlets: the websites and social media platforms. The Climb Fitness Center also has an active marketing presence with an email list and social media accounts. Erin Kershaw and her staff would use their outlets to advertise a camp at Ascutney. This would target a different group of people and add exposure for the camp.

Appendix D: Grants

Grant Writing Workshop Structure

(10 minutes)

Introduce our goals for the meeting
Gain a better understanding of each project and where they see it going in the future
Start to be able to fill in more information about budgetary allocation

(45 minutes)

Work in small groups with the partner in charge of each project to go over our templates
Develop better language and stronger ideas that can be used for grant writing
Suggest the grants we see each project fitting into

(10 minutes)

Conclude the workshop, if we have time, with their thoughts on how the grant writing process is going and what we can do better as we begin to transition from templates to structured grants

RTP Grant Application: Flow Trail

Note: Questions 1-14 of this grant include a set of yes or no logistical questions to be answered by AO prior to submitting this proposal, as well as a request for a detailed work plan, budget, and map, that AO has not yet formulated given that this project is still in it's early planning stages. These components will be completed by the fall of 2017.

15. Project Justification: Write a short description of your proposed project and tell the following items:

Ascutney Outdoors (AO) plans to develop a new flow country course on the mountain. A flow trail is often considered the roller coaster of mountain biking trail. The International Mountain Bicycling Association defines flow country trails based on four qualifying characteristics. First, the trail must have some sort of “synergy with the landscape” that allows riders to explore the natural, rather than constructed, terrain. Second, the trail must include modified features, such as “bermed turns and cambered tread surfaces” that “counteract forces that direct the user off-trail.” Third, flow country trails are designed to maintain the bikers momentum. This is done by

avoiding momentum-killing features such as sharp turns, and instead implementing momentum-conserving features such as smoother wave-like straightaways and cambered turns. Finally, the trail must also include a diversity of features that eliminate any sense of repetition while also promoting the bikers forward momentum. (www.imba.com/model-trails/flow-trails) This particular flow country trail will be constructed on a former ski slope on Ascutney Mountain, and will be accessed via a two-mile climbing trail to be built separately by STAB.

The ensuing impact on the towns of West Windsor and Windsor after the closing of Ascutney Mountain in 2010, and thus the suspension of it's recreational amenities, provide a clear example of why the promotion and expansion of these amenities is vital for the economic well-being of the area. Home values in the area fell as much as 60 percent, while local businesses such as the Brownsville General Store, and Queen's Cafe went out of business following the closing of the mountain. "As a small business, if people aren't heading up the mountain we see that impact pretty fast," said Rich Thomas, the owner of Paradise Sports, a small outdoor sports shop in Brownsville that had struggled considerably after the closing of Ascutney. The fact of the matter is that outdoor recreation serves as one of the primary sources of consumer influx and economic productivity in the area surrounding Ascutney Mountain. Luckily, in 2015 with the assistance of the Trust for Public Land, the town of West Windsor purchased 468 acres of the former Ascutney Mountain Resort, adding it to the 1112-acre Town Forest. This flow country course plays a significant role in the revitalization of the mountain's recreational amenities made available to the public, as well as the ensuing economic benefits. Such economic benefits from mountain biking are evidenced by an operation in Burke, Vermont, a town of fewer than 2,000, that attracts over 40,000 visitors every year, each of which contributes about \$100, resulting in an annual economic contribution of more than \$4 million by the biking operation as a whole. Mount Ascutney's current mountain biking trail system is limited to a set of traditional cross-country trails that lack variety, yet are still utilized by about 4000 bikers per year. Flow country trails have been popularized within the past few years, particularly among younger mountain bikers, therefore the addition of such a trail to the current system will attract a broader influx of users. Like the trail system in Burke, many of these bikers would likely travel to Ascutney from out of state, thus increasing use of lodging, restaurants, sporting good, and other businesses in the area. This economic upsurge could lead to the return of such businesses as the Brownsville General Store, and Queen's Cafe, fostering a competitive and ever-growing

economic environment. In order to make this vision into reality, Ascutney Outdoors will require funding from the Recreational Trails Program because unlike many of its other projects, the flow country trail cannot be constructed by solely volunteer labor. In fact, early estimates indicate that the hiring of a contractor and construction of the trail via heavy machinery would cost about \$36,000, in addition to the cost of acquiring permits, such as the Act 250 permit. Furthermore, this hefty cost makes the financial aide from this grant a necessity.

16. Improved Linkages/Livability: How does this project create or strengthen linkages & connections with other existing trails, or fill critical gaps within an existing trail/trail system. Describe ways users will have improved access to natural, scenic, historic & agricultural destination areas, parks, forests, recreation areas, schools, developed growth centers and/or designated downtown areas.

Although this flow country trail won't connect other already existing trails, it will fill a gap in both required skill level and interest among visiting mountain bikers. Many of Ascutney's current trails require beginner to intermediate levels, while providing few options for more advanced users. The proposed flow trail will provide a new recreational opportunity for these intermediate to advanced users, as well as the chance to explore areas of the mountain that have typically been unexplored by visitors in the past.

17. User Ability/User Benefits: Describe the range of trail uses/users this project will serve; Tell how this project will improve access and capacity for people of various ages (young children – older citizens) or abilities to use the trail. List and provide web link references to any economic, health, or educational benefits known for users?

As mentioned above, the proposed flow trail will expand the range of skill levels that Ascutney's mountain biking trail network may accommodate by acting as a trail more suited for intermediate and advanced users. Additionally, by providing this type of trail, we will attract younger riders who will also be exposed to the full network of natural trails that Ascutney has to provide, as flow trails have recently increased in popularity among this age demographic. Much like ski areas need to attract broad spectrum of skiers/riders, flow trails are an important component missing to attract whole family.

With this diversification of trail type, Mount Ascutney will expand its appeal to a broader crowd,

thus increasing the scope of economic benefits received by the community of West Windsor and Windsor. A 2015 nationwide survey of more than 1400 bikers, conducted by Singletracks.com, a hobbyist website that publishes reviews, articles, and user content of mountain biking trails, found that an average of \$382.25 per biker is contributed to the local economy per trip (www.singletracks.com/blog/mtb-trails/mountain-bike-tourism-by-the-numbers/). An individual contribution of this amount indicates that an improved and expanded appeal of Ascutney's mountain biking trail system could lead to significant economic benefits to an area that has faced recent economic struggles. Finally, the proposed flow trail will provide a space for outdoor exercise that may contribute to the improvement of physical health among the local community as they begin to use it more frequently.

18. Sustainable Trails: What set of trail standards, guidelines, or best practices in trail construction, trail maintenance or trail management will be used in this project to ensure sustainability, minimize environmental impact, and provide erosion control? Include a website link if available.

Ascutney Outdoors plans to hire the contractor, Sinuosity LLC, a trail development company specializing in the application of “refined trail design, management, and building techniques to minimize impact on the environment and create trail longevity.” The contractor builds all projects to the sustainable trail standards established by the International Mountain Bicycling Association (IMBA). (See below link) Additionally, Ascutney Outdoors plans to implement a carrying capacity analysis project throughout their trail systems, in which trail counters and GPS will be utilized to measure trail use data that will guide AO in taking the proper actions to limit overuse and potential harm to the environment from increased erosion and runoff.

- <http://sinuosity.net>

19. Future Maintenance: What is the applicant's commitment for continued operation and maintenance of the project after grant money is no longer available. List financial, community & organizational support in place for future trail maintenance and general upkeep to ensure the useful life of the trail. Attach any relevant documents signed, dated and on letterhead, or plans

referencing agreed upon efforts approved by the landowner and/or trail managing entity.

Since 2006, Mount Ascutney's trails have been maintained primarily through volunteer labor from Sport Trails of the Ascutney Basin (STAB), a chapter of Vermont Mountain Bike Association (VMBA) in partnership with the enthusiastic community of West Windsor and AO. For the past 5 years, a part-time trail manager has facilitated these trail maintenance projects. This volunteer labor has been vital to the upkeep of Mount Ascutney operations, as an average of 1000 work hours per year have been devoted to trail maintenance. AO also plans to establish an adopt-a-trail model for the Ascutney mountain biking trail network, in which volunteers will take ownership over certain portions of the trail and facilitate maintenance projects within that particular portion.

20. Promoting Stewardship: What measures are in place to make the public more aware of trail opportunities, user-responsibilities, resource protection, respect for landowners and trail users, trail-user relations, safe trail use and future stewardship opportunities?

AO has a designated board member in charge of marketing the services provided on Mount Ascutney, primarily through a social media campaign. The AO website provides an easily navigable platform that lists upcoming events, recreational, educational, and conservation opportunities on the mountain, and ways to volunteer or donate. The website also promotes the need for stewardship as the marketing board member regularly posts about sharing the trails and respecting land and land owners in the surrounding area. Additionally, physical maps and kiosks that can be accessed on the mountain include the right of responsibility code for trail users, making it clear that the trails are there for shared use by other visitors and the surrounding environment.

- <http://ascutneyoutdoors.org>

21. Collaboration, Local Support & Involvement: What commitments of labor, money, or materials to support the proposed project have been made by public and private sectors? Describe local citizen and community involvement in the proposed project, and local support obtained for project implementation.

AO and the Ascutney trail system has primarily been supported by local NGOs and community

members. Our partner, STAB, has 11 years experience in recruiting volunteer labor and is committed to seeing this project through by continuing to channel this volunteer support throughout the duration of this project, and there on after via trail maintenance. Additional support comes from Sinuosity LLC, the contractor who will be constructing the trail. Sinuosity has extensive experience working with non-profits and incorporating volunteer labor into their projects. Finally, AO has incorporated this flow trail project into it's capital fundraising campaign which has already raised more than \$400,000 for a multitude of projects geared towards revitalizing Mount Ascutney as a hub for outdoor recreation.

Attach up to 3 letters of support, on letterhead and dated, as evidence of support. Do NOT attach support letters from contractors or outside organizations who may do work on the project.

- *The General Store, School District, and Selectboard have all pledged support to the project and are possible sources of these letters.*

22. Town and Regional Plans and Goals: Tell how this project is achieving priorities, goals and objectives in the local town plan, the Regional Planning Commission's regional plan, public land management and/or forest management plan.

This project will contribute to the achievement of multiple goals listed under the Town of West Windsor Town Plan (published in 2014). The Plan calls for the improvement of economic development (including real estate values) by promoting recreational opportunities and facilities, historic resources, and local businesses. As mentioned above, the consumer influx that would result from the availability of a flow country course would lead to increased demand for local businesses and the promotion of all recreational opportunities and facilities on Mount Ascutney. The Plan specifically includes the goal of "to the extent possible, facilitate the re-opening of the resort for a variety of year-round recreational uses. The flow country trail would provide a recreational use for all seasons but Winter. Additionally, these goals include the preservation and protection of West Windsor's recreational, historic, and scenic resources. Mount Ascutney has always been an iconic part of the community and been used recreationally dating back to the 19th century. Finally, the Plan calls for the development of "strategies to attract enough young families to West Windsor to maintain a stable school population and a dynamic community." As mentioned previously, flow country trails are particularly popular among younger mountain bikers, thus likely contributing to the fulfillment of this goal as more

youth and younger families will likely be drawn to the resort.

23. Project Readiness: What is the current status of the project? List any major activities that must still be accomplished before the project can begin, including any permits still needed. Provide a bulleted timeline to show how/when these items will be completed then go on to provide a timeline to show how this project will be completed. NOTE: Grants are anticipated to be approved by July 1, 2016, so while permits should all be gathered before the project's start date, the start date in the timeline for when the project begins should be no sooner than July 1, 2016

This project is currently in its early planning stages, although a tentative budget has been set, along with a location and labor/construction plan. Next steps include:

- 1. The completion of a proposed timeline starting with project design in the fall of 2017*
- 2. Submission of required permits, including the Act 250 permit in the winter of 2018*
- 3. Two months of construction starting in August of 2018*

Keen Application Template: Trail Monitoring Technology

Keen Effect Project Abstract (Paragraph, 1000 character max)

Please provide a brief and concise 1-2 sentence description of what a Keen Effect grant would fund. Consider this your elevator pitch.

Ascutney Outdoors (AO) and the Upper Valley Land Trust (UVLT) operate and maintain Ascutney Mountain in West Windsor, Vermont for local and regional community outdoor recreation all four seasons of the year. In order to conserve and maintain the trail system that runs through the unique mountain ecosystem, AO and UVLT request funds for the purchase and installation of trail monitoring technology to aid its conservation efforts.

Keen Effect Project Description (Paragraph, 2000 character max)

Please provide a detailed long description of what a Keen Effect grant would fund.

Founded in 2015, Ascutney Outdoors mission is to harmoniously manage, develop, and protect the recreational, educational, and environmental assets of the West Windsor Town forest and adjacent land on Mt. Ascutney, while maintaining year round affordable access for all. Our partners at UVLT With ongoing projects to increase access and further develop the Ascutney trail system, AO anticipates increased numbers of trail users. Carefully tracking this increase in recreation and the effect it has on the mountain ecosystem is a top priority of AO. Critical to these tracking efforts is trail-monitoring technology for conservation. If awarded funds from the Keen Effect, AO would direct them to the purchase of technology for this innovative and effective approach to conserving the mountain ecosystem while complementing AO's mission of providing sustainable outdoor recreation.

The technology for this project includes trail counters, GPS trackers, a trail camera, and monitoring tablet. With help from our experienced partners at the Upper Valley Land Trust (UVLT) and the Sports Trails of the Ascutney Basin (STAB), we have identified the specific technologic tools necessary for our trail monitoring and conservation efforts. These tools would allow for an initial carrying capacity and baseline metric to be created and used for all future tracking. The direct benefit that these technologies will have is a long-term ability to measure the impact that our outdoor recreation has on our mountain ecosystem. For best practice management solutions to be identified and implemented for the health of this unique outdoor space, the collection of baseline use metrics through technology is essential.

Number of Participants Outside

How many people will your project get outside (estimate)?

What are these numbers? 1,000 visitors a month?

Hours Spent Outside

How many hours will be spent outside per person (estimate)?

Typical numbers of hour spent per person? 4 hours per person?

How were you referred to Keen Effect?

Single Select List: *Found online?*

Preserving and Protecting Access (Paragraph, 2000 character max)

How will your project preserve and protect access to the places we play around the world?

Preserving and protecting access to the outdoors is at the core mission of this project and more largely Ascutney Outdoors. Mount Ascutney is conserved as Ascutney State Park and West Windsor Town Forest. The Upper Valley Land Trust currently holds conservation easements on over 1000 acres of this land. Ascutney Outdoors manages this land and the two dozen hiking and biking trails that crisscross the mountain. With more trails planned for development and expected increases in number of trail users, this trail monitoring technology project would directly work to preserve and protect the unique forest mountain ecosystem.

The Mount Ascutney and West Windsor Town Forest ecosystem is located in one of the largest undeveloped wildlife corridors in southern Vermont. According to Vermont Biofinder, a state-wide analysis of ecological priorities, West Windsor Town Forest is a hotspot for biodiversity, containing twelve state-significant natural communities, rare plant and animal species, vernal pools, and a rare physical landscape. The Vermont Natural Heritage Program considers Mount Ascutney as the best example of elevation-dependent natural community variation on acidic soils in the state, and probably among the best in all of New England. The property also supports cliffs, outcrops, and talus slopes, a number of scenic waterfalls, and 1.4 miles of headwater streams. The property's residents include deer, moose, bear, bobcat, fisher, ruffed grouse, snowshoe hare, porcupine, amphibians, and migratory songbirds and raptors. Furthermore, a Forest Bird Habitat Assessment by Vermont Audubon (2014) found that the property "holds extremely high forest bird conservation value." The unique forest supports a large diversity of bird species now in decline, including Wood Thrush, American Redstart,

Black-Throated Blue Warbler, Blackburnian Warbler, Black-throated Green Warbler and Blue-Headed Vireo.

Introducing trail monitoring technologies to manage the expected increase in trail use will not only help to protect conserve this unique landscape, but it will also set the precedent for sustainable outdoor recreation management for future projects at Mount Ascutney and other outdoor recreation areas just like it.

Audiences (Paragraph, 2000 character max)

What is the demographic of your audience? Describe your participants and let us know if any of them are new to the outdoors.

Ascutney Outdoors serves the local West Windsor and regional New England communities in providing access to a unique outdoor experience. For years, Mount Ascutney has been a hub of outdoor recreation for all age groups. Our visitors range from families, whose kids are just learning to ski or bike, to experienced outdoor enthusiasts who know the mountain like the back of their hand or have heard of its superior biking trails from afar. Young, old, local, or vacationer, we are known for having a diverse range of outdoor recreation options every season of the year, regardless of experience level.

While we most value the returning visitor, we also serve and appreciate the one-time tourist. Any first time outdoor adventurers that we might have the privilege of introducing to the mountain are most likely one-time visitors or young children being introduced to the outdoors by their parents. There is a high local demand for outdoor recreation opportunities in the West Windsor and New England communities. Located just one mile from Interstate 91, Mount Ascutney is easily accessible to Upper Connecticut River Valley of Vermont and New Hampshire. We offer relatively low cost options for any and all visitors looking for outdoor recreation so as to maximize accessibility for all income groups.

Ascutney Outdoors also plans to revamp its outdoor education and recreation camps program for children looking to experience the outdoors and parents looking for their kids to have a worthwhile summer experience. Though separate from the trail monitoring technology and conservation project, the camps program will continue to bring a young audience of outdoor adventurers to the trails on the mountain.

Innovation and Sustainability (Paragraph, 2000 character max)

How is your project innovative? How will it be sustainable in the future?

The use of trail monitoring technology for conservation of our mountain recreation space is an innovative approach to achieving long-term sustainability of our mountain ecosystem. This specific technology includes trail counters, GPS units, a trail camera, and interactive tablet. The plan for the trail counters is to have them planted underneath the four main trail entry points. Each counter senses both weight and the presence of metals so as to account for hikers and bikers. Planting counters under the trail also eliminates the need for excess infrastructure that might otherwise impede access to the trail and disrupt the natural landscape.

GPS tracker units necessary to identify which sections of trail get see the most traffic. A trail camera will also aid in the monitoring of high traffic areas. Lastly, the interactive tablet will be located at a kiosk at the main entry point for the mountain. Recreation users will be able to input their favorite trail routes, access an interactive map of the trail system, and participate in surveys that will help AO management get a better understanding of the user experience and any areas, on or off the mountain, that need to be addressed.

Ultimately, the combination of these technologies allow for a baseline use to be determined for comparison to future high and low volume periods. Once identified, particular trail sections of high traffic can be given the necessary attention for trail maintenance and protection. These technologies will also aid in identifying the carrying capacity of the mountain. Though certainly not yet reached given the amount of traffic the trail system sees in a given time period, as recreation use increases, knowing the carrying capacity of the mountain and trail system is critical to ensuring sustainable use of our mountain ecosystem.

Project Partners (Paragraph, 2000 character max)

If applicable, please identify and describe key partners you will have on this project and how they are contributing.

Ascutney Outdoors maintains partnerships with local communities, organizations and businesses working toward the common goal of recreation and conservation on the slopes of Mount Ascutney. As a nonprofit organization, AO is partnered with Sports Trails of the Ascutney Basin (STAB), the Upper Valley Land Trust (UFLT), Orange Lakes Resorts, Ascutney Trails

Association, and the Climb Fitness Center at the Mount Ascutney Resort. However, for this specific project on trail monitoring technology for conservation, the Upper Valley Land Trust is the main partner.

The UVLT is a co-holder of the conservation easement on the West Windsor Town Forest and worked closely with the West Windsor community to develop and unprecedented easement to secure recreational access to our remarkable Ascutney Trails network in perpetuity. UVLT is responsible for monitoring the trails and property, and oversees and advises on the care and stewardship of the town forestland. In 2015, UVLT coordinated with AO and STAB to offer and lead hikes and mountain bike rides, and hosted UVLT volunteer workdays to remove invasive species and perform trail work. As of now, and is the case with this project, AO and UVLT are working together to expand outdoor experiences, including educational programs and interpretive walks focused on understanding the unique and special ecosystems of Mount Ascutney.

For this project in particular, UVLT is an invaluable resource. UVLT's background and extensive experience in recreational trail monitoring for conservation is beneficial in determining which technology is most effective and how it should be used. In addition to identifying specific technology, UVLT will aid in the collection and interpretation of data produced by these technologies.

Outreach and Social Media (Paragraph, 2000 character max)

How will you use social media and other online platforms to promote your project and increase participation?

Ascutney Outdoors and its partner organizations currently use Facebook, Instagram, YouTube, Twitter, and standard email in addition to publishing information on our website to promote and provide updates on all ongoing and future projects at the mountain. Attracting a wide group of potential visitors to the beautiful outdoor recreation opportunities that Mount Ascutney has to offer has always been a priority of AO. In addition to website and email communication, we take full advantage of the photogenic Mount Ascutney landscape to attract newcomers via our social media platforms. With multiple projects underway, including trail monitoring for conservation, we find it of utmost importance that our local community and greater public know of the changes that will allow for increased capacity at the mountain.

The need to acquire trail monitoring technology is part of a larger project to sustainably increase the capacity of outdoor recreation on Mount Ascutney. In addition to posting pictures and updates on our Facebook and Instagram, our partners, including the Trust for Public Land, are working to promote our projects on YouTube. Most recently, in May 2017, Trust for Public Land posted a video showcasing the history of Mount Ascutney, the current recreation opportunities, and what projects are ongoing to increase participation. The video can be found at the following link: <https://www.youtube.com/watch?v=Ttf8NpmOZWM&t=7s>.

For this project in particular, we plan to continue to showcase updates through imagery that complements more detailed description. The goal of this project is to conserve the unique mountain ecosystem while increasing recreation activities. Images on Instagram and videos on YouTube, like the one linked above, we have found to be most effective in reaching followers while conveying the importance of the our conservation message. This will continue to be our primary tactic in promoting our project while also undergoing traditional promotion through email and website updates.

Social Follows (Number)

How many social followers do you have across all your platforms?

Vermont Community Foundation Grant Document: Mt. Ascutney Interpretive Trails

The Vermont Community Foundation grant document is a list of questions from the grant application preview and possible responses to the questions. To apply, AO will need to preview the responses and enter them into an online questionnaire to submit. The deadline is August 2nd.

Project Name* Character Limit: 100

Mt. Ascutney Interpretive Trail

Project Description*

Provide a one to two sentence description of what the project will accomplish. Be clear and explicit about what you will accomplish and how. Please use complete sentences. Note: Your answer may be used in publications. For example: "We will beautify a blighted neighborhood by creating a public mural space for residents to share their hopes and dreams."

Character Limit: 300

We'll acquire a design suite to help create a Mt. Ascutney's interpretive trail. On the interpretive trail, locals and visitors alike will learn about the biodiversity, natural and cultural history of Mt. Ascutney while enjoying the outdoors.

Amount Requested* Minimum \$500 / Maximum \$2,500 Character Limit: 20

\$2500

Strategic Path*

Choose the primary strategic path for your project from the following list:

Sustainable Communities: Arts, Humanities, and Cultural Heritage; Environment; Economic Development

Opportunity Issues*

The Vermont Community Foundation has identified 11 opportunities that have a positive effect on Vermont's economy and that provide an especially meaningful role for philanthropy as described in our report Opportunity: 11 Critical Paths for Philanthropy in Vermont available [here](#).

To help us understand how our grants fit into these opportunity issues, please choose the issues that this project relates to. Check all that apply. We fund beyond these issue areas.

Choices

Bring Quality Education to All Residents

Limit Forest Fragmentation

Geographic Area - Town/City*

What Vermont town(s) will be directly served by your project? Please keep your answer concise and refer to the following guidelines:

West Windsor

For multiple towns, use commas to separate the town names.

If your project spans state borders, limit your answer only to Vermont.

If your project has broader implementation (multiple counties or statewide), you do not need to mention each town. Instead, briefly outline the geographic scope.

Character Limit: 200

Geographic Area - County* Choose all that apply:

Choices

Addison County Bennington County

Caledonia County Chittenden County Essex County Franklin County Grand Isle County

Lamoille County Orange County Orleans County Rutland County Washington County

Windham County *Windsor County*

Project Overview*

Explain the goal(s) of the project. Describe the work you will do and what that will accomplish.

Note: Your answer may be used in publications.

Character Limit: 1800

The goal of this project is twofold: to enrich the trail experience and to provide access to the young and elderly.

Through a place-based approach, the interpretive trail will highlight the hydrology, biodiversity, geology, current use and stewardship, and ski history of Mt. Ascutney. Having an interpretive trail will add to Mt. Ascutney's recreational opportunities and enhance appreciation for this beautiful natural area. Having this professionally planned trail will signal to people the care and stewardship present at Mt. Ascutney, an area that has been through some turbulent times economically. People can better enjoy Mt. Ascutney when they can learn about the area's natural and cultural value when they visit.

Additionally, the interpretive trail offers a rewarding option for people who can be otherwise barred by the strenuousness of the trails from enjoying nature. The gentle gradient and engaging educational components of the interpretive trails opens access to people of limited physical ability, so that they have a compelling alternative to enjoying and celebrating Mt. Ascutney.

Professional planning assistance would be much needed help for this project, specifically funding assistance to a suite of designs that will go on the signage on the interpretive trail. This suite of designs will play a crucial role in the overall tone that the interpretive trail environment provides, entice visitors, enliven the trail experience and contribute to mental and physical wellbeing. Plus, the same designs can be reused on educational and informational brochures and the Ascutney Outdoors website.

Tell us a story about your project.*

Paint a picture or give examples of the value of this project and what it will look like in real life. In other words, be creative and tell us a story that makes it personal. Note: Your answer may be used in publication.

Sample responses can be found on our website FAQ by clicking here. Character Limit: 900

When this interpretive trail is built, community members and visitors can walk along and stop to look for all the natural treasures this interpretive trail points out. Grandparents will take their grandchildren on this trail, pause to talk about the history of the area and explain some of the signs and information. People on wheelchairs can bask in the sunshine and breathe in deeply the crisp mountain air. Teachers can bring schoolchildren to the accessible and educational trail for field trips. It won't take too long for this trail, open to all, to become a must see for visitors and a collective community space for local people.

Tell us about the community in which this work will take place.*

What need are you trying to address? Who will be involved? Who will be impacted? Character Limit: 1000

Mount Ascutney has served as a centerpiece of community recreation in the West Windsor area. However, since the closure of the privately owned ski resort in 2010, the town endured a decline in economic and social vitality. In response, townspeople rallied around building a future with diversified outdoor activities, educational programs, events and arts on the mountain. The nonprofit Ascutney Outdoors is formed to manage Mt. Ascutney under a linked recreation and conservation model, centering the community's needs and realizing its collective vision of revival. Local community members are closely involved in the decision making, as they are who Ascutney Outdoors is ultimately aiming to serve.

Project Champion*

Who is championing this project, what is their role in the community, and why are they leading this work?

Character Limit: 1000

Laura Stillson, a local, serves as the conservation and education chair on the Ascutney Outdoors board. She is leading this project with expertise from Jennifer Waite at the national park service. Laura is an avid outdoors person and a deeply involved community member. She has volunteered on the West Windsor Town Forest Committee and served as chair in 2015. In addition, she has been a member of the W. W. Conservation Commission since 2010 and been involved with the Upper Valley Land Trust for over ten years. Laura carries her passion for the community and her record of service into leading the interpretive trails project, akin to an open and living natural history museum for all to enjoy.

Tell us how this work will increase trust in your community*

Our goal with the Small and Inspiring grant program is to strengthen the social fabric of our communities by supporting work that encourages trust among those that will benefit from this work. We are looking to understand the connections your constituents will make rather than your organizational connections.

Character Limit: 1200

The interpretive trail will be a new attraction at Mt. Ascutney for community members and local groups to enjoy. It will be an accessible walk close to the AO building, allowing young children and the elderly to experience and learn about nature. Local school groups, conservation groups, outdoor clubs and other interest or affiliation groups can walk the trail together and learn more about nature in their backyard.

An interpretive trail, with all its creative components, is a step that will go a long way in allowing the local community to take ownership of Mt. Ascutney's future and take pride in all that it has to offer.

What type of connections are you hoping to achieve with this project?* Please choose the most relevant option.

Connect people to people in deep and meaningful ways that are grounded in acts of generosity
Connect people to the environment around them in ways that encourage stewardship and respect

Connect people with opportunities for positive social interaction and benefit

Tell us about existing community support for this project.* You may attach a Letter of Support in addition to or in lieu of this question. Character Limit: 900

Letter of Support (OPTIONAL ATTACHMENT)

People in the local community care deeply about Mt. Ascutney's future, as evidenced in high attendance at open meetings. Below are some testimonials that show people's connection and hopes for Mt. Ascutney.

"Ascutney Outdoors Draws Crowd at Meeting"

"I started skiing at Ascutney 60 years," said Connie Moser, "and probably will not be able to continue to ski there... And yes I want skiing to be a part of it but I hear about these other opportunities, we can't go back to the way it was, as much as we'd like to. But I think that we can move forward and have something that is going to bring vitality back to this community, to the mountain and a lot of joy to life. And so I really hope that we work together to make that happen." (<http://www.thevermontstandard.com/2017/01/ascutney-outdoors-draws-crowd-at-meeting/>)

"Skiing returns to its roots at Mt. Ascutney"

"He got the ball rolling, but it's been a true community-effort since," Farrell noted. "It's very organized with committees, and we had 70 people turn out for a work day," she said, saying there are too many involved in the project to hazard a guess at the numbers of volunteers doing different things. (<http://mountaintimes.info/skiing-returns-to-its-roots-at-mt-ascutney/#sthash.VAB7ylw9.dpuf>)

You may use this space to attach an optional letter of support.

File Size Limit: 4 MB

Project Budget - Narrative*

What will the grant funds be spent on? Note: Administrative costs related to the project (such as staffing, rent, and gas mileage) are acceptable.

Character Limit: 900

If funded, \$2500 will go towards getting professional planning assistance for the interpretive trail. The leader of the project, Ms. Laura Stillson, had poured hours into interpretive trail planning books, but finally realized that professional planning assistance is necessary. A suite of

designs would be integral to the overall success of the interpretive trail, and would be feasible for \$2500, especially if a designer agrees to provide services at a lower price to a nonprofit serving the local community. Because interpretive trails rely on its visual effect on the surrounding environment to engage visitors, a suite of designs is essential to achieving this goal.

Project Budget - Itemized (REQUIRED ATTACHMENT)*

Attach a copy of your itemized project budget. You should include both expenses and revenue, including pending and secured support. (Sample budget documents can be downloaded from the Community Foundation's website - visit our Online Grants Center for more details.)

File Size Limit: 2 MB

Bonus Words (OPTIONAL)

What else should we know about the project that we didn't ask?

Character Limit: 900

About Your Organization

Organizational Description*

Briefly describe your organization or group and its mission. (This is your "elevator speech" and may be used in publications.)

Character Limit: 300

Ascutney Outdoors aims to strengthen people's connection with the land and environment around them. Through our community arts, education and conservation programs, we encourage and support appreciation and learning for all.

Organizational Budget*

What is your total organizational budget (total expenses) for the current fiscal year? Character Limit: 20

Organizational Budget (REQUIRED ATTACHMENT)*

Upload a copy of your organization's Budget to Actual comparison or Profit Loss (P/L) statement for the most recently completed fiscal year. (Sample budget documents can be downloaded from the Community Foundation's website - visit our Online Grants Center for more details.)

File Size Limit: 4 MB

If you are showing a deficit in your organizational budget, please tell us why.

Character Limit: 300

Fiscal Sponsorship

Our grants must be paid to a registered 501(c)(3) nonprofit, church/religious group, or town/municipal agency. If your organization or group does not fall into one of these categories, you will need to use a fiscal sponsor. If you have questions, please contact Lauren at 802-388-3355 ext. 222. We are happy to talk through your options.

What status best describes the applicant?*

Choices

Municipal entity (i.e., town, public school, or other municipal department or agency) Registered 501(c)(3) nonprofit

Church or religious group

Other - Please provide details in your answer to the next question.

Grant History*

Has your organization received funding within the last three years from our Community Fund grant programs (Small & Inspiring, Innovations & Collaborations, Special & Urgent Needs, Food and Farm Initiative, and Nonprofit Capacity Building)? If Yes, please specify the project name and the grant year(s).

Character Limit: 200

No.

Grant Report (If Applicable)

If you received grant funding from the Small and Inspiring program in the past three years and you have completed your project, you are required to fill out and submit a final grant report through our online grant system. Your Grant Report Form is assigned in your online account as a Follow-up form connected to your application and can be accessed from your account dashboard. From the report form, please select the option at the top of the page to create a "Follow-Up Packet" of your final submitted report and upload the pdf here.

Please call Lauren at 802-388-3355 ext. 222 if you have any questions.

File Size Limit: 8 MB

Attach a Photograph (OPTIONAL ATTACHMENT)

With your grant application, we strongly encourage you to submit a single photograph from your organization (e.g. program activities, project setting, participants, staff at work, events, etc.)

("Your Photograph"). If selected, Your Photograph will be used in conjunction with your application and shared with other potential funders.

Please attach Your Photograph in a .jpg file that is a minimum of 100KB and a maximum of 2MB.

File Size Limit: 2 MB

Photo Caption (If Applicable)

Character Limit: 60

Photograph License and Release (If Applicable)

If you are attaching a photograph, please indicate your acceptance of the terms below:

You hereby grant to the Vermont Community Foundation (VCF) an unrestricted license to use and publish Your Photograph in VCF communications material in any and all manner and media. You hereby represent that you have permission to grant these rights (please make sure you have a signed photo release on file for any identifiable subjects in the photograph you submit). You hereby release the VCF and its employees from any and all claims and/or liability related to Your Photograph.

Choices

I agree

I do not agree

Save and Submit

2017 Deadlines: 5:00 p.m. February 1, April 5, August 2, October 18.

Project Timeline (Paragraph, 2000 character max)

Please outline a basic timeline for your project, including milestones and significant tasks identified in your proposal. Be sure to identify specific events and planned dates.

If awarded funds from the Keen Effect on October 30th, 2017, Ascutney Outdoors and UVLT would immediately use the funds to purchase the trail counters, GPS units, trail camera, and interactive tablets. Details of these technologies can be found in the Budget Section below. Installation of the technologies, however, would not begin until Spring 2018 once the winter ski season is over. Outdoor trail use for hiking and biking typically begins April of each year and runs through late fall.

Once installed extensive monitoring and data collection is required for at least several months. This data will be used to create baseline numbers on use for each month of season. Conservation of our mountain ecosystem is an ongoing task that will always need to be addressed. Where this trail monitoring technology and the data it produces becomes most advantageous is comparing it to all future years. After the end of each winter ski season, new data collection will begin and analyzed the following winter to determine management strategies for the following the seasons where trail use is active.

Keen Effect Budget (Paragraph, 2000 character max)

Craft a general budget showing how you will spend your \$10,000 in Keen Effect funds. Please note if matching funds are available.

Keen Effect Budget (\$9,970)

1. First Priority: Trail counters (\$4,050)
 - a. Trafx package of 3 plus software at (\$2,200)
 - b. 3 more counters plus IR converters (\$1,700)
 - c. IR conversion kit \$150
2. Second Priority: GPS Units (\$3500)
 - a. 30 units each at (\$100)
 - b. 2 Garmin GPS Map 64 each at (\$250)
3. Third Priority: Two Tablets (\$2,670)
 - a. iPad mini 4, 7.9 inch at (\$400)
 - b. Lifeproof case at (\$100)
 - c. Bad Elf GNSS receiver at (\$600)
 - d. External RAV 26,800mAh Battery Pack (\$35)
 - e. Software Package (\$100)
4. Fourth Priority: Two Trail Cameras (\$500)
 - a. Bushnell Trophy Cam HD Essential E2 Trail Camera (\$150)
 - b. CamLock Box (\$35)
 - c. Python Cable (\$30)

- d. Extra batteries and SIM cards (\$35)

Electronic Signature (Checkbox Listed)

Yes, I agree that my organization is a tax exempt, not-for-profit organization not affiliated with any religion, church, or political campaign.

Appendix E: Annotated Bibliography

Mountain Biking Literature

Active vs. Passive Decisions. Chetty et. al.

Raj Chetty is a 2012 MacArthur Fellow and the preeminent public economist in the world. He studied the behavioral tendency for consumers to make passive decisions in retirement savings in Denmark. When not removing money from a worker's paycheck for retirement savings was the default, most people did not opt in to save, even when subsidies were offered for saving for retirement. Only when automatic employer contribution was the default option did retirement savings increase. In fact, 85% of retirement savers are individuals who kept the default saving option. This study shows that most people will keep default options, no matter what they are. This model may be applied to the donation model.

Consumer Confusion about Donation Amounts. Olsen, Pracejus & Brown. Olsen et al. dive into the behavioral economics of consumer understanding of "percentage of profit" donations by a company. When a percentage value of total price or profit is listed, consumers tend to overestimate the amount donated when they make a purchase, even if they have had formal accounting training, and regardless of participant motivation in an experimental setting. In addition, customers express approval of the company as a function of the percentage value donated, regardless of whether a given percentage of profit or price is listed. This research helps inform the choice of suggested donations.

Lavidge & Steiner. *A Model for Predictive Measurements of Advertising Effectiveness.* This article explores the intricacies of effective and long-term advertising strategies. Lessons from this article were used in developing a market campaign for Ascutney Outdoors, which is especially important given the fact that AO is a new organization with little funding whose primary goals are to increase use of the area and revenue.

Grant Making Literature

Kaner, S. *Facilitator's Guide to Participatory Decision-Making.* Sam Kaner provides different ways to facilitate productive and efficient group meetings and decision making. We used this source to help plan our grant writing workshop

Barber, Jeff. "Mountain Bike Travel: By the Numbers." *Singletracks*. 16 Mar. 2015. <<https://www.singletracks.com/blog/mtb-trails/mountain-bike-tourism-by-the-numbers/>>.

We used this source, from a popular mountain biking hobbyist website, that conducted a survey of more than 1400 mountain bikers from around the United States. The survey resulted in data on mountain biker behavior, ranging from money spent on trips and duration of trips, to preferred housing options while on biking trips. We used the spending data specifically.

Lau, Lee. "Economic Impacts of Mountain Biking Tourism - 2016 Update." *Pinkbike*. 26 July 2016. <<https://www.pinkbike.com/news/economic-impacts-of-mountain-bike-tourism-2016-update.html>>.

This source came from another popular mountain biking hobbyist website that conducted an analysis of a collective of 33 studies of user behavior and economic benefits from mountain

biking operations around the world. In our chapter, we used data regarding the average daily spending of bikers while on trips, as well as average trip duration data.

“Ascutney Outdoors Draws Crowd at Meeting”

<http://www.thevermontstandard.com/2017/01/ascutney-outdoors-draws-crowd-at-meeting/>

“Skiing returns to its Roots at Mt. Ascutney”

<http://mountaintimes.info/skiing-returns-to-its-roots-at-mt-ascutney/#sthash.VAB7ylw9.dpuf>

These articles helped us understand the community support and narrative bolstering Ascutney Outdoors. We also used them as community testimonial sources in our VT Community Foundation grant application.

Interpretive Trails Literature

Kruger, L. E., and D. R. Williams. (2007). Place and place-based planning. Proceedings from the National Workshop on Recreation Research and Management (83-87).

We used this document to foster our background knowledge about place-based approaches, which were important in the creation of the interpretive trail system as a whole - as well as each specific waypoint. Place-based learning and experiences are important in forming connections for the visitor and enhancing the experience.

Larsen, D. L. *Interpretive Themes*. National Park Service U.S. Department of the Interior.

1-3.

This document was produced by the National Park Service, and was very useful, especially at the beginning of our project, when we were a bit unsure about the creation of interpretive trails in the first place. Larsen highlights the important mechanisms for staying away from the classic, boring experience while drawing connections between different points along the trail.

Seamon, D. (2014). Place attachment and phenomenology: The synergistic dynamism of place. In L. C. Manzo and P. Devine-Wright (Eds.), *Place attachment* (11-19). London: Routledge.

Seamon discusses human experience of and attachment to places. This article was valuable in constructing programs designed to ensure a positive place experience at and place attachment to Mount Ascutney.

Westrup, L. (2002). “Educating trail users: advice for planning interpretive trail systems and exhibits.” Retrieved from <http://www.americantrails.org/resources/wildlife/Interpretive-trail-signs-exhibits.html>

This webpage provides a guide to forest and park managers for making engaging and informative wilderness trail signs and exhibits. It was very useful in creating a system of interpretive trails for Mount Ascutney.

Camps Literature

<http://www.cousteaudivers.org/silo/files/divelogs/mediterranean/imperial.pdf>

User Research and Monitoring Study Literature

Egan, D. (2017). *The death and life of the great lakes*. New York: W.W. Norton & Company.

Egan provides a discussion of the wide array of impacts of invasive species that is relevant to the invasive species common in the Ascutney area. This book was used to identify warning signs of the presence of invasive species and possible impacts of invasive species at Mount Ascutney for educational and risk management purposes.

Jewell, M. C. and Hammitt, W. E. (2000). Assessing soil erosion on trails: A comparison of techniques. Proceedings from the Wilderness Science in a Time of Change Conference. Missoula, MT.

This article explains the significance of monitoring trail erosion. It assesses the utility, limitations, and implications for trail management of different practices for monitoring trail erosion. This article was helpful in choosing and developing methods for Ascutney Outdoors to monitor trail erosion and recruit users to help in their efforts.

Manning, R., Jacobi, C., and Marion, J. L. (2006). Recreation monitoring at Acadia National Park. *The George Wright Forum*, 23(2), 59-72.

This paper discusses recreation resource/social condition monitoring at Acadia National Park off the southern coast of Maine, with relevant research and assessment practices. Successful parts of this program could be used at Mount Ascutney, which is in the same cultural and ecological region, being only six hours away.

Marion, J. L., Wimpey, J., & Park, L. (2011). *Informal and formal trail monitoring protocols and baseline conditions: Acadia National Park*. Blacksburg, VA: Virginia Tech Field Unit College of Natural Resources & Environment.

This research study developed wilderness trail condition indicators, monitoring and assessment methods that could be used to determine trail quality and guide decision making to improve and maintain trail quality, again using the study area of Acadia National Park. The paper contains analysis of the utility of each method in measuring trail quality. We used this information to select the best trail quality indicators and monitoring and assessment methods for Ascutney Outdoors.

Nuzzo, V.A. (1991). Experimental control of garlic mustard [*Alliaria petiolata* (Bieb.) Cavara and Grande] in northern Illinois using fire, herbicide and cutting." *Natural Areas Journal*, 11: 158-167.

Nuzzo provides information about the spread, habitat, and mitigation of garlic mustard, a common invasive plant in the Ascutney area. This paper was used to conceptualize and develop education programs for Mount Ascutney users about invasive species, one of the most common of which is garlic mustard. Trail users and camp attendees will be taught to recognize garlic mustard and other invasive species and encouraged to look for them when at Mount Ascutney.

This will have the dual effect of maintaining the balance and health of Ascutney's biological communities (especially because Ascutney Outdoors has a very small budget and would struggle to monitor all of Mount Ascutney for invasive species themselves) and prompting users to care about and be involved in the health of their local wilderness, which, it is hoped, will lead to wider environmental awareness among community members.

Pettebone, D., Newman, P., & Lawson, S. R. (2010). Estimating visitor use at attraction sites and trailheads in Yosemite National Park using automated visitor counters. *Landscape and Urban Planning*, 97(4), 229-238. doi:10.1016/j.landurbplan.2010.06.006

This study found that automated infrared visitor counters placed on trails have high rates of accuracy; however, infrared trail counters used in combination with on-site visitation counts allows for more accurate data representation than either approach on its own. Therefore, Ascutney Outdoors, which has little available manpower, can feel confident in trusting infrared trail counters to monitor trail usage; however, it should consider devoting any additional manpower it gains in the future to periodic direct trail observation in order to improve the accuracy of its trail use data.

Pickering, C. M., Hill, W., Newsome, D., & Leung, Y. (2010). Comparing hiking, mountain biking and horse riding impacts on vegetation and soils in Australia and the United States of America. *Journal of Environmental Management*, 91(3), 551-562. doi:/10.1016/j.jenvman.2009.09.025

This is a literature review of invasive species and erosion management at parks and recreation areas in the United States and Australia - two issues that could become a problem at Mount Ascutney.

St John-Sweeting, R.S., Morris, K., (1991). Seed transmission through the digestive tract of a horse. Proceedings from the 9th Australian Weeds Conference. Adelaide, South Australia. *Weed Management Society of Australia*, 170-172.

This study develops a mechanism for the spread of invasive species via horseback riding, which is a permitted activity at Mount Ascutney. Use of Ascutney by horses should be monitored so that areas at greater risk for exposure to seeds of invasive species can be identified and monitored.

Wenning, B. (2012). Japanese barberry: An exotic invasive plant fact sheet. Retrieved from <http://www.ecolandscaping.org/11/invasive-plants/japanese-barberry-exotic-invasive-plant-fact-sheet/#sthash.emj9rLnX.dpuf>

This fact sheet contains biological information concerning the invasive species Japanese Barberry, a common invasive species in the Ascutney area, and tactics for mitigation and removal.

Music on the Mountain Literature

Clayton, S., Silka, L., Trott, C., Chapman, D., and Mancoll, S. (2016.) Building resilient communities in the face of climate change. Retrieved from <http://www.spssi.org/index.cfm?fuseaction=Page.ViewPage&PageID=2098>

This is a guide for communities attempting to become more resilient in the face of environmental threats. It discusses climate change, its environmental and social impacts, and what individual communities can do to mitigate and prepare for negative consequences of environmental change, such as increased flooding. This guide was useful in framing thinking about Mount Ascutney's existence into the future and considering environmental changes as a factor in planning programs.

Daly, H. E. (2005). Economics in a full world. *Scientific American*, 293, 100-107.
doi:10.1038/scientificamerican0905-100

This article discusses a reimagining of economic ideas for a world with a finite biosphere, as opposed to the current infinite biosphere model upon which most economic decision-making is currently based. The finite resources model is key to the environmental movement and provides important context for both Ascutney Outdoors's conservation work. The finite biosphere model was also important to consider when developing programs at Ascutney: any program that put too much stress on any of Ascutney's natural resources, such as the soil surrounding wilderness trails, becomes economically insensible if those resources are assumed to be finite and depletable.

Quandt, A. (2016). Towards integrating political ecology into resilience-based resource management. *Resources*, 5(31). doi:10.3390/resources5040031

This paper discusses how political ecology, a social science concerned with the connection between human-environment interactions, power, and environmental change, and resilience thinking, which focuses on making social-ecological systems capable of absorbing shock without changing their basic structure, can be used to sustainably manage ecosystems. Quandt argues that political ecology, which focuses more on human societies, and resilience thinking, which focuses more on ecology, can be used in tandem to provide a better understanding of each other. Political ecology can also help to define methods to manage resilience and indicators of resilience due to its multifaceted approach and explanatory power. This paper provides guidelines for thinking about sustainable ecosystem management, which is the ultimate goal of all programs run by Ascutney Outdoors.

Dillon, S. (2007). Assessing the positive influence of music activities in community development programs. *Musical Education Research*, 8, 267-280.

This paper is about community development and how incorporating music into one's community can quickly foster a sense of belonging and nationality within individuals. It provided useful ideas about how to use Music on the Mountain to draw the struggling community of West Windsor closer together and foster a connection to Mount Ascutney among community members.

Brynjulf, S., Ansdell, G., Elefant, C., and Pavlicevic, M. (2010). *Where Music Helps: Community Music Therapy in Action and Reflection*. Surrey, UK: Ashgate Publishing.

This book focuses on music in the therapy process for individuals who have gone through traumatic experience, with a focus on community music activities. It provided inspiration for

types of music activities to hold at Mount Ascutney and guidance on harnessing the positive power of community music programs.

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