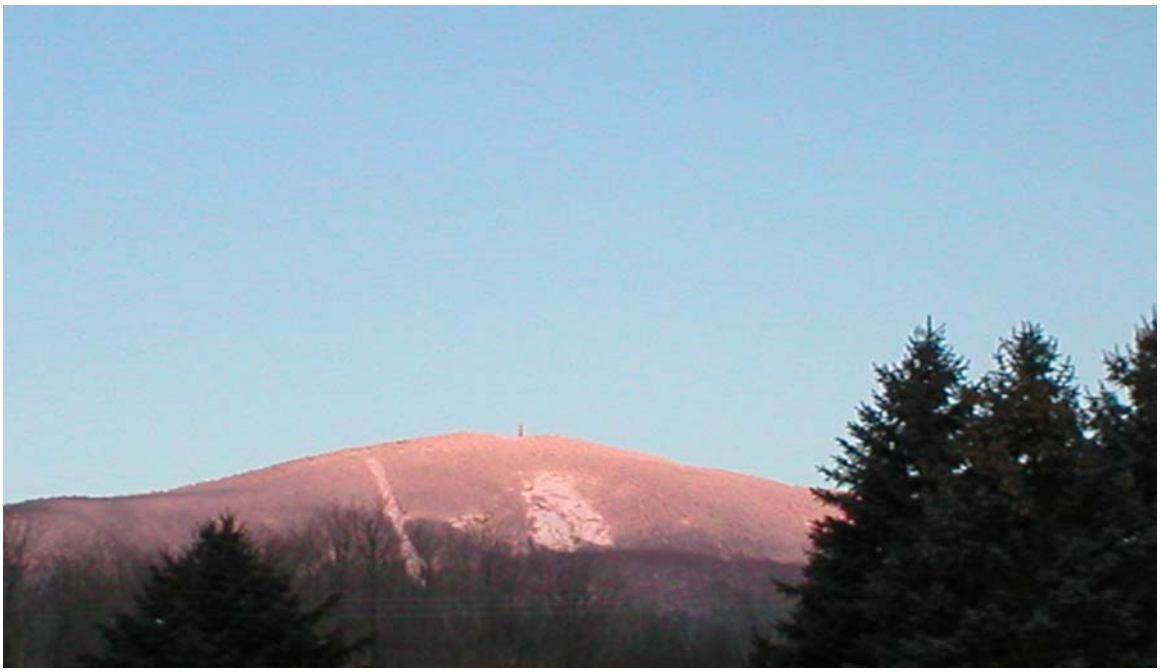
Interpretive Trail Design

Greylock Glen

Adams, MA



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Clients: Donna Cesan, Doug Stefancik, Town of Adams

Environmental Studies 302

Spring 2005

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Project Objective

Donna Cesan and Doug Stefancik of Community Development of the Town of Adams approached Environmental Studies 302 with the desire for a group to design an interpretive trail in the wetlands of Greylock Glen. Our main focus is to design a universally accessible interpretive trail as part of a larger proposal, the Greylock Glen Outdoor Recreation & Environmental Education Center. The trail will attempt to interpret not only biological features of the area with an emphasis on wetlands protection and environmental stewardship, but also the human aspects of the landscape.

Physical Site Description

Nestled in the northwest corner of Massachusetts, the Greylock Glen is a natural area in Adams at the foot of the Mount Greylock. The Glen is comprised of 1063 acres of hilly forest and wetlands. The Greylock Glen Outdoor Recreation and Environmental Education Center project, however, will only concern six percent of the total land area, or about 50 of the 1063 total acres. This particular parcel extends from where Gould and Thiel roads (which curve around to form the southern and northern borders, respectively) meet on the eastern side to where Gould Trail forms a boundary on the west. Farther east is the Jaeschke Orchard, and the western border beyond Gould's Trail is defined by existing Gould Farm. The former ski slope Thunderbolt Trail sits above the northeast corner of the site.

Our portion of this project, the interpretive trail, concerns the area in the northeastern portion of this plot that surrounds a pre-existing 1.5-km trail (labeled "Nature Trail" on the map below). The area is composed of wetlands surrounding ponds of various sizes and contains an active beaver habitat and several vernal pools. Due to beaver activity and their damming practices, this area is constantly in flux. Even in the past few years, new ponds have formed and parts of the trail that were once submerged are now dry, and parts that were once dry are now submerged. While our client has expressed interest in highlighting these unique habitats, these conditions present possible limitations on how the trail may be constructed (i.e. what kinds of surfaces may be used) and could limit access for Nordic skiers as well as handicapped visitors. Another limitation is the site's steep slope at certain points which may make wheelchair access difficult.

One existing point of access to this site is via Gould Road, which branches off of Thiel Road. Along Gould Road, there are two kiosks that go along with the Greylock Glen trail, but only one of them (the one located farther west) leads directly to the trail and the gazebo area at the main pond. Following Thiel road north, there are also several small parking areas (see P's on map below) that could also serve as access points if there are no parking spaces by the gazebo, though the trail that connects these parking spaces to the gazebo area is slightly flooded in parts due to recent beaver activity.

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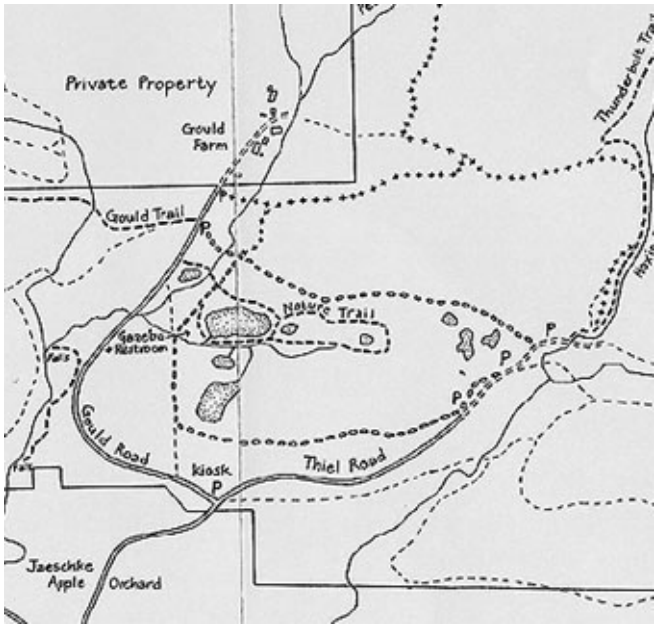


Figure 1: Map of the Existing Area

Once the other components of the proposed Greylock Glen Outdoor Recreation and Environmental Education center are put into place, our client anticipates that there will be multiple access points to the Interpretive Trail, connecting it to the Lodge, Environmental Education Center, trail head on Thiel Road, and Gould Road.

Site History

"…I here devoutly kneel,
and render up my gratitude, thereto,
The Most Excellent
Purple Majesty of Greylock…"
-Herman Melville, from the dedication to his novel Pierre

Mount Greylock, the state's tallest mountain at 3,491 feet,[1] is 600 to 450 million years old[2] and has witnessed centuries of American history. It has been a site for settler farms and pastures beginning in the 1760s, a sublime natural inspiration to Romantic literary figures like Herman Melville and Henry David Thoreau in the mid-1800s, a source of timber and charcoal to power the growing local industries of iron smelting, glassmaking and textiles in the second half of the nineteenth century,[3] and the location of the Thunderbolt Ski Trail, a Civilian Conservation Corps project and product of FDR's New Deal legislation in the

[1] Burns, Deborah E. and Lauren R. Stevens, *Most Excellent Majesty: A History of Mount Greylock*, Berkshire Natural Resources Council, Inc, Pittsfield, MA: 1988, p. 9.
[2] http://www.mass.gov/dcr/parks/western/mgryhist.htm
[3] Department of Conservation and Recreation: History of Mount Greylock. http://www.mass.gov/dcr/parks/western/mgryhist.htm

1930s.[4] More recently, as people's perceptions about their relationship with their environment have changed, many have come to view Mount Greylock as a geologically and ecologically unique and historically valuable place to be preserved. Today, over twelve thousand of its acres comprise the Mount Greylock State Reservation.[5]

Greylock Glen has a long history of its own. The land was originally owned by local farmers, some of whom remain its neighbors, including the Goulds, who now own an abutting dairy farm. In the 1970s, ELCO Resort Developers worked to convert the land into a ski and golf resort that was never realized.[6] The state of Massachusetts finally acquired the Glen in 1985 under legislation that mandated not only public recreation, but also economic development as a means to revitalize the declining town of Adams[7] and to attract some of the tourists who flock to the North Berkshires to see the Clark Art Institute, the Williamstown Theatre Festival, and the state-funded Massachusetts Museum of Contemporary Art (Mass MoCA). Since that time, town and state officials, in joint public-private partnerships with developing firms, have been trying to develop the land. To date, their efforts have included a series of feasibility studies and a number of major proposals (see next section: **Project Background**). None of these plans, however, has fully come to fruition.

The twenty-year standstill is the product of conflict that has pitted environmentalist groups against others eager to see the Glen developed. Groups like Save the Glen, the Conservation Law Foundation, the Berkshire Natural Resources Council, and the Massachusetts Public Interest Research Group (MassPIRG), are suspicious that any development will be the first step toward more building on the land.[8] Other organizations, like the Greylock Glen Now group, have long lobbied for major development, asserting that it will not only increase the tax base, but also make Adams a destination site, giving it a niche in the burgeoning Berkshire "cultural tourism" economy. It thought that the Glen should be used to help revive the declining downtown and relatively low-income population, hurt most recently by the closing of the Curtis Fine Paper Mill, which provided about one hundred local people with manufacturing jobs. Greylock Glen has become more and more run down and is now a safety concern for many Adams residents due to the vandalism which commonly occurs there, such as theft, destruction of private property, and damage to trails by off-roading vehicles.

Project Background

State agencies were not the first to introduce the idea of developing the Glen to the population of Adams. Beginning in the 1950s when the mills of Adams began to close, local entrepreneurs began to view the Glen as a solution to their economic problems. In the early 1960s, a tramway was planned for the summit but in 1964, the growing suspicion against the Tramway Authority turned out to be justified. The corporation was buying more land than

[4] Purple Mountain Majesty: A Big Schuss Production
http://members.tripod.com/~mountainmajesty/index1.html
[5] Department of Conservation and Recreation: History of Mount Greylock.
http://www.mass.gov/dcr/parks/western/mgryhist.htm
[6] *Most Excellent Majesty: A History of Mount Greylock*, p. 81-82.
[7] *Most Excellent Majesty: A History of Mount Greylock*, p. 84.
[8] Flint, Anthony. "Massachusetts Preservationists Concerned about State Plans for Mountain Area," *Boston Globe.* August 17 2003.

was necessary because, in fact, along with a tramway, a vast commercial ski resort (similar to Vermont's Mount Mansfield) with a shopping center, restaurants, an amusement park and a thousand-car parking lot were being planned. In the 1970s, ELCO Resort Developers worked on a proposal including alpine skiing for the winter and an 18-hole golf course for the summer, and even built parts of the ski and golf structures before running into financial problems. In an attempt to bail themselves out, the developers proposed a gambling casino, which is illegal in Massachusetts and so required a special vote. In 1981, the gambling was voted down and so the project failed.[9] Many of these structures, such as concrete foundations and remnants of ski lifts, can still be seen today.[10]

(Photograph of remnants of ELCO development courtesy Hank Art)

When the state of Massachusetts acquired the Greylock Glen property in 1985, it was placed in the custody of the Department of Environmental Management (DEM). Legislation passed at the time required the DEM to develop the Glen to "utilize the area's recreational potential to aid the weak economy of northern Berkshire County." Though the Glen remains undeveloped today, the DEM has worked on multiple proposals for the Glen's development over the years. Its failure to realize any of them stems from the conflicting goals of the Glen's multiple stakeholders. Several proposals have met the goals on one side's objective but a truly viable option that proposes just the right amount of development to maximize revenue and minimize effects on the environment has not been found to date. The only end results of the 12.3 million state dollars spent to develop the Glen are a single gazebo, several kiosks with trail maps, and a couple of composting toilets.

Heritage Project

The DEM's first proposal had the backing of former Governor Michael Dukakis. In collaboration with the Heritage Development Group of Connecticut, a 220 million dollar resort including a 180-room inn, a 25-acre constructed lake, an 18-hole golf course, and a New England-style village was proposed and met with great opposition, especially by the

[9] JHM, "The Assualt on Greylock." *Sanctuary: The Glory that was Greylock*. May/June 1991.
[10] Birnie, Katherine; Jacobs, Allison; & Wilson, Jason. *Sustainable Winter Recreation at Greylock Center, Adams, MA*, 1998.

local advocacy group Save the Glen. In 1991, the plan failed due to the limitations the 850 proposed housing units would have placed on the recreational and conservational interests in the Glen. Understanding the importance of multiple use of the Glen, a master plan was developed in 1994 through an advisory committee consisting of twenty-one individual representatives from the Adams community, town government and businesses.

Greylock Center

Proposed by Chris Fleming and Greylock Management Associates (GMA) in a public-private partnership between GMA and the Department of Environmental Management, the $125 million Greylock Center proposed an 18-hole golf course, clubhouse, and driving range, a 200-room hotel and conference center, and 300 residential units, intended as second homes. In addition, the plan called for 1000 parking spaces to facilitate the development. Finally, Fleming and his associates proposed the construction of an environmental education center and expansion of the current trail system. This project, after having been partially built, however, was "eventually killed by Acting Governor Jane M. Swift in 2001 amid questions about its financing, the obvious need for more state money, and the threat of a lawsuit from environmental groups, including the Berkshire Natural Resources Council, the Sierra Club, Massachusetts Audubon Society and the Environmental League of Massachusetts."[11]

The Next Three

In 2003, the Massachusetts Development Finance Agency (MDFA) issued a request for and received, in turn, three proposals for Glen development but denied all three due to criticism that they did not support the economic objectives of the master plan to revitalize Adams' downtown economy. The proposals were for a natural history museum, an environmental education center that would have been would have provided programming for schoolchildren in connection to Nature's Classroom, and, lastly, information kiosks tied to the downtown learning center.

Governor Swift had initially charged MassDevelopment to work with the Town of Adams in 2001, after she stopped the Greylock Center Project. To that end, MDFA has invested $563,384 in downtown revitalization efforts, including the construction of the Adams Visitors' Center.[12] The 1994 Master Plan for the Greylock Glen was deemed outdated, as more information was now available as to what a viable project must incorporate into their plans. Thus, in April 2004, an 'Amended Master Plan' was passed after revisions by planners of the Department of Conservation and Recreation, MassDevelopment, and Division of Capital Asset Management. This amended master plan concentrates on environmental education, outdoor recreation, sustainability and green technology, an environmental focus shared with past proposals such as the Greylock Center.

[11] Drohan, Glenn. "State forges ahead with new Glen Plan," *Berkshire Advocate*. February 4, 2004. www.berkshirejobs.com/story.php3?story_id=13435

[12] 17 May 2005 email exchange with Donna Cesan

The Trail Network

Although the proposals differed in the type of development complexes they proposed, each plan included a trail network they hoped would complement their construction. Each proposal wanted to continue to emphasize the multiple kinds of recreation already taking place on the Glen. The Greylock Center, for instance, intended to have numerous multi-use trails to facilitate walkers, bikers, and Nordic skiers on the property. The Center planned to utilize the existing trails and leave none abandoned. Trails were to be maintained so as to keep existing connection to trails of the Mount Greylock State Reservation open. Trail maintenance in the Greylock Center proposal did not include universally accessible trails, but some were scheduled to be widened to accommodate golf carts along the golf course. All trail users, including the public and paying tourists to the Center's resort were to be granted free access to the trails, another quality that all proposals endorsed.

Greylock Glen Outdoor Recreation and Environmental Center and its Interpretive Trail

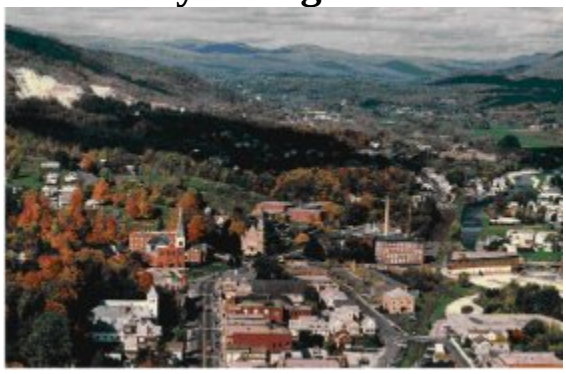
The new Official Amended Master Plan from 2004 may be a solution to which both sides can agree. The Plan calls for very limited development on just 50 of the site's 1,063 acres. The proposed Greylock Glen Outdoor Recreation and Environmental Center would include an environmental education center, lodging and meeting facilities, a network of trails, an outdoor amphitheatre, and a sculpture garden featuring environmental artworks. In proposing the development, the town of Adams has partnered with a number of local groups, including MassMoCA, the Massachusetts Audubon Society, the Appalachian Mountain Club (AMC), and the Massachusetts College of Liberal Arts (MCLA). With its focus on environmental awareness, sensitivity to natural resources, and outdoor recreation, we hope this newest proposal, the latest chapter in the history of Greylock Glen, can succeed in bringing residents together with a shared vision for the future of the Glen.

Our clients' goal is for us to present the most functional, universally accessible trail possible for the proposed area. This trail must conform to established trail regulations, and may or may not include the 1.5 km of pre-existing trail, depending on the condition of that trail (including ongoing beaver activity) and how well it suits our client's goals. These regulations will include both universal access standards and rules for construction in wetlands.

In addition, we are expected to create a trail that will appeal to both the tourist circuit associated with the "cultural Berkshires" (i.e. visitors of Mass MoCA and Williamstown cultural venues) and the town residents. The variables to be considered in

the creation of this interpretation are method of deployment (i.e. brochures, signage, or live interpreters); concentration of themes (i.e. cultural history, natural features, or art and nature, a theme involved in other aspects of the Greylock Outdoor Recreation and Environmental Education Center proposal); and what form the trail needs to take in order to accentuate each of these themes. Donna Cesan and Doug Stefancik have made it clear that they want us to pool together our creative brainpower to come up with an exciting, dynamic proposal, as they do not want this to be "just another nature trail."

Community Background: Adams



(Photography courtesy http://www.townstuff.com/town_photos/adams.jpg)

Adams, the town where the Greylock Glen is found, was originally settled by the Society of Friends (or Quakers) in the 18th century. This group was known for its progressive ideas regarding gender relations, slavery, and war. In the following years, Adams grew from an agriculture-based community into an industrial one, home to many successful mills around the turn of the century that attracted large inflows of immigrants. In recent years, however, it has become one of western Massachusetts' several former mill towns with a continually declining population.

Adams, in fact, reached its peak population in 1910 with 13,026 residents.[13] According to the Federal Census, the population of Adams dropped by 24% between 1905 and 1990, at which time it had 9,445 residents,[14] and now in 2005, it is down to 9,307.[15] Manufacturing jobs employ the highest percentage of the labor force (27%), and 5% of the population was unemployed in 2000.[16] Though agriculture was originally the basis of the community, now only 0.3% of the labor force is employed in agriculture. Compared to other towns in Berkshire County, Massachusetts, Adams has the second-lowest average family income of $37,569 per year.[17] Perhaps due to the aging baby boomer generation, its population over the age of 65 comprises a large percentage (20%) of the population. In 2000, Adams was home to 366 people with "limited mobility," to whom a universally accessible nature trail would certainly be valued.[18]

[13] Berkshire County Data Book
[14] Michalenko, 2000
[15] Adams Town Clerk
[16] Berkshire County Data Book
[17] Berkshire County Census Data, 2000
[18] Berkshire County Data Book

Year:	1910	1990	2000
Population:	13,026	9,445	8,809 (of these, 20% or 1762 are over the age of 65 and 366 have "limited mobility")

Adams Work Force (Year 2000)

Manufacturing	Agriculture	Unemployed
27%	0.3%	5%

Adams is working to capitalize on previously untapped resources. These include, for instance, the town's 14,465 acres, many of which have the potential be turned into recreation areas. In addition, Adams has far more registered historical resources, including objects ranging from flagpoles to buildings to town squares, than any other township in the Berkshires. As Doug Stefancik, Community Development planner for Adams states, "Today, in the field of planning, many areas are looking at the tourist/cultural route in revitalizing their cities and towns. Many of these cities and towns have abundant spaces in the way of mill buildings and complexes that are vacant and certainly ready to be reused. These vacancies occur as the manufacturing industry has died in the United States…downtown Adams is certainly looking very successful from a planning perspective. Adams has a successful Facade Signage Program where many of the downtown buildings have been and are undergoing construction for revitalization…With increasingly skyrocketing real estate prices, the Town of Adams will be a wise investment, for someone to start to establish a business or to live."[19] Stefancik also describes the cultural renaissance taking place in neighboring towns like North Adams that are drawing in tourists and new residents with cultural attractions like MassMoCA. The Glen, and Mount Greylock as a whole, is seen as one of the Adams' most powerful resources, and it is hoped that recreational facilities put in place there will continue to revitalize historic downtown Adams. The community, however, is ambivalent about the level of development they would like to see in the Glen, since it is also valued as a naturally pristine retreat for the public and especially in light of the fact that so many attempts to develop the area have failed in recent history.

Law and Policy: Regulations

Universal Accessibility

[19] Email exchange with Sarah Meserve from Monday, 09 May 2005.

(Photograph courtesy wdfw.wa.gov/.../wheel_ chair_trail.sized.jpg)

There are now more than 53 million Americans with disabilities, comprising approximately one in five U.S. citizens. As mentioned in the Community Background section above, Adams itself had 366 persons of limited mobility as of 2000. Because people with disabilities are now so prevalent in our society, the National Center on Accessibility is working toward a goal of providing "trail access for all of nature's wonders while protecting the environment through which these new trails pass."[20]

To that end, a Regulatory Negotiation Committee is currently working on behalf of the Access Board in Washington, D.C. to finalize a set of proposed rules for trails and outdoor recreational facilities designed and constructed for pedestrian use according to the standards of the Americans with Disabilities Act (ADA).[21] Because there are no specific regulations yet in place, trail builders, including the AMC and Massachusetts Department of Conservation and Recreation, are required to use the best available information on trail accessibility: the standards proposed under the Recommendations for Accessibility Guidelines: Outdoor Developed Areas – Final Report from September 1999. The Report emphasizes a number of basic principles, which include maximizing accessibility to provide for equality of opportunity, balancing safety concerns with the protection of natural resources and the environment, and provisions for independent use by persons with disabilities.

In addition, the Report outlines eleven Technical Provisions of Trail Accessibility that include the standards to be considered in the selection of a route for the Greylock Glen Interpretive Trail. One of the most important of these is ensuring a firm and stable surface that will hold up during the rainy season and also in wetland areas that may be subject to flooding, depending on future beaver activity (see following section). This will likely mean using geotextiles in drier areas and elevated boardwalk in wetter areas. Another provision for us to consider will be running slope, ensuring that no more than thirty percent of the total trail length exceed a running slope of 8.33 percent. This will mean avoiding particularly hilly areas and using switchbacks where we encounter areas with steep slopes. In addition, we must also think about placing rest spaces intermittently along the trail we ultimately choose. (For a more detailed description of the 11 Technical Provisions of Trail Accessibility as well as exceptions to the stated guidelines, please see table in the appendix section at the end of the report.)

In light of these principles and technical provisions, most of the Massachusetts Department of Conservation and Recreation Accessible Trails are, in practice, "generally one-quarter to three-quarter miles in length."[22] This fits well with our clients' goal of creating a universally accessible trail with a length at or around 1.5 km.

[20] http://blackboard.williams.edu/courses/1/05S-ENVI-302-01/content/_55855_1/Accessible_Trails.pdf
[21] http://www.americantrails.org/resources/accessible/index.html
[22] http://www.mass.gov/dcr/universal_access/a-trail.htm

Wetlands

(photograph courtesy Sarah Meserve)

The U.S. Environmental Protection Agency defines wetlands as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal conditions do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”[23]

Stemming from this definition, the U.S. Army Corps of Engineers uses three characteristics when making wetland determinations: vegetation, soil, and hydrology. Nearly 5,000 plant types exist in the United States that are known as "hydrophytic" vegetation and may occur in wetlands. Several Corps offices have published pictorial guides of representative wetland plant types. There are approximately 2,000 named soils in the U.S. that may occur in wetlands which the Soil Conservation Service calls “hydric soils”. Most of these hydrologic indicators can be observed during a field inspection. Indeed, for an area to be defined as a wetland one or more indicators of wetland vegetation, hydric soil, and wetland hydrology must be present.[24]

Once an area of land is defined as wetlands, it is protected by federal, state and local agencies and legislation. Wetlands first became protected in 1969 when the United States government passed the National Environmental Protection Act. Legislation that directly involves wetlands can be found in Section 404 of the Clean Water Act. It “establishes a program to regulate the discharge of dredged and fill material into waters of the United States. This includes wetlands, especially in regards to development fills.[25]

The wetlands in question here, located in Greylock Glen, also are protected under the state of Massachusetts. The Massachusetts Department of Environmental Protection (DEP) established the Massachusetts Wetlands Protection Act that protects the state’s coastal and inland wetlands by monitoring all activity within them. This monitoring takes the form of regulates all dredging, draining, filling, and removal of the wetlands as well as alterations to natural drainage characteristics, vegetation, water temperature, water level, and water biochemistry. Citizens wishing to conduct an activity in a wetland area

[23] Moore, Peter. “Wetlands”. Facts on File. 2001.
[24] U.S. Fish and Wildlife. “National Wetlands Inventory.” http://wetlands.fws.gov/
[25] http://www.epa.gov/owow/wetlands/facts/fact10.html

must first file a request for Determination of Applicability and may only legally proceed with their activity after receiving a positive determination for their area.[26] If positive determination is determined and the area is subject to the Wetlands Protection Act, as in the case of the Greylock Glen, then project applicants need to file a Notice of Intent with the local conservation commission. The project applicant will then work with the conservation commission and any of their orders of condition until an affirmative answer to their project is reached.

Wetland trails are not only difficult to legally create, but are also difficult to construct due to the wet ecosystem. The American Trails, a non-profit organization dedicated to sustainable trails in the U.S., admit that most trails should avoid wetlands due to the problems in construction and maintenance they pose. The basic differences in construction techniques for wetland trails depend greatly on the geologic, hydrologic, and vegetative factors influencing the site and, to a degree, on the wildlife species that live there.[27] Construction techniques differ for wetlands due to the federal, state and local wetland protection acts. Based on its experiences of already established wetland trails, American Trails, however, explains that to comply generally involves a letter to the local district headquarters, perhaps a site visit by a Corps representative, and the issuance of a Corps 402 or 404 permit. Generally, complying with Corps requirements also results in construction that needs minimal maintenance.[28] Concerning Greylock Glen, the Adams' Conservation Commission will be the primary regulatory agency involved. From interviews with members of the commission, it has been indicated that the Greylock Glen interpretive trail could have relatively free reign in the fields surrounding the wetlands and should not encounter many obstacles within the wetland area if the trail sticks to existing crossings. However, it is likely that the trail will not stick to existing trails due to the recent beaver activity and resulting landscape changes. If this is indeed the case, the trail applicants will need to file a notice of intent with the Adams Conservation Commission and work with them and possible orders of conditions before any trail construction can be approved. Because so much of the regulations apply to the processes that are beyond the scope of our project, the main stipulation we took into account while planning the trail was following the requests of the Adams Conservation Commission, which emphasized using as much of the pre-existing trail and wetland crossings as we could.

Community Research Results

Findings from an August 2000 Poll of Adams Residents Regarding Development of the Downtown Area and Greylock Glen

Jean Bacon, Ph.D., Williams College
Wayne Klug, Ph.D., University of Massachusetts and Berkshire Community College
Anne O'Dwyer, Ph.D., Simon's Rock College of Bard

[26] MA DEP Wetlands Protection Act. http://www.mass.gov/dep/brp/ww/aboutww.htm
[27] American Trails. "Wetland Trail Design and Construction." http://www.fhwa.dot.gov/environment/fspubs/01232833/intro.htm
[28] American Trails. "Wetland Trail Design and Construction." http://www.fhwa.dot.gov/environment/fspubs/01232833/intro.htm

In the late summer of 2000, three professors from colleges in the greater Berkshire area spearheaded a poll of Adams residents to gauge local feelings about development proposals both within Adams' downtown and also in the Greylock Glen. In particular, the poll was conducted in response to the proposed Greylock Center Development, which was on the table at the time. The professors trained a number of Berkshire Community College students to conduct the survey by telephone, interviewing, in total, 228 randomly selected and anonymous residents from town of Adams who were at least 18 years of age. Given the size of their sample and the responses they received, the authors of the study estimate their average margin of error at plus or minus six percent.

In response to questions about development, the poll found that respondents, on average, would like to see 60% of the $5 million of state money earmarked for development of Greylock Glen used to develop downtown Adams instead. Eighty-five percent of those interviewed said that they make use, at least intermittently, of Greylock Glen, and almost half of these visit at least once per month. The most frequent activity, cited by 75% of the sample is hiking or walking; other cited activities include picnicking, swimming, skiing, biking, fishing, hunting, bird-watching, photography, foraging, and playing frisbee. Of the eight proposed Greylock Center development components for the Glen, hiking trails received the highest percentage of support with 85% supporting, 3% opposing, and 12% undecided; bike trails and the environmental education center were the next most supported components, with support percentages each well above 50%. The proposal of 300 private homes was the least supported component, with 13% of residents supporting and 67% of residents opposed. Although 30% of Adams residents opposed development of any kind on the Glen, the majority welcomed limited development. In response to open-ended questions, a majority of residents expressed their concern that the Greylock Glen development remain low-key, enhance natural beauty, and minimize the number of structures placed on the land. Their responses included the following statements:

"Leave the Glen the way it is now – it's beautiful"

"It should be kept in a natural state. Whatever they do, they should maintain as low an impact as possible on the environment."

"…We need easier trails for old people. Open up trails – but don't build anything drastic."

"Recreational uses primarily; keep it like it is or make it educational…"

Although this study is now five years old, we believe its findings are still very relevant. They express, in short, the desire on the part of Adams residents to keep development in the Greylock Glen low-key and focused on providing recreational opportunities, especially hiking trails. The Town of Adams' current proposal, The Greylock Glen Outdoor Recreation and Environmental Center, appears, then to be a perfect match with the expressed desires of Adams residents in that it will limit development to just 50 of the Glen's 1063 acres. Moreover, the study shows that the component of the proposal that we are working on, the Interpretive Trail, garners overwhelming local support and will provide an already popular amenity to the Town of Adams.

Interview Findings

Interview Instrument

For the AMC/Mass Audubon (partners in development proposal), trail specialists:
-Explain who we are, why we're involved with Glen and what we're

doing there.
-What suggestions/advice they have on interpretive trails? What worked well? What were the obstacles? What kind of signage did they use? Who were their primary users? Did they make the trail seasonal in their interpretation? Was it a multi-user trail, such as for cross-country skiing?

Generalized Answers:

Due to the open-endedness of these questions, there was not a lot of overlap among answers; rather, each interviewee gave us pieces of advice based on their experiences with and expertise of trail making. Tips included concentrating on the visual features of the trail that one can see at any time, to be as unobtrusive as possible by using brochures rather than signs, the need for a sustainable trail (especially with the constantly changing landscape of the Glen due to beaver activity) and continual maintenance to keep it in good repair, including a variety of features (biological and otherwise), making easy-to-read brochures, and following the edges between habitats for a more varied experience. Some obstacles the interviewees foresaw for our project were difficulties meeting ADA standards with a wetland trail due to the lack of firm and stable ground with a low degree of slope, making sure motorized vehicles do not have access, using appropriate, local surfaces, and being mindful of current uses of the area such as snowmobiling and skiing. The chair of the Adams Conservation Commission informed us that we had "free reign" over the fields, but he advised us to use existing wetland crossings if we wanted the Conservation Commission's approval. People seemed interested in the idea of incorporating the changing seasons into the interpretation of the trail, though it opens up new challenges such as having to trade out seasonal brochures at the right time. They were also interested in the idea of having a strong cultural/human history component to the interpretation.

For other interested groups (DCR, Berkshire Resources, Adams Conservation Commission, Save the Glen, Selectman candidate Jay Lukkarila):

-Explain who we are, why we're interested in the Glen and what we're doing there.
-Ask them their opinions on the current development plan? Do they like it? If not, or if so, which aspects do they like/dislike? Why?
-Do you like the Greylock Glen?
-Why? What areas? What features?
-Do you visit the Glen? What time of year? What do you do there (activity wise, ski? picnic?) How long are your visits?
-Have you been on interpretative trails before? Did you enjoy them? Was there a theme to the trail? Natural, historical, etc.
-Do you have a preference for signage on trails? Plates or flyers?

Generalized Answers:

Reactions to Development Plan

Everyone we interviewed, with the exception of one person, liked the idea of building a trail on Greylock Glen regardless of their view of the proposal as a whole, especially because of its low concentration of developed area. The general sentiment was that reconstructing the trail could only improve the glen as long as it is kept simple, and that it

will draw more visitors and improve stewardship. The Save the Glen members in particular were worried about this proposal eventually becoming something larger, but seemed optimistic about it as long as the buildings blended into the landscape and not too much concrete (in the form of roads, sidewalks, and parking lots) was used. Another concern of theirs was the location of the lodge on current conceptual maps in the proposal, which places it atop vernal pools. One member disagreed with the "privatization of public space" that comes with the lodge, which presumably will have a hefty price tag for visitors. Another feared the project would fail and leave unsightly vestiges like the ELCO project did in the 1970s. On the other end of the spectrum, one interviewee strongly opposed the proposal because it did not develop enough of the land and thus wasted an opportunity widen Adams' tax base.

Current Uses of the Glen

With the exception of the Save the Glen members, most people we interviewed only visited the Glen rarely because of the disrepair of the trails. People mostly go there to sit and reflect or take a walk, something that was corroborated by what we observed on our multiple visits there. Virtually every time we visited the Glen, there was at least one person and never more than three people sitting at a picnic table or walking their dog. Save the Glen members had longer lists of activities in which they participate at the glen, including butterfly and wildflower hikes led by the group Friends of the Glen, birdwatching, and skiing. Several people mentioned swimming and fishing in the ponds before they were contaminated by runoff from the nearby Gould Farm. It was also acknowledged that snowmobilers often used the area for recreation, and that they have their own designated trails to do so. Another unfortunate use is the clandestine driving of off-roading vehicles there, which are prohibited in the area due to the damage they cause on the trail.

Features of the Glen to Include

Because the people we interviewed were stakeholders in the Glen and thus have spent a good deal of time there, we asked them about their personal experiences with the Glen and what features we should try to accentuate. Some answers included the lower pond, the beaver activity, weeping willow trees, the view of Adams from a hilltop, using the visible remnants of past development projects to talk about the human history, and various biological features from butterflies to birds to trees. People also expressed interest in having a discussion of the nearby trails and bordering farms as well as the history of the Bellow's Pipe as part of the Underground Railroad. Importance was placed on highlighting habitat features such as geology and the wetland ecosystem in general rather than individual plants for the sake of longevity. When we mentioned the possible use of stations to replicate the sounds of the Glen (for instance, a station where visitors could hear the sound of spring peepers in the fall), everyone asked showed interest in the idea.

Case Studies

Area Interpretive Trails

Bradley Farm Interpretive Trail,
Mount Greylock State Reservation; Lanesborough, MA

Massachusetts Department of Environmental Management and Student Conservation Association

This trail is on the opposite side of Mount Greylock than the Glen in Adams. A kiosk at the head of the trail with laminated photos and history of the land greeted me at the trailhead as I began my hike. At the kiosk, I also found printed brochures that included a section entitled *About the Trial*, detailing trail length, how long it would take to walk, how to navigate the trail (follow the blue bear paw trail blazes), and guidelines (staying on the trail, leaving only footprints and taking only memories, be aware of hunting season, and users – in this case, foot and ski traffic only). The brochure also featured 13 numbered sections with brief written descriptions that correspond to numbered wooden posts on the trail pointing out specific features visible at that particular point, a map showing route and locations of numbered posts, a brief history of Greylock entitled *Greylock at the Glance*, and a section on who created the trail, when it was created, and relevant contact information.

I thought the brochure was very well done. In particular, I liked the catchy subtitles including "Labor of Love" or "Once Beauty, Now Beast" and found the interpretive descriptions concise and easy to read. As I walked the trail, I enjoyed the interpretation, a mix of geology, ecology, and human history. One of the features I found less desirable was that the trail included some long stretches of hike without a numbered post and accompanying interpretive description that made the walk more monotonous.

Mohawk Trail State Forest Nature Trail
Rte. 2, Charlemont, MA

According to the Department of Conservation and Recreation, "In this rustic and natural setting, [the] Mohawk Trail offers visitors a taste of real wilderness."[29]

This trail allowed us to experience a trail of comparable size to ours but with a different approach to interpretation, that of signage instead of numbered posts with a corresponding informational brochure. It was different from ours in that it was not universally accessible. This trail was part of a network of other trails surrounding a campsite/lodging area which also contained a Forest Headquarters and a kiosk with enlarged, laminated maps of the area as well as brochures for the visitors. Like the Thunderbolt Trail on Mount Greylock, the Mohawk Trail was originally built by members of the CCC, a history that was recounted on plaques at the main entrance to the forest.

The brochures were quite simple: they included a trail map with a key of path surfaces (i.e. "paved," "unpaved," "hiking trail"); a list of Trail Use Guidelines; and contact information. The task of interpretation was left to the signs scattered along the trail, perhaps 8 in all. The signs involved pieces of information regarding biology ("bluebird houses in meadow") as well as human history ("former cart path"). However, for the signs to remain small enough as to be unobtrusive, they lost some power in terms of information. For example, though the visitor was informed that there was an

[29] http://www.mass.gov/dcr/parks/western/mhwk.htm

abandoned cart path at a given spot, there was no indication of what kind of cart path it was, what it was used for, or who used it.

A successful device employed in this trail was the identification of species by color-matching. Upon entering a certain stretch of woods, there would be a sign with swatches of color next to the names of tree species to be found there which matched paint on corresponding trees. The trail was very effectively placed in that it passed through several varied habitats, often along edges between them. Another useful technique that might be included in the Glen is the inclusion of a sign at the trail head and that indicated not only the length of the trail, but the time it would take to walk it.

The main lesson learned from this visit was that posts with brochures are ideal. This minimizes impact on the scenery while maximizing the opportunity to impart information to the visitor. With a brochure, it is possible to not only mention the presence of a feature, but also to discuss background information or interesting tidbits about it as well. This is an option we plan on fully taking advantage of with our interpretive trail. An equally important lesson is the care that needs to be taken with trail building around water sources: this trail was flooded in parts, and completing the trail with wet feet was not fun.

Pleasant Valley Wildlife Sanctuary
Lenox, MA
Massachusetts Audubon Sanctuary

The Massachusetts Audubon Society, a partner in this Greylock Glen proposal, has 43 sanctuaries scattered around Massachusetts. One such sanctuary is located in Berkshire County and is the site of the most relevant case study for the Greylock Glen interpretive trail because, unlike our other case studies, it is universally accessible and passes through a beaver habitat. The Pleasant Valley Wildlife Sanctuary, 1300 acres situated in Lenox, MA, is typical of the Massachusetts Audubon Society, welcoming visitors from a semi-impervious parking area with a welcome kiosk and front office filled with seasonally changing educational brochures that promote environmental advocacy. These handouts are particularly impressive because its colorful layout guides visitor through the ecological aspects of the sanctuary so that all information is applicable to all parts of the trail. Information included seasonally changing characteristics, Berkshire county characteristics, and focused on items that could be viewed from both far away, such as Lenox Mountain, and close up, such as butterflies. The brochure also includes information about how the Massachusetts Audubon Society protects the environment and what each visitor can contribute to the cause as well.

Throughout this sanctuary lies 7 miles of trails and a portion of that trail system is a newly constructed All-Persons trail. This fully accessible trail winds through their hardwood forests and along the edge of a beaver pond. Constructed with Peter Jensen of OpenSpace Management, the trail represents a perfect example of how the Greylock Glen trail should be built as a universal access trail winding through wetlands. The Pleasant Valley trail utilizes geotextiles to stabilize surfaces through their forests with buffer areas approximately 10 inches wide on either side. As a visitor approaches the pond, the trail changes to a boardwalk composed of helical piers and plastic composite boards. This

boardwalk is wide enough for one wheelchair and has curbs on either side. Each of these materials is noticeably firmer than the surrounding terrain. Every so often, the trail widens to include a bench. The All-Persons trail culminates at an observation deck on the beaver pond fully equipped with benches. The trail goes on but is not fully accessible, a condition that according to the interviewed office manager, is not troublesome but rather encourages more travelers. This trail emphasizes our need to be especially mindful of environmental gradients, soil stability and the opportunity for an observational patio that could also serve as a desirable end point at Greylock Glen.

Art and Nature

As the American Trails Organization reports, "site-based art [along trails] can serve as a catalyst for environmental awareness and action at the community level."[30] The following is an example of one such effort from the American Trails website:

Withlacoochee State Trail; Citrus, Hernando, and Pasco counties, Florida
This trail, running through three counties in Florida, is part of a rails-to-trails initiative managed by the Florida Department of Environmental Protections Office of Greenways and Trails. The trail itself includes three murals and one adjacent mural. One mural, painted on the side of a business, depicts the Florida City Train Station of the late 1800 and early 1900s and includes the slogan "Gone but Not Forgotten." Another mural, painted by the Citrus High School Art Class from February through March, 2004 on the side of a ranger station, illustrates the Rails to Trails program with a rendering of a locomotive and a map of Florida. Other simple murals, painted by a class of primary schoolchildren to cover up graffiti, portray palms and other trees.[31] This weaving together of art and nature could be an exciting, distinctive addition to the Greylock Glen Interpretive Trail.

Takeaways: Some Features We Might Borrow

There were a number of features we encountered during our site visits (both actual and online) that we liked and might want to apply in designing the Greylock Glen Interpretive Trail. For example, we liked when kiosks were placed at the trail head and included a map showing trail route, post locations, and estimated time of walk. In terms of method of deployment and signage, we liked the use of numbered posts and brochures, as they seemed the least obtrusive the land and would also allow for interpretation than changes seasonally. We also liked the idea integrating interpretive themes, focusing not just on biology and ecology but also on themes like human history and art. In this way, the trail could engage a variety of users with diverse interests. We also liked the idea of painted murals we found at the Withlacooche State Trail and thought they might be a way to bring art into the trail given that MassMoCA is one of the Adams' partners in the Greylock Glen Outdoor Recreation and Environmental Education Center and that Mount Greylock has, for centuries, inspired artists with its pristine beauty. When thinking about trail route, we liked the idea of incorporating spurs, paths that go off the main loop to

[30] http://www.americantrails.org/resources/art/index.html
[31] http://www.americantrails.org/resources/art/FL-WithlacoocheeAWS.html

points of interest and provide a scenic place to rest and take in the view as well as using loops or figure-eight layouts so that visitors end up back where they started after they have walked the length of the trail. Thinking about universal accessibility, boardwalks, like those at Pleasant Valley are the best option for crossing wet areas. In addition, Pleasant Valley provided some trail design features that may prove useful as we consider how to make our trail universally accessible. These include using switchbacks to lessen the steepness of the grade in areas with hilly topography and also making part, not all of the trail (as in a single loop of a figure-eight layout) universally accessible.

Possible Interpretive Themes

> *"Interpretation is the art of translating the language of nature and the voices of history into stories and experiences that everyone can understand and enjoy."*[32]

We selected the following themes as what we considered the most dynamic, exciting features and stories of the land that would draw people to the trail and provide them with a fun, distinctive experience that changes seasonally.

Natural History and Wetland Ecology

"I follow nature as the surest guide, and resign myself with implicit obedience to her sacred ordinances." –Cicero, Roman Orator, 106-43 B.C.[33]

Perhaps the most obvious feature that an interpretive trail set in Greylock Glen should take into account is the wetlands that the trail will pass through. In the United States, wetlands are unfortunately becoming less and less common. Before Europeans arrived, there is the widely accepted estimate that the United States was home to over 250 million acres of wetlands. Now only 110 million acres remain and of that over 100,000 acres are being destroyed yearly. Placing a trail in a wetland area is providing a resource to spread the information of how critical they are for a healthy area to have. Wetlands are ecosystems that perform a myriad of functions for both the environment and for the human population. Wetlands maintain healthy carbon, oxygen, nitrogen, and hydrologic cycles for the surrounding area. Benefiting humans is the fact that wetlands are home to microbes that transform and purify toxins and act as a great buffer to flood control. Wetlands are amazing suited for absorbing large quantities of water and releasing it in smaller amounts.

Though wetlands are useful to the environment at large and to human populations, it is a habitat quickly losing a battle with development. Wetlands are currently being dredged, drained, filled, or turned into dumps at a rate that makes it an interpretive theme

[32] http://www.mass.gov/dcr/stewardship/interp/interp.htm
[33] http://www.americantrails.org/quotes.html

for the Greylock Glen. A wetlands theme will connect visitors to the place they're visiting; the habitat they're walking through in such a way that educates them about this alarming environmental trend but also serves as an example of a non-threatening use of the interesting ecosystem.

Wetlands and the protection they deserve but do not receive explains why wetland ecology contributes to an engaging interpretation of the Greylock Glen. However what deserves to be recognized more extensively throughout the interpretive trail is the rich biodiversity inhabitating the Glen. The Greylock Glen is home to diverse habitats which are an active home for beavers, a shrubby home for wetland and migratory songbirds, and a wealth of plant biodiversity. These environments exist due to the Glen acting a transition area between Adams' civilization and Mt. Greylock wilderness, a transition area for differing altitudes along the side of Mt. Greylock, and due to the Glen's past developments. Since the history of the Glen did involve massive clearings for potential golf courses, those greens have begun succession and so a wealth of different habitats; field, shrubs, forest are present and so guarantee a wealth of interesting and engaging biological features that the interpretive trail may highlight. This biodiversity has long been recognized by past naturalists. William Brewster, a nineteenth century ornithologist, birded in the Berkshires (including the eastern flank of Mt. Greylock where the Glen is situated) and found 66 species including 4 that had never before been found nesting in Massachusetts[34]. In the 1988, Edna Dunbar, a Massachusetts Audubon volunteer, discovered early hairstreak butterflies on Mt. Greylock, a butterfly thought to be extirpated in Massachusetts[35]. Currently the Greylock Glen is predicted to be home to rare species of salamanders and newts ensuring that this wealth of ecological features is still very much alive and so should be highlighted within the Glen's interpretive trail.

Human History

Mount Greylock and its Glen are important resources to the town of Adams and their human histories provide an opportunity to provoke interest in downtown, historical Adams and assist in the revitalization process currently taking place there. Interpreting human history here will also distinguish the Greylock Glen Interpretive Trail from other trails that focus exclusively on nature and natural processes.

Native American History

Native Americans, including the Mahican and Hoosac inhabited this area in the 17th century. They did not, however, climb to the summits of the mountains, which they regarded as sacred.[36] When a landslide in May, 1990 brought down tons of rock, earth, and trees on the eastern slope of Mount Greylock, it exposed a rock face that many people claim resembles the profile of a local legend: Chief Greylock, a Waronoke Indian who lived in a secret cave in Mount Greylock and led of band of Native Americans that harassed British settlers as they settled in his domain.[37] The name for the famous

[34] Laubach, Rene. "Birding with Mr. Brewster." *Sanctuary: The Glory that was Greylock*. May/June 1991.
[35] Tyning, Tom. "The Wild Mountain." *Sanctuary: The Glory that was Greylock*. May/June 1991
[36] Burns, Deborah E. and Lauren R. Stevens, *Most Excellent Majesty: A History of Mount Greylock*, Berkshire Natural Resources Council, Inc, Pittsfield, MA: 1988, p. 27.
[37] http://www.surfwiz.com/mount-greylock.htm

landslide of August 1901, "Chief's Steps" or "Chief's Stairway," (which you can still see to the left of Chief Greylock's profile) also makes reference to him.

Previous Uses of the Land

In the early 19th century, the Glen was primarily used for farming, and towards the end of the century the harvesting of charcoal and lumber that took place there fueled the growing manufacturing industry in Adams. As industry developed, agriculture declined, and as a result many fields that were once farms became abandoned, later returning to forest. Now, subsistence farmers in the area are an anachronism, though farms do exist, including the nearby Gould farm and Thiel's apple orchard. The trail found on the northern edge of the Glen named Bellow's Pipe formerly served as a part of the Underground Railroad for escaped slaves on their way out of New York, which did not abolish slavery until 1826, 36 years after Massachusetts did.[38]

The uses of the land in more recent time has been mainly tangled up in a series of failed proposals, which are outlined in the "Project Background" section of this paper starting on page 6. It is notable that one of these development projects, that of the ELCO Resort Developers in the 1970s, left behind remnants of structures, such as snow-making devices and the foundations of a base lodge, that are still visible today.

Writers and Naturalists on Mount Greylock[39]

In the nineteenth century, painters and authors alike celebrated the American landscape as a place for communication with the divine. For them, Mount Greylock inspired particular devotion. Herman Melville, author of the novel Moby Dick, for example, dedicated his novel *Pierre* to Mount Greylock in 1852 with these words: "…Majesty is all around us here in Berkshire, sitting as in a grand Congress of Vienna of majestic hill-tops, and eternally changing our homage…I, dwelling with my loyal neighbors, the Maples and the Beeches, in the amphitheater over which his central majesty presides, have received his most bounteous and unstinted fertilizations, it is but meet, that I devoutly kneel, and render up my gratitude…to the Most Excellent Purple Majesty of Greylock." In "A Night On Mount Greylock," an excerpt from his 1844 *A Week on the Concord and Merrimarck Rivers*, Henry David Thoreau describes what he sees, awaking above the clouds after an evening spent on Mount Greylock: "As the light in the east steadily increased, it revealed to me more clearly the new world into which I had risen in the night, the new terra firma perchance of my future life…There were immense snowy pastures…and shady vales between the vaporous mountains, and far in the horizon I could see where some luxurious misty timber jutted into the prairie, and trace the windings of a water course…my muse would fail to convey an impression of the gorgeous tapestry by which I was surrounded…" Others, inspired by the visions Melville and Thoreau capture in their writing have worked, for years, to save Mount Greylock and its Glen from development. These groups include The Greylock Park Association, The Berkshire Environmental Action Committee, and Save the Glen.

Thunderbolt Ski Trail[40]

[38] Michalenko (2000)
[39] *Most Excellent Majesty: A History of Mount Greylock*, introduction and appendix.

Montani simper liberi – Mountaineers are always free. – LATIN SAYING

The abandoned ELCO project of the 1970s was just one of the many efforts to bring back skiing to Mount Greylock. The mountain and skiing have, in fact, long been closely tied. In the 1930s, Mount Greylock's eastern slope witnessed the birth of the American love affair with modern alpine skiing. In response to the outpouring of local interest, the 107th Division of the Civilian Conservation Corps, formed to put youths to work in forests, parks, and rangelands during the Great Depression, built the Thunderbolt ski trail in 1934 under the guidance of the Mount Greylock Ski Club of Pittsfield. Named after a roller-coaster in Lynn, Massachusetts, the mile and a half long trail was challenging indeed, as steep as 35 degrees and as narrow as 15 feet. Throughout the 1930s and '40s, the Thunderbolt hosted the Massachusetts and Eastern downhill amateur ski races, welcomed thousands of cheering fans, and gave birth to a slew of local heroes from Adams, including Maurice "Greeny" Geurtin, Bill Linscott, and Ruddy Konieszny. After World War II, the Thunderbolt lost popularity as skiing techniques changed and skiers became more reluctant to make the 2 hour hike up the mountain for a single, albeit exhilarating run down. Today, however, the Thunderbolt still attracts fervent skiers and snowboarders as a backcountry classic and a reminder of the history our nation's passion for mountains and adventure.

Art and Nature

Nineteenth Century Hudson River School tradition

Throughout the mid-19th century, landscape painters of the Hudson River School working in New York state depicted unsettled areas around America's Eastern mountains. Their subjects included gorges, mountains, forests, and lakes in and around the Catskill Mountains. Although their compositional and stylistic technique was largely Old World European, their subject matter was authentically American and conveyed a unique sense of place, capturing the drama and beauty of the American landscape as a place for communication with God and a site of healing for the human spirit.[41] Thomas Cole's 1870 oil on canvas, *Mount Greylock*, is one such example.

The work of local Adams artist John Maziarz, who taught studio art at Mount Greylock Regional High School in Williamstown for 38 years, continues the transcendentalist perception of the natural world of the Berkshires as sacred, sanctified, and worthy of veneration. His acrylic paintings celebrate New England landscapes and especially Mount Greylock as icons.

Applications for trail users: Painted Murals of surrounding Landscape

One way to involve Mt. Greylock's history with art in our proposed nature trail would be to create new art on the site. We propose making use of the existing concrete structures left over from the ELCO development project as a canvas to capture the beauty of Greylock Glen that has been admired by so many artists and writers in the past. This could entail the involvement of MassMoCA, a partner in the Town of Adams' proposal

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[40] *Purple Mountain Majesty [videorecording]: A History of the Thunderbolt Ski Run*, Hoosac Valley High School's Hurrican films, 1999.

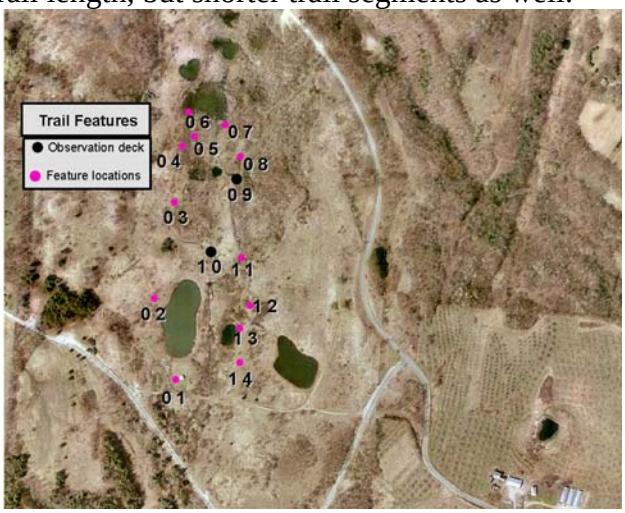
[41] http://www.askart.com/interest/tophudson_a.asp

for the Glen as a whole, or perhaps a local school could be commissioned to paint the murals. By leaving the old structures behind, not only would an opportunity to discuss past successful efforts to stop overzealous development projects be gained, but it also would demonstrate our ability to transform something unsightly into something beautiful.

Alternatives

"Stand ye in the ways, and see, and ask for the old paths, where is the good way, and walk therein…" –Jeremiah 6:16[42]

Visiting the trail site with our research of interpretive themes in mind, we created a map of the site that indicates where those themes can best be interpreted. These are, in short, our trail highlights that we will want to feature in our trail design. Many of the feature locations are variable, but were placed so that, depending on a visitor's desire to travel the whole length of the trail, a balanced representation of the themes is represented along not only the whole trail length, but shorter trail segments as well.



Features

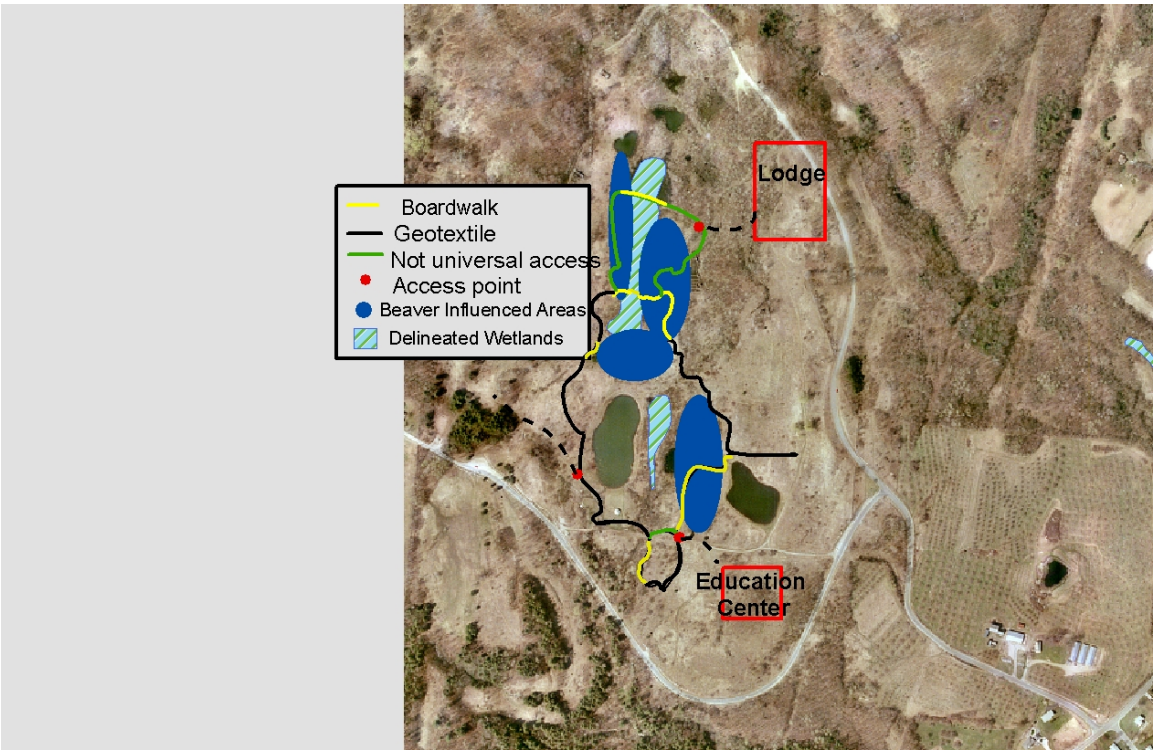
Number	Description
01	Standing Gazebo
02	Chief Greylock View
03	View of the summit, Thunderbolt Trail
04	Forest with good birdwatching
05	Marsh Marigolds
06	Beaver Dam
07	Cattails and Horsetails
08	ELCO Murals
09	ELCO Observation Deck
10	Beaver Observation Deck

[42] http://www.americantrails.org/quotes.html

11	Shrubby birding area
12	Adams Vista
13	Good view of summit of Mt. Greylock
14	Wildflowers

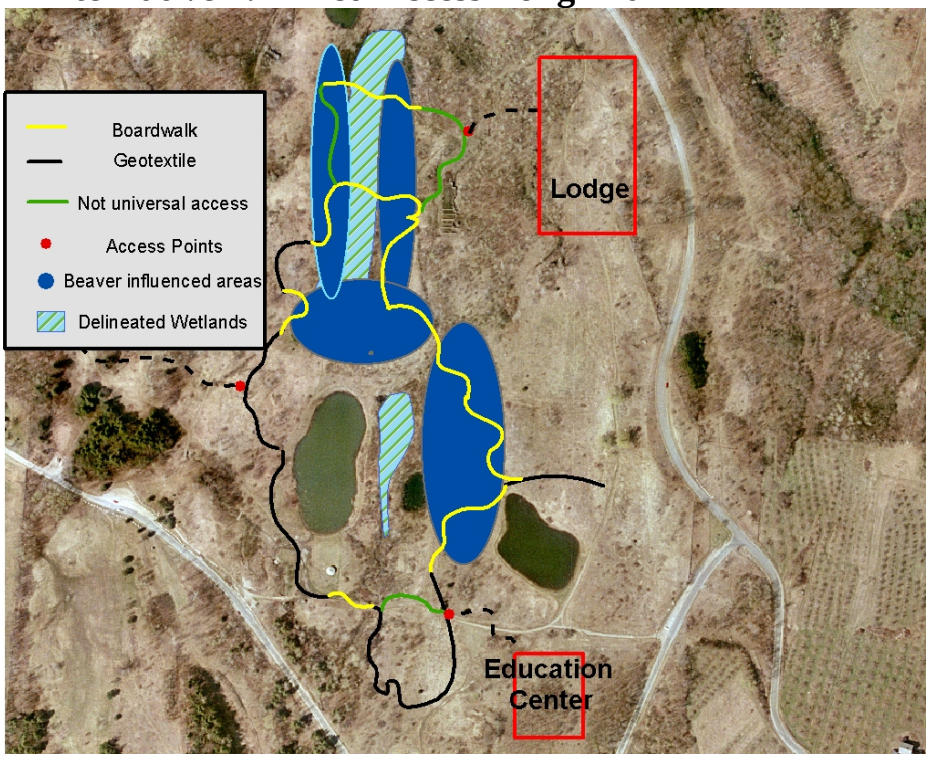
Since the trail features are the most essential part in determining our trail, we now needed to decide how best to connect those features to create the actual trail route. We did this using a Garmin ETrex GPS unit to mark the features we want to highlight as well as showed the path of how we walked to connect these features. We knew that we wanted a loop or double loop (figure-eight) layout based conversations with trail experts at the Massachusetts Audubon Society and AMC, who cited that such trail layouts are more attractive to visitors. We were also mindful that we could make *part* of our trail, such as a single loop, universally accessible, like the All Persons trail at the Pleasant Valley Wildlife Sanctuary in Lenox, MA. Furthermore, we considered how well the route connected to the three approximately located access points Ms. Cesan had delineated to us (Thunderbolt Lodge, Environmental Education Center, Trailhead Parking) With all this in mind, we walked different routes of differing lengths, incorporating as many features as we could and, with the advice of the Adams Conservation Commission, using the existing trail paths and wetland crossings as much as possible. In the end, we generated three possible trails, which are described below.

Alternative 1: Mixed Access Short Trail



This trail shortens the length of the universally accessible route by making use of an existing spur into the wetland (now partially submerged) to form a figure-eight trail path, of which one loop would be universally accessible. In this way, it cuts down on cost by allowing use of bog bridges instead of boardwalk for the non-universally accessible loop, located at the top of this map. Despite these positive features, the shorter universal access loop does not feature easy universal access to the Thunderbolt Lodge, nor does it include all the features included in entire trail network, notably the ELCO structure and proposed mural. In addition, the Adams Conservation Commission highly discourages the use of bridges built over the wetland, as they are thought to be imposing on the terrain rather than working with it, and though this alternative utilizes a partially existing structure for its crossing, a bridge would still needed to be built.

Alternative 2: Mixed Access Long Trail



This trail provides a slightly longer universally accessible route. Like the Mixed Access Short Trail described above, it would cross over a wetland to form a figure-eight trail path, of which bottom loop would be universally accessible, cutting down on cost by allowing use of bog bridges instead of boardwalk for the non-universally accessible loop. Unlike the first alternative, this trail features the ELCO structure on the Universally Accessible loop. It does not, however, include all the features included in entire trail network. In addition, although it crosses the wet area at its narrowest and point to make the figure-eight layout, it does so using a completely new crossing. Again, universal access to the Lodge would be more difficult because of distance. As discussed above, the

Adams Conservation Commission highly discourages the use of bridges built over the wetland.

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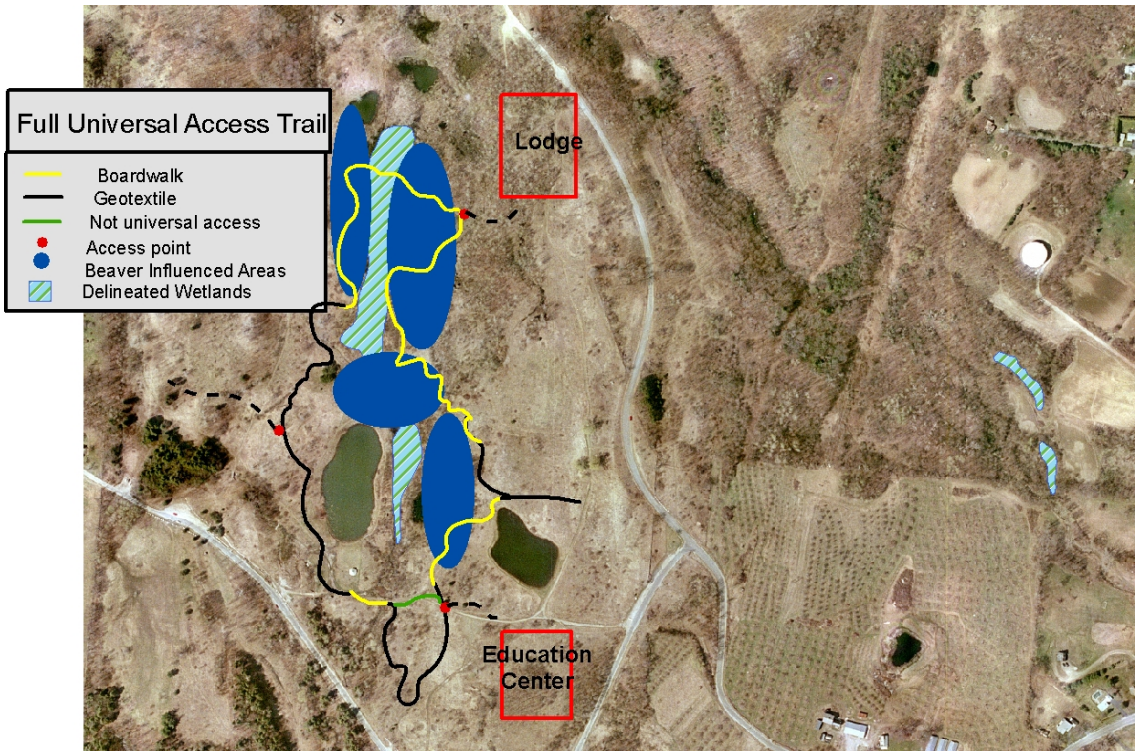
Alternative 3: Full Universal Access Trail



This alternative would be entirely universally accessible and include all of our proposed interpretive features in a loop layout. Additionally, the trail would provide easy universal access to all three proposed access points. Although the universally accessible trail length would be much greater than the first two Mixed Access trails described above, the multiple access points would allow users to get on and off as they pleased at three different locations. Furthermore, the trail would make use of existing wet area crossings and its length, at .98 miles matches almost exactly our clients' proposed length of 1.5 km. One negative aspect is that this trail would require more costly boardwalk instead of bog bridges in areas prone to flooding and would also require more rest areas, entailing greater costs and more maintenance.

Comparing Alternative Trails

In determining which of the three trails we would select as the best, we considered a number of components that we thought would be useful in rating our alternatives routes so that we could ultimately select the best. In many ways, our criteria

are similar to why we chose to walk a given path in the first place. Our evaluating criteria included: 1) to what extent the route featured key interpretive sites, 2) to what extent the trail complied to the Adams Conservation Commission's preference that we use the existing DCR-placed wetlands crossings rather than constructing new ones and 3) the cost of trail material, especially in the case of universally accessible wetlands areas that would need to be comprised of elevated boardwalks instead of less expensive bog bridges, and in relation to trail length.

Trail Comparisons: Features

Trail	Wetland	Human History	Development Meets Art	Beaver Observation Deck	ELCO Structure Obs. Deck
Mixed Access Short Trail	All access – Beaver, Bird, Plant	All access – Chief Greylock, Thunderbolt, Adams vista	None	All Access	Not universally accessible
Mixed Access Long Trail	All access – Beaver, Bird, Plant	All access – Chief Greylock, Thunderbolt, Adams vista	All Access – ELCO structure	All Access	All Access
Full Universal Access Trail	All access – Beaver, Bird, Plant;	All access – Chief Greylock, Thunderbolt, Adams vista	All Access – ELCO structure	All Access	All Access

The Full Universal Access Trail is the only alternative that makes all trail features accessible to all persons. Although the Mixed Access Long Trail includes all the features themes, namely wetlands, human history, development meets art, the beaver observation deck, and the ELCO Structure Observation Deck, it does not include all the individual features in the universally accessible loop. The features it would miss are the Marsh Marigolds, the Beaver Dam, and the Cattails and Horsetails (Features 5, 6, and 7 on the Feature Map discussed above), and would not pass by another pond (located to the north of the trail) with beaver activity. The Mixed Access Short Trail not only excludes these features, but also the ELCO structure and its proposed mural, one of the features we feel makes our trail exceptional and distinct. Comparing the way in which each trail incorporates the various features, then, the Full Universal Access Trail is clearly the best choice.

Trail Comparisons: Wetlands Regulations

Trail	Wetland Crossing	Wetland Trail Length
Mixed Access Short Trail	Yes – new, 157 feet	2585 feet
Mixed Access Long Trail	Yes – new*	2797 feet

Full Universal Access Trail	Yes – existing: 197 feet	4064 feet

*****no footage is available for this crossing, as it is currently a pond across which we could not walk with our GPS unit to record the distance

The Full Universal Access Trail is the only one of the three alternatives that entirely makes use of an existing wetlands crossing, the Adams Conservation Committee's one specific stipulation. The Mixed Access Short Trail does use an existing spur, but because the trail here is partially submerged, bringing the trail route across this area would require constructing a wetlands crossing, some of which would have to be new. Although the Mixed Access Long Trail crosses the wet area at the narrowest point, it is the only trail that would require the construction of an entirely new wetlands crossing. Additionally, the Full Universal Access Trail provides the greatest wetland trail length, provide trail-users the most opportunity to observe and appreciate the wetlands of the Greylock Glen. For these reasons, the Full Universal Access Trail is the best alternative in terms of wetlands regulations and access.

Trail Comparisons: Universal Access Length and Cost

Trail	Total Length and Length of Universally Accessible Loop	Boardwalk Length and Estimated Cost (approximately $8/linear foot*)	Geotextile Length and Estimated Cost (approximately $5/square meter**)
Mixed Access Short Trail	.7 miles (3696 feet); Universal: 3252 feet	1168 feet, $9,344	2084 feet, $3,176
Mixed Access Long Trail	.74 miles (3908 feet); Universal: 3611 feet	1986 feet, $15,888	1625 feet, $2,476.50
Full Universal Access Trail	.98 miles Universal: 5175 feet	2634 feet, $21,072	2541 feet, $3,872.50

*****this figure was derived from an estimated range of $0.80-16.67 according to www.plasticlumber.com
**Colorado State Trails News, May 1995, p.7

Cost-wise, the Full Universal Access Trail will be the most expensive of the three alternatives insofar as it has the greatest overall universally accessible length, which will require use of both geotextiles and also boardwalk in areas subject to flooding. The estimated total cost of the universally accessible loop for the Mixed Access Short Trail would be $12,520. The total estimated cost of the entire Mixed Access Short Trail would be **$13,670**. This estimate takes into account the cost of the 444 foot-long non-universally accessible loop, which would be constructed of bog bridges at a cost of $2.59 per linear foot. The estimated total cost of the universally accessible loop for the Mixed Access Long Trail would be $18,364.50. The total estimated cost of the entire Mixed Access Long Trail would be **$19,134**. This estimated total cost takes into account the cost of the 297 foot-long non-universally accessible loop, which would, again, be constructed of bog bridges. The estimated total cost for the Full Universal Access Trail would be **$24,944.50**. Costs aside for a moment, the length of the Full Universal Access Trail, 0.98 miles, or 1.58 kilometers, is closest to our clients' desire to create a trail approximately 1.5 kilometers long. Therefore, although the Full Universal Access is the most

expensive, it is also does the best job in meeting the goals of our clients, who told us to consider length and not weigh the cost factor as much.

Final Trail Proposal

Both the Mixed Access Short and Mixed Access Long universally accessible trail loops would miss, to differing extents, some of the interpreted features highlighted on the Full Universal Access Trail. Furthermore, they would also require new wetlands crossing, creating potential problem with the Adams Conservation Commission. The Full Universal Access Trail, on the other hand, would incorporate all interpretive themes for all persons, cross wetlands at an existing crossing, and have a universal access length that comes closest to our clients' proposed length.

We choose, therefore, the Full Universal Access Trail as our best alternative. We believe that this trail will preserve wetlands and cultivate environmental stewardship. In addition, what visitors see on the trail and what they read in the brochure will change seasonally so that the Greylock Glen Interpretive Trail is always offering something new to discover and enjoy for both Adams residents and more distant travelers alike!

Recommendations as the Project Moves Ahead

Interpretive Possibilities

Because of the multiple access points along this trail, we recommend using symbols or color codes to correspond the posts to the brochures, as a numbering system might be confusing. In a public presentation of this project, audience members indicated an interest in the involvement of all the sensations of the trail, rather than simply things that can be seen. To that effect, we recommend exploring the possibilities of dispensing audio tapes or CDs at the Environmental Education Center, which could take the place of or even supplement a brochure. For people with vision impairments, it would be interesting to include an exploratory room in the Environmental Education Center where all the interesting textures of the Glen could be experienced without the dangers of the trail.

General

As mentioned in the Wetlands Regulations section of this report, continued cooperation with the Adams Conservation Commission will be required as this project moves ahead. Because it is a possibility that they will require wetland replication for boardwalked areas, it would be a good idea to start thinking about areas in the glen that would serve as good replication areas. In addition, we recommend that environmentally-friendly construction materials be used, such as hardware cloth around the posts of the boardwalk to indicate to the beavers that they are not trees. The Town of Adams should also be aware that as this project moves forward and more money is required, the fact that this trail will be accessible qualifies it for a number of grants that should be taken advantage of.

Appendices

Appendix A: Interview Findings

Interview Instrument

For the AMC/Mass Audubon (partners in development proposal)
-Explain who we are, why we're involved with Glen and what we're doing there.
-What suggestions/advice they have on interpretive trails? What worked well? What were the obstacles? What kind of signage did they use? Who were their primary users? Did they make the trail seasonal in their interpretation? Was it a multi-user trail, such as for cross-country skiing?
For other interested groups (DCR, Berkshire Resources, Adams Conservation Commission, Save the Glen, Selectman candidate Jay Lukkarila)
-Explain who we are, why we're interested in the Glen and what we're doing there.
-Ask them their opinions on the current development plan? Do they like it? If not, or if so, which aspects do they like/dislike? Why?
-Do you like the Greylock Glen?
-Why? What areas? What features?
-Do you visit the Glen? What time of year? What do you do there (activity wise, ski? picnic?) How long are your visits?
-Have you been on interpretative trails before? Did you enjoy them? Was there a theme to the trail? Natural, historical, etc.
-Do you have a preference for signage on trails? Plates or flyers?

Heather Clish, Director of Trials and Riverways Stewardship, Appalachian Mountain Club

What makes a good interpretive trail?
- It should be a pleasant walk, not very challenging or steep.
- Make sure you can actually see what you're interpreting.

What are some obstacles you've encountered in the past and are things we might want to watch out for?
- Making sure pedestrian trails don't get used by motorized vehicles.

What kinds of signage techniques have you used in the past?
- Not great big displays
- Mark points of interest with numbered posts and a corresponding brochure

Have you ever done a seasonal trail with interpretation that changed as the seasons changed?
- That could work. It might be a good idea to put one season on the front of the brochure and another on the back so you can just have one brochure instead of multiple brochures that you're always needing to change as the seasons change.

Based on your knowledge of the Glen, is there anything you would want to highlight in an interpretive trail?

- I'll defer to your knowledge and research findings but like the idea of integrating themes of ecology, human history, past development proposals.

Can you talk to me a little about handicap accessibility issues since we are, indeed, interested in making this trail universally accessible?

- Peter Jensen is a local expert in that area.
- There are no hard and fast laws, just proposed standards as of now, which is what the AMC uses.
- Recommended sources include Universal Trail Accessibility website and Forest Service website.

Gayle Yeo, Massachusetts Audubon Society

What's your opinion on Adams' development proposal?

- Support it. It designates the majority of the land to be used in a conservation aspect. The increased trail system, especially an interpretive trail, will only be helpful in getting more people outside and appreciating the outdoors.

What general features make a good interpretive trail?

- I can't say; I've never seen the Glen. I would talk to Ron Wolanin. He's the Mass Audubon guy that has the natural eye for picking out the habitat features that will interest people.

Has Mass Audubon ever done an interpretive trail that incorporates other features besides natural history?

- No, not officially on the brochure. We do mention the impact of our trails on the ecosystem but featuring the history and art on the interpretive guide would be cool.

What kinds of signage techniques have you used in the past?

- Mostly the brochures, and we put them in the sanctuary offices and welcoming kiosks and let the patrons decide how they want to experience the trails.

What are some obstacles you've encountered in the past and are things we might want to watch out for?

- It sounds like your trail will be through some wet soil, and with the beavers, chances are it will flood so I would suggest elevated boardwalks.

Becky Barnes, Region V Trails Coordinator, Department of Conservation and Recreation (DCR)

What makes a good interpretive trail?

- Physically easy and shorter, between a mile and a mile and a half
- Interpretive writing should provide easy-to-read information suitable for the general population or a family

What are some obstacles you've encountered in the past and are things we might want to watch out for?

- Because of the way the beavers are constantly changing that landscape around the old interpretive trail and the seasonal effects of rain and flooding, it will be difficult to put something in the lower elevations because they could easily become covered in water. At the same time, the DCR is not interested in controlling the natural processes in this area. Currently, we're passively managing the area, doing some

mowing and garbage pick-up. So you need a trail that's flexible and takes these natural processes into account.
- Also, remember that there are currently multiple users in the Glen, including snowmobile access and a ski trail (including posted signs) in the winter.

What kinds of signage techniques have you used in the past?
- Usually number posts and corresponding brochures because they are low-maintenance and easy to change, if necessary.

Based on your knowledge of the Glen, is there anything you would want to highlight in an interpretive trail?
- Focus on highlighting habitat features like geology and the wetland ecosystem or biological processes like succession instead of individual plants because it is hard to maintain interpretation of specific plants over a long period of time.
- Also, integrating themes might be a good idea especially if remnants from past development projects will be visible from the trail. People will be curious and ask questions – they'll want to know what they're seeing so you'll want to explain.

Have you ever done a seasonal trail with interpretation that changed as the seasons changed?
- That's an interesting idea. You'll have to consider whether you will be able to see the path in the wintertime because of the snow. Also, you'll want to think about whether the stations will change enough from one season to another to make seasonal interpretation viable.

What's your opinion on Adams' development proposal?
- I cannot make an official comment on behalf of my agency.
- DCR is unsure of what its role will be in the future. If the development happens, it could change a lot of things.

Office of Tom McCarthy, Director of Universal Access Program Office, Department of Conservation and Reservation (DCR)

What are the DCR regulations that make trails qualified to be called "Accessible?"
- The regulations we use are those of the Federal Access Board, which has a website, although it is very technical.
- You'll get a better sense looking at the National Center of Accessibility guidelines, which are also online. These have not yet been made law.
- Major areas you'll need to think about include firm and stable surface and a grade that is not very steep.

Are you usually actually working with the disabled community in the area to assess user needs?
- Not usually. We use the Universal Access Program.

What are some obstacles you have encountered in the past and how might we avoid them?
- Sometimes there are difficulties making trails Universally Accessible in Wetlands areas because of Conservation Commission standards, like perhaps not being able to use pressure treated wood that might be detrimental to the health of the wetland.
- In terms of other challenges to anticipate: finding appropriate (hopefully local) materials, grade, and rockiness.

Tad Ames, Berkshire Natural Resources Council

What's your opinion on Adams' development proposal?
- Actually support it since it only develops 4% of the Glen area. The rest will be conserved and the development is relatively low impact. Not thrilled about the lodge but the Council does not oppose this proposal.

What makes a good interpretive trail?
- Being able to see what the brochure is actually talking about. Point out things that anyone can anytime of the day and not some salamander that should be in the pond but is never there when you look in.

Do you visit the Glen? What do you use it for?
- I use it a few times during the year, at least once a year. As do many people in the office. Usually work related, but it's enjoyable to walk around the area.

Jim Fassell, Adams Conservation Commission Chair

What particular regulations do we need to be mindful of while designing this trail?
- Anything we plan on doing will be an improvement; "free reign" on fields.
- Make sure to keep same crossings over wetlands.

Do you visit the Glen? What do you use it for?
- Used to cross-country ski; now it is too crowded.
- Trails destroyed; no longer visits Glen.

What makes a good interpretive trail?
- Needs to be permanent. Without supervision, 4x4s and ATVs will ruin trail.
- Needs maintenance program for upkeep.
- Goes along edge between two habitats.
- Includes variety of features.
- Use brochures with posts.

What features in the Glen do you think should definitely be included on the interpretive trail?
- Beaver activity.
- Weeping willow trees.
- Vistas of Adams—link to history.
- Lots of cultural history in general.
- Mention Bellow's Pipe as part of Underground Railroad; show Quaker House from vista, group of rocks that served as safe haven for escaped slaves visible when one looks toward Cheshire.

Members of Save the Glen, Local Advocacy Group: Betty Bressett, Eleanor Tillinghast, and Nancy O'Brien

What do you and people you know currently use the Glen for?

Betty: Used to fish and swim in pond, but now possibly contaminated by runoff from Gould Farm; ski, birdwatch, wildflower walks, count butterflies, various hikes led by Friends of the Glen
Eleanor: Hike nearby trails, enjoy beautiful views, enjoy remoteness.
Nancy: Swam before contamination issue, picnic, fish, walk around pond, and sit at tables and enjoy scenery.

What general features make a good interpretive trail?

All: Nothing intrusive—no kiosks or computers. Posts with brochures are best.
Nancy: Keep trail simple—not complex network.

What features in the Glen do you think should definitely be included on the interpretive trail?

Betty: Wildflowers, butterflies, bird species, tree species, spectacular brooks, and beaver activity.
Nancy: Ragged Mountain, Gould Trail, Cheshire/Harper Trail, monarch butterflies that collect around milkweed, information about old farms, beaver ponds, changing landscapes. Improve area around pond: needs maintenance.
Eleanor: Lower pond is the best spot.

Would you like to see the use of sound at particular points along the trail to simulate activity during other seasons (i.e. spring peeper sounds in the fall)?

All: That would be neat!

Have you heard of the new proposal for the area? What are you reactions to it?

Betty: Likes the idea of trail rebuilding; dislikes lodge being built on vernal pools; hopes there will not be too much concrete (i.e. roads, parking lots). Would rather see smaller lodge, like dormitories with mountain biking, cross country skiing, snowshoeing.
Eleanor: Fears development will expand from original proposal; likes idea of trail, but keep it simple—no new roads, high buildings, parking lots. Would prefer parking in Adams with shuttle to trail head. Does not like privatization of public spaces involved in older projects (i.e. condos only for rich). Would prefer no development at all to keep the Glen pure as development goes on all around it.
Nancy: Fears parking lots, large/high buildings: doesn't want to ruin view from summit. Likes idea of amphitheater and the idea of bringing in tourists to increase stewardship and use of the Glen; fears possible failure of project will leave vestiges like those of Heritage and Fleming.

Jay Lukkarilla, Adams Selectman Candidate

What's your opinion on Adams' development proposal?
- Definitely against it. It puts too much land into conservation and just perpetuates Adams' tight financial situation. The land would be more taxable and thus more profitable if more development was there or more of it was private land.

Do you visit the Glen? What do you use it for?
- Visits the Glen all the time with children and neighbors to walk around and study the vernal pools.

What makes a good interpretive trail?
- Features not just biological in nature but ones that also link the trail to history or even other disciplines.

Summary of Findings

- General support for the Greylock Glen Outdoor Recreation and Environmental Education Center, especially trail-building aspect; more concern about the lodge and intensive development
- Preferred signage technique: numbered posts with corresponding brochures available at an introductory kiosk
- Be able to see what you're interpreting
- Integrate Interpretive Themes
- Challenge: balancing Universal Accessibility requirements with wetlands conservation and a habitat constantly being changed by beaver activity
-

Appendix B: Biological Survey

Wetland Ecology

- In the United States, before Europeans arrived it is estimated that there existed over 250 million acres of wetlands. Today, only 110 million acres remain.
    - Approximately 100,000 acres of wetlands are being destroyed each year. Wetlands are being drained, dredged and filled in for housing development or turned into ponds or dumps. They are also being polluted by substances found in acid mine drainage, nutrient runoff, and acid rain.
- Wetlands come in a variety of forms such as bogs, freshwater marshes, prairie potholes, forested swamps, and salt-water estuaries.
- Wetlands greatly benefit the environment. They are an integral part of the environment's "maintenance of oxygen, nitrogen, hydrologic, and carbon cycles, the treatment of waste, and the absorption of excess nutrients that might otherwise induce eutrophication".[43]
- Swamp wetland areas, such as Greylock Glen seem to be more accurately described as shrub swamps as the area is dominated by willows, alders, shrubby dogwoods, and buttonbush. Some shrub swamps are permanent, while others slowly transform themselves into true forested swamps.
- Wetlands are vital to human health. They cleanse the nation's water, and are a natural flood control, absorbing large amounts of water and releasing it slowly in more manageable amounts. Wetlands also contain microbes that transform and purify toxic organic and inorganic chemicals[44].

Biological Survey (Professor Henry Art, April 26, 2005)

Trees
Black cherry, *Prunus serotina*

[43] http://naturetourism.allegheny.edu/essay_wetlands.html

[44] http://www.audubon.org/campaign/wetland/ecosystem.html

Apple, *Malus* spp.
Red maple, *Acer rubrum*
White ash, *Fraxinus americana*
Box elder, *Acer negundo* (wetland indicator)
Willow, *Salix* spp. (wetland indicator)
Quaking Aspen, *Populus tremuloides*
Speckled Alder, *Alnus rugosa*
Gray Birch, *Betula populifolia*
Paper Birch, *Betula papyrifera*
Black Willow, *Salix nigra* (wetland indicator)
Sugar Maple, *Acer saccharum*
Musclewood, *Carpinus caroliniana*

Understory Shrubs

Blackberry
Red Osier Dogwood, *Cornus sericea*
Silky or Swamp Dogwood, *Cornus foemina*
Honeysuckle, *Lonicera japonica*
Cattails, *Typha latifolia*
Phragmites, *Phragmites australis*
Grape vine,
Marsh Marigold, *Caltha palustris* - (wetland indicator)
Wild parsnip, *Pastinaca sativa*
Sensitive fern, *Onoclea sensibilis* - (wetland indicator)
Milkweed, *Asclepias tuberosa*
Common Buckthorn, *Rhamnus cathartica*
Dwarf Horsetails, *Equisetum scirpoides*
Golden Alexander, *Zizia aurea*
Trout Lilly, *Erythronium americanum*
Staghorn Sumac, *Rhus typhina*
Serviceberry, *Amelanchier canadensis*

Animals

Blue azure butterfly,
Red-spotted Newts, *Notophthalmus viridescens*
Leopard Frog, *Rana pipiens*
Backswimmers,
American Toads, *Bufo americanus*
Beaver, *Castor canadensis*
Raccoon, *Procyon lotor*
American Kestrel, *Falco sparverius*
Eastern Kingbird, *Tyrannus tyrannus*
Red-wing Blackbird, *Agelaius phoeniceus*
Pileated Woodpecker, *Dryocopus pileatus*
Northern Cardinal, *Cardinalis cardinalis*

Tree Swallow, *Tachycineta bicolor*
American Goldfinch, *Carduelis tristis*
Golden Eagle, *Aquila chrysaetos*

Harmful Plants

Wild Parsnip (*Pastinaca sativa*)
Sap from the plant can cause phytophotodermatitis, a light sensitive reaction on your skin. If the juice from broken stalks, leaves or flowers contacts your skin and then is exposed to sunlight, a skin rash will result 24-48 hours later. Symptoms range from slightly reddened skin to large blisters. The blisters may produce a sensation similar to a mild to severe sunburn. The blisters do not spread or itch, as poison ivy rashes do, but they are uncomfortable and leave brown scars that last for a number of months to two years.[45](University of Wisconsin)

Sensitive Fern (*Onoclea sensibilis*)
Sensitive fern grows in marshy area, wet meadows and its common names refers to its sensitivity to the cold and how it will wither the first night that the temperature drops into the low thirties. However, the fern is also known to contain an unknown toxin that has been highly toxic to horses.[46]

Edible Plants

- Cattails (*Typha latifolia*)
Cattails have a long history of use as food plants. The heart of the young shoots, young flower spikes, rootstocks, and pollen can all be used as food stuffs.
- Marsh-Marigold (*Caltha palustris*)
Marsh Marigold is a spring plant that blooms from April to June and is also known as Cowslip. Its leaves and flower buds can be eaten if prepared correctly, if eaten fresh the plant contains a toxic substance.

Invasive Species

Invasive species are defined as a "non-native" or alien species to the environment under consideration and whose introduction into said ecosystem causes or is likely to cause environmental, economic, or human health harm[47]. Greylock Glen is home to invasive plant species; among them being Phragmites (*Phragmites australis*) also known as the common reed, Honeysuckle (*Lonicera japonica)* Common Buckthorn (*Rhamnus cathartica*), and wild parsnip (*Pastinaca sativa*).

Beaver Activity

- In 1932, 3 beavers were reintroduced to the state of Massachusetts from New York's Adirondacks. Before then, heavy fur trapping had taken its toll and essentially extinguished the once abundant beaver population in the state.

[45] University of Wisconsinc- Extension. " Wild Parsnip"
http://www.uwex.edu/ces/wihort/gardenfacts/X1083.pdf
[46] Cox, Donald. "A Naturalist's Guide to Wetland Plants: An Ecology for Eastern North America". Syracuse University Press. 2002.

[47] http://www.invasivespecies.gov/

- The most prominent wetland rodent, beavers have webbed hind feet, a rubber-like tail and can remain underwater for 15 minutes although the time span is more usually 5 minutes.
- Beaver are social rodents that live in family groups and work together to build and repair dams.
- Within the family, beavers maintain a social hierarchy where the adult female is dominant. She is responsible for the felling of trees and the majority of the word one on the lodge and dam.
- Beavers are active year-round.
- Beavers mate for life and only have one litter per year. Their offspring are called kits and will live in their home lodge until they are two years old.
- When danger is present, beavers will slap their tails on the water to warn other members of their family.
- Beavers eat the leaves, twigs, and roots of many deciduous trees but generally prefer the cambium or growth layer of willows, alders, birch, ash and aspen.

Wetland Birds

- The Greylock Glen is along the Atlantic Ocean Migratory pathways. Over 350 bird species migrate each year over the United States.
- Up to one-half of North American bird species visit wetland ecosystems for food, rest or to build their nests.
- Red-winged Blackbirds are very prevalent in the trail area. Males are a glossy black with scarlet red epaulets. Females are brown with buff and chestnut streaks. They one of the more polygamous bird species, it is normal for one male to have 3-4 females in his territory during one breeding season.[48]

Galls: Plant-Insect Interactions

-Galls can be a variety of colorful, unusual shapes but all galls are simply deformations of the meristematic plant tissues.

-Insects and mites are the most common causes of galls but it is often difficult to identify the insect and observers have much better luck identifying the gall form.

-Galls are formed because they provide food and shelter for insect larvae. The covering will help protect larvae from predators and parasites. And the walls of a gall are typically rich in protein and sugars more so than the surrounding non-gall tissue.

-The six most common insect families are: Coleoptera (beetles), Lepidoptera (moths and butterflies), Homoptera (aphids), Thysanoptera (thrips), Diptera (flies), and Hymenoptera (sawflies and wasps).[49]

Doctrine of Signatures

-In the 1500s, master herbalist and physician Paracelsus became the most famous advocate of the idea of doctrine of signatures, the belief that physical qualities of plants could indicate their medicinal properties.

[48] http://birds.cornell.edu/BOW/REWBLA/

[49] http://www.wcrl.ars.usda.gov/cec/insects/gallmake.htm

-Properties such as taste, color, shape, smell would bear a resemblance to the ailment they cured. For example, yellow sap, or yellow flowers cured jaundice, butterfly shaped flowers cured insect bites.
-The use of the doctrine of signatures has been followed since before the 1500s, often by religious folks who believed that God left them visual cues for medicinal plants.
-The uses of plants according to the Doctrine of Signatures remain evident in some vernacular names. Liverwort was used to treat liver ailments; snakeroot was used an antidote for snake venom. [50]

Appendix C: ADA Trail Accessibility Guidelines

ANSI / RESNA Standards for Firmness & Stability			
	Very Firm / Stable	**Moderately Firm / Stable**	**Not Firm / Stable**
Firmness	0.3 inch or less	>0.3 £ <0.5 inch	>.5 inch
Stability	0.5 inch or less	>0.5 £ <1.0 inch	>1.0 inch

The proposed accessibility guidelines require a trail surface to be firm and stable. The intended use and length of the trail may regulate the degree of firmness and stability preferred. For example, a trail with a length greater than .5 miles should be very firm and very stable. Trail lengths between .1 and .5 miles should be moderately firm and stable. Firmness means the surface "does not give way significantly under foot." Stability means surfaces "do not shift from side-to-side or when turning." For example, when one walks or wheels on sand, the sand shifts and the foot or wheel sinks. When turning, a foot or wheel will displace the sand. Therefore, sand is neither firm nor stable. Firmness and stability can be measured using a rotational penetrometer. When controlled pressure is applied to the penetrometer, the penetration depth of the device is measured as the degree of firmness while rotating the penetrometer will provide the stability measurement. The penetration guidelines below further illustrate characteristics of firmness and stability.[51]

[50] http://www.botgard.ucla.edu/html/botanytextbooks/economicbotany/Doctrine/
[51] http://www.ncaonline.org/monographs/1trail-surfaces.shtml

Proposed Federal Trail Accessibility Guidelines

Technical Specifications for Trails and Access Routes

TECH SPECS	TRAILS	OUTDOOR RECREATION ACCESS ROUTES
Surface	Surface shall be firm and stable.	
	Exception: provision shall not apply where firm and stable surface cannot be provided because at least 1 of the 4 conditions specified in 16.1.1 applies.	
Clear Tread Width	36 inches (915 mm)	
	Exception 1: The clear tread width shall be permitted to be reduced to no less than 32 inches (815 mm) minimum where at least 1 of the 4 conditions specified in 16.1.1 apply. **Exception 2**: The provision shall not apply where 32 inches minimum clear tread width cannot be provided because at least 1 of 4 conditions specified in 16.1.1 applies.	**Exception**: The minimum width shall be permitted to be no less than 32 inches (815 mm) minimum for a distance of 24 inches (610 mm) maximum where at least 1 of the 4 conditions in 16.1.1 applies.
Openings	Openings shall be of a size that does not permit passage of a ½ inch (13 mm) diameter sphere. Elongated openings must be perpendicular or diagonal to the direction of travel.	
	Exception 1: Elongated openings may be parallel to the direction of travel if they do not permit passage of a ¼ inch (6 mm) sphere. **Exception 2**: Openings shall be of a size that do not permit passage of a ¾ inch (19 mm) sphere.	**Exception 1**: Elongated openings may be parallel to the direction of travel if they do not permit passage of a ¼ inch (6 mm) sphere.
Protruding Objects	Comply with ADAAG 4.4 and shall have 80 inches (2030 mm) minimum clear head room.. **Exception**: Where vertical clearance of a trail is reduced to less than 80 inches (2030 mm) where one of the four conditions specified in 16.1.1 applies, a barrier to warn blind and visually impaired persons shall be provided.	Comply with ADAAG 4.4.
Tread Obstacles	Where obstacles exist, they shall not exceed 2 inches (50 mm) high maximum. **Exception**: Tread obstacles shall be permitted to be 3 inches (75 mm) maximum where running and cross slopes are 1:20 or less.	Where obstacles exist, they shall not exceed 1 inch (50 mm) high maximum. **Exception**: Tread obstacles of 2 inches (50 mm) high maximum shall be permitted where beveled with a slope no greater than 1:2 and where at least 1 of the conditions in 16.1.1 applies.

Passing Space	If the clear tread width is less than 60 inches (1525 mm), passing spaces shall be provided at intervals of 1,000 feet (301 m) maximum. **Exception**: The provision shall not apply where passing space cannot be provided because at least 1 of the 4 conditions specified in 16.1.1 applies.	If the clear tread width is less than 60 inches (1525 mm), passing spaces shall be provided at intervals of 200 feet (61 m) maximum. **Exception**: Passing spaces shall be permitted at intervals of up to 300 feet (91 m) maximum where at least 1 of the conditions of 16.1.1 applies.
Running Slope	70 percent of the total running slope must not exceed 8.33 percent. ▸ 5% (1:20) for any distance ▸ 8.33 % (1:12) with resting intervals provided every 200 feet (61 m) ▸ 10 % (1:10) with resting intervals provided every 30 feet (9.15 m) ▸ 12.5 % (1:8) with resting intervals provided every 10 feet (3.05 m) **Exception 1**: For open drainage structures, a running slope of 14 % is permitted for 5 feet (1.5 m) maximum with a cross slope of 1:20 maximum. Cross slope is permitted to be 1:10 at the bottom of the open drain, where clear tread width is 42 inches (1.065 m) minimum.	▸ 5% (1:20) for any distance ▸ 8.33 % (1:12) with resting intervals provided every 50 feet (61 m) ▸ 10 % (1:10) with resting intervals provided every 30 feet (9.15 m)
Cross Slope	5 % (1:20) maximum	3% (1:33) maximum **Exception**: Cross slopes of 1:20 maximum shall be permitted to ensure proper drainage.
Rest Intervals	Rest intervals shall be 60 inches (1.525 m) minimum in length, shall have a width at least as wide as the widest portion of the trail segment leading to the resting interval, and have a slope not exceeding 1:20 (5%) in any direction.	Rest intervals shall be 60 inches (1.525 m) minimum in length, shall have a width at least as wide as the widest portion of the trail segment leading to the resting interval, and have a slope not exceeding 1:33 (3%) in any direction.
Edge Protection	Where edge protection is provided, the edge protection shall have a height of 3 inches (75mm) minimum.	
Signs	Newly constructed and altered trails and trail segments complying with these guidelines shall be designated with a symbol (to be determined) at the trailhead and all designated access points. Signs identifying accessible trail segments shall include the total distance of the accessible segment and the location of the first point of departure from the technical provisions.	Not applicable.

This table was prepared by Peter Jensen, Trail Designer/Builder, September, 2002. The information in this table was extracted from the "Recommendations for Accessibility Guidelines: Outdoor Developed Areas - Final Report", September 1999.

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*Front cover photograph courtesy of Heather Linscott