

National Park Service
U.S. Department of the Interior

Metacomet-Monadnock-Mattabesett Trail System
Massachusetts/Connecticut



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Natural Science Trail Feasibility Study and Environmental Assessment

Spring 2006



Draft Report

Metacomet Monadnock Mattabesett Trail System

National Scenic Trail Feasibility Study and Environmental Assessment Draft Report

Metacomet Monadnock Mattabesett Trail System
Massachusetts/Connecticut

National Park Service, Northeast Region

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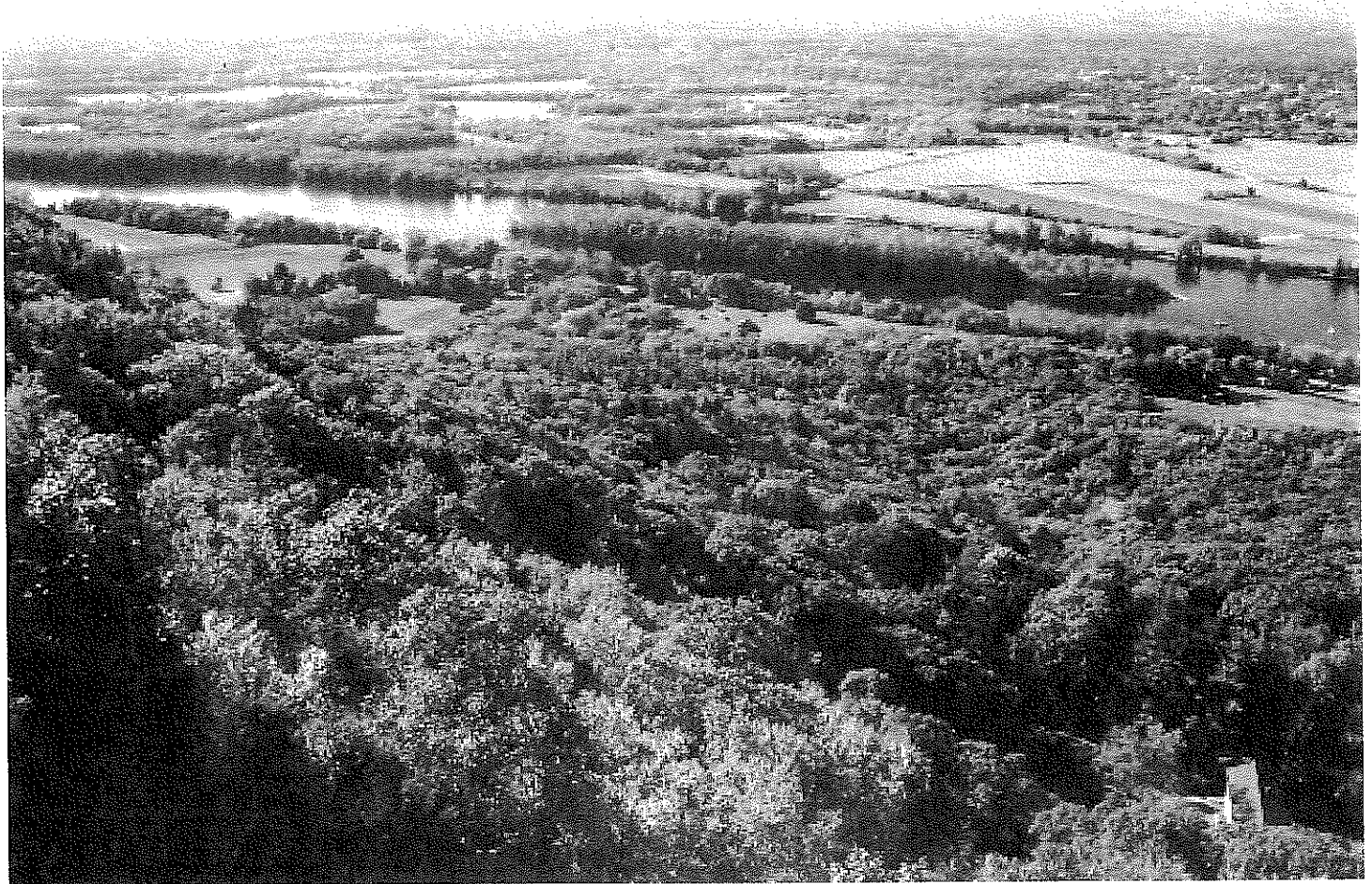
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West Peak, Connecticut

Contents

Summary of Findings	1	Trail System Issues and Opportunities	43
Trail System Background	1	A. Trail Use	43
Study Accomplishments	2	B. Trail Protection	43
Important Spin-Offs of the Study	2	C. Landowner Issues/Interests	45
Introduction and Study Background	5	D. Maintenance and Trail Management Related Issues	46
A. Summary of National Trails System Act	5	E. Administration	46
B. Background on Metacomet Monadnock-Mattabesett Trail Study	5	F. Community Connections	47
C. Study Approach	5	G. Trail Continuity and Relocations	47
D. Summary of Public Involvement and Participation	7	H. Alternate National Scenic Trail Route in Massachusetts	49
		I. Alternate National Scenic Trail Route in Massachusetts	49
The Metacomet-Monadnock-Mattabesett Trail System	11	A Blueprint For Management of the Trail	53
A. Development of the Trail	11	A. Landowner Issues	53
B. Description of the Trail	12	B. Trail Use	54
C. Management and Administration of the Trail	12	C. Trail Protection	54
D. Recreational Use of the Trail	15	D. Trail Management and Maintenance	54
E. Demographics of Adjacent Trail Towns	18	E. Community Connections	54
F. Population	18	F. Administrative Framework	55
G. Landuse	20	G. Provisions if National Scenic Trail Designation Occurs	55
H. Community Involvement with the Trail	21	H. Proposed Blueprint Budget	56
I. Natural and Cultural Resources	24	Management Alternatives and Environmental Assessment	59
Significant Evaluation	33	A. Purpose and Need	59
		B. Alternatives Considered and Rejected	59
		C. Alternatives Considered	60
		D. The Affected Environment	61
		E. Impacts of Alternatives	62
		Sources	67



View of Connecticut River from Hadley, Massachusetts

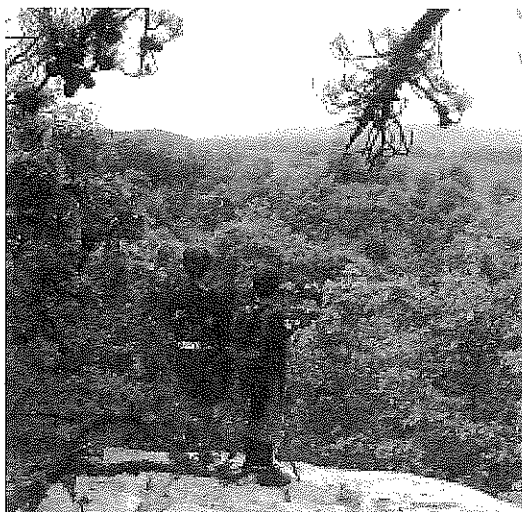
Summary of Findings

Trail System Background

The Metacomet Monadnock Mattabesett (MMM) Trail System is a 190-mile trail route that has been in existence for over half a century. It travels through 39 communities in central Connecticut and western Massachusetts. The trail system is one of two long-distance recreational trails, the other being the 92-mile Midstate Trail, serving the south-central region of New England.

The MMM Trail System hosts an array of scenic features and historic sites. Long distance vistas with rural towns as the backdrop, agrarian lands, unfragmented forests, and large river valleys are among the classic New England landscape features located along the trail system. The trail system also travels through important Native American and colonial historical landmarks showcasing the unique landscape of the area. The trail system harbors a range of diverse ecosystems and natural resources, including traprock ridges, mountain summits, forested glades, vernal pools, lakes, streams and waterfalls.

The Connecticut Forest and Park Association (CFPA) is the steward of the trail system in Connecticut through their "Blue-Blazed Hiking Trail" program. The Berkshire Chapter of the Appalachian Mountain Club (AMC) is the principal steward of the trail system in Massachusetts. The entire trail system is predominantly managed and maintained by volunteers, and much of it relies on the generosity and commitment of landowners who voluntarily allow it to cross their lands.



Mattabesett Trail, Durham, Connecticut looking west toward Totoket Mountain

As growth continues to change the landscape of southern New England, portions of the MMM Trail System have experienced increasing pressures that threaten the long-term viability of this continuous long-distance trail. Residential subdivision and other growth pressures are forcing relocations of the trail system with increasing frequency, and options for such relocations are dwindling. The growth pressure is most acute in Connecticut and in the southern and central regions of Massachusetts.

Study Background and Approach

Responding to the perceived threats to the long-term viability of the trail system, Congressman John Olver of Massachusetts and Congresswoman Nancy Johnson of Connecticut sponsored federal legislation to study the Metacomet Monadnock Mattabesett Trail System in Connecticut and Massachusetts. Based on the expressed intent of the sponsors and principal trail steward organizations, two goals were established for the study that became Public Law 107-338 in December, 2002:

Primary Goal: To determine the best way to ensure the long-term viability of a continuous public-use trail system from Long Island Sound through Connecticut to the Massachusetts/New Hampshire border.

Secondary Goal: To determine whether or not designation as a National Scenic Trail makes sense as a means of achieving the primary goal of long-term trail system viability.

In addition, the study had four guiding principles:

- Meaningful investigation of the trail system's long-term viability can only occur with the full involvement of trail advocates, landowners, and other interested parties.
- Emphasis will be on strengthening existing trail system partnerships and characteristics of use, maintenance, ownership, and voluntary stewardship.
- Respect for private property rights is a fundamental component of a successful project.
- Federal condemnation of land will not be considered as an option in establishing or protecting the trail system.

To ensure broad stakeholder involvement, an ad-hoc steering committee was formed in Connecticut and working groups were formed in Massachusetts to assist in the completion of the study. Involvement was open to all interested parties, including landowners, trail users, trail maintainers, non-profit land conservation groups, regional planning organizations and local and state agencies. The steering committee and the working groups met quarterly and provided input and feedback to the National Park Service on the study products as they were developed.

Considerable effort was also put into engaging trail landowners and leaders in each of the communities that the trail system travels through. Outreach efforts included trail-use questionnaires, newsletters, establishment of a website and a series of community meetings that were held to introduce the study and provide opportunities for public involvement.

Study Accomplishments

In addition to researching the trail and its natural, cultural and recreational attributes, several accomplishments completed during the study are worthy of particular note, including:

- **Mapping the Trail.** Modern GIS (Geographic Information System) and GPS (Global Positioning System) mapping techniques allowed for more detailed and accurate mapping of the existing trail system route.
- **Identifying and Communicating with Trail Landowners.** By cross referencing accurate trail location data with tax map records in town and city offices, 613 landowners owning 1,070 parcels of land on the trail system were identified and communicated with as a part of the study.
- **Identifying Trail Issues and Opportunities.** Working committees, trail landowners, user groups, community officials, trail stewards and others all contributed to an understanding of trail issues and opportunities.
- **Research on Successful Long-Distance Trail Management.** The Pioneer Valley Planning Commission and Franklin Regional Council of Governments researched different types of long-distance trail management practices to better inform the study process and products (Appendix G).
- **A Blueprint for the Future of the Trail.** A culmination of much of the study's effort, the "Blueprint for Management" of the trail system was developed from all of the input cited above. The Blueprint is intended to be a useful guide to the future of the trail whether or not National Scenic Trail designation is implemented.

Important Spin-Offs of the Study

The mapping, landowner communication, and stakeholder dialogue sponsored by the study generated important spin-off accomplishments undertaken by volunteer partners:

- **Extension to Long Island Sound.** Town planners in Guilford, CT assumed the challenge of connecting the existing trail system to Long Island Sound in coordination with the Study Steering Committee. A 14-mile potential route has been identified and is incorporated into the Preferred Management Alternative.
- **Successful Trail Relocations.** Several landowners who were contacted during the study requested that the trail be removed from their lands. Trail managers and community partners subsequently moved several miles of trail in both Connecticut and Massachusetts onto permanently protected routes.

Preferred Management Alternative: Implementation of the Trail Management Blueprint through National Scenic Trail Designation from Long Island Sound in CT to the NH Border, including a significant re-route in the Belchertown – Leverett area in Massachusetts. The study concludes that the long-term viability of the MMM Trail System as a high quality, continuous, long-distance trail will require a sustained level of increased focus and resources by a wide array of trail partners. National Scenic Trail designation appears to be the most feasible way to generate such an increased level of attention and resources. The trail system, proposed to be named the New England National Scenic Trail, would be approximately 220 miles in length, including a new trail extension and relocations.

In summary, the designation would:

- Provide the best opportunity to secure long-term trail viability;
- Provide an opportunity for federal funding for trail management and protection;
- Address critical landowner issues through commitment to a Management Blueprint;
- Coalesce trail partners and communities through creation of a Trail Stewardship Council;
- Facilitate a trail extension to Long Island Sound
- Elevate the profile of the trail system to the level of national significance.

The preferred alternative includes the following elements:

Blueprint for Management. The Blueprint document was developed with input from a full range of study participants to provide the best possible plan for long-term trail viability. Future trail management, administration and protection efforts would be based on the Blueprint.

Creation of a Trail Stewardship Council. The council would bring trail partners and stakeholders together on a regular basis to discuss trail issues and coordinate management activities, and generally guide implementation of the Blueprint

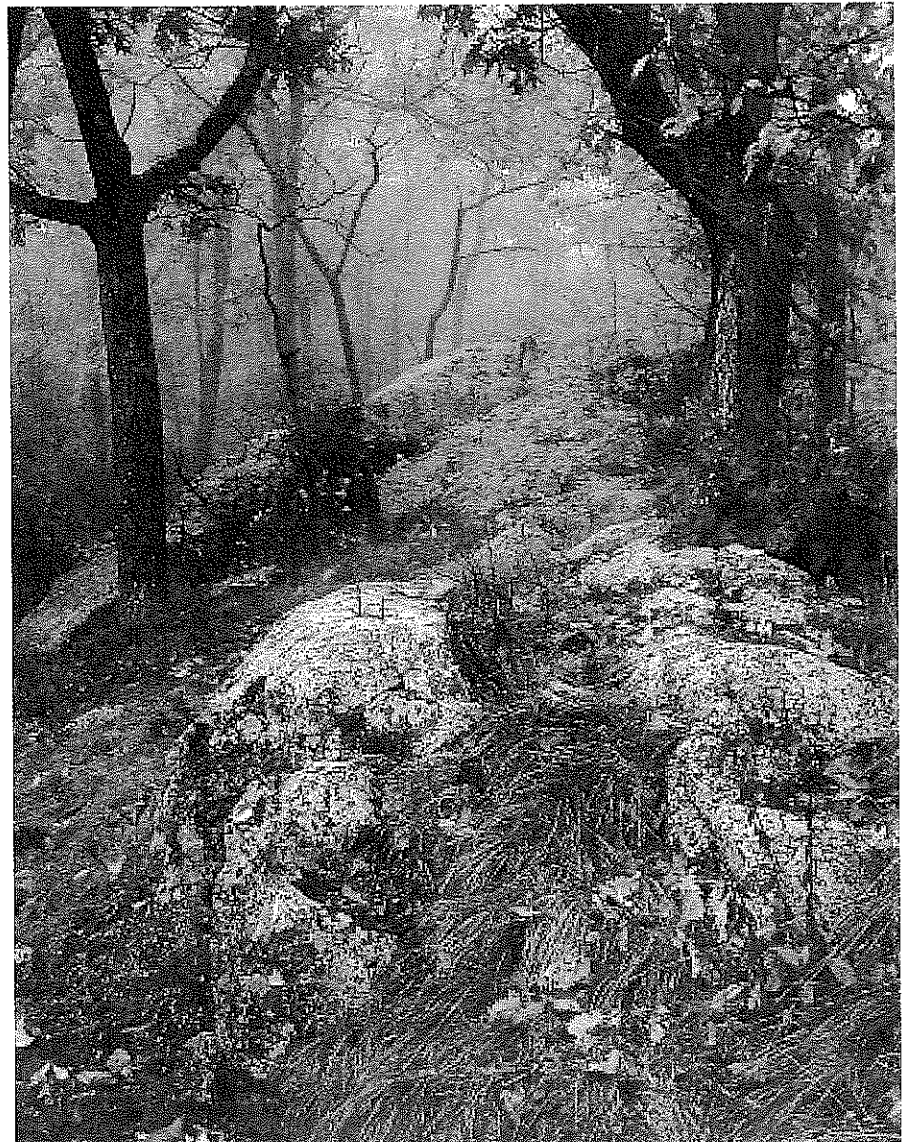
for Management. The Council would have advisory powers only, being non-regulatory in nature.

National Park Service Role. The Study identified no need for direct federal trail ownership or direct federal trail management. Thus, the National Park Service role in implementing the proposed National Scenic Trail designation

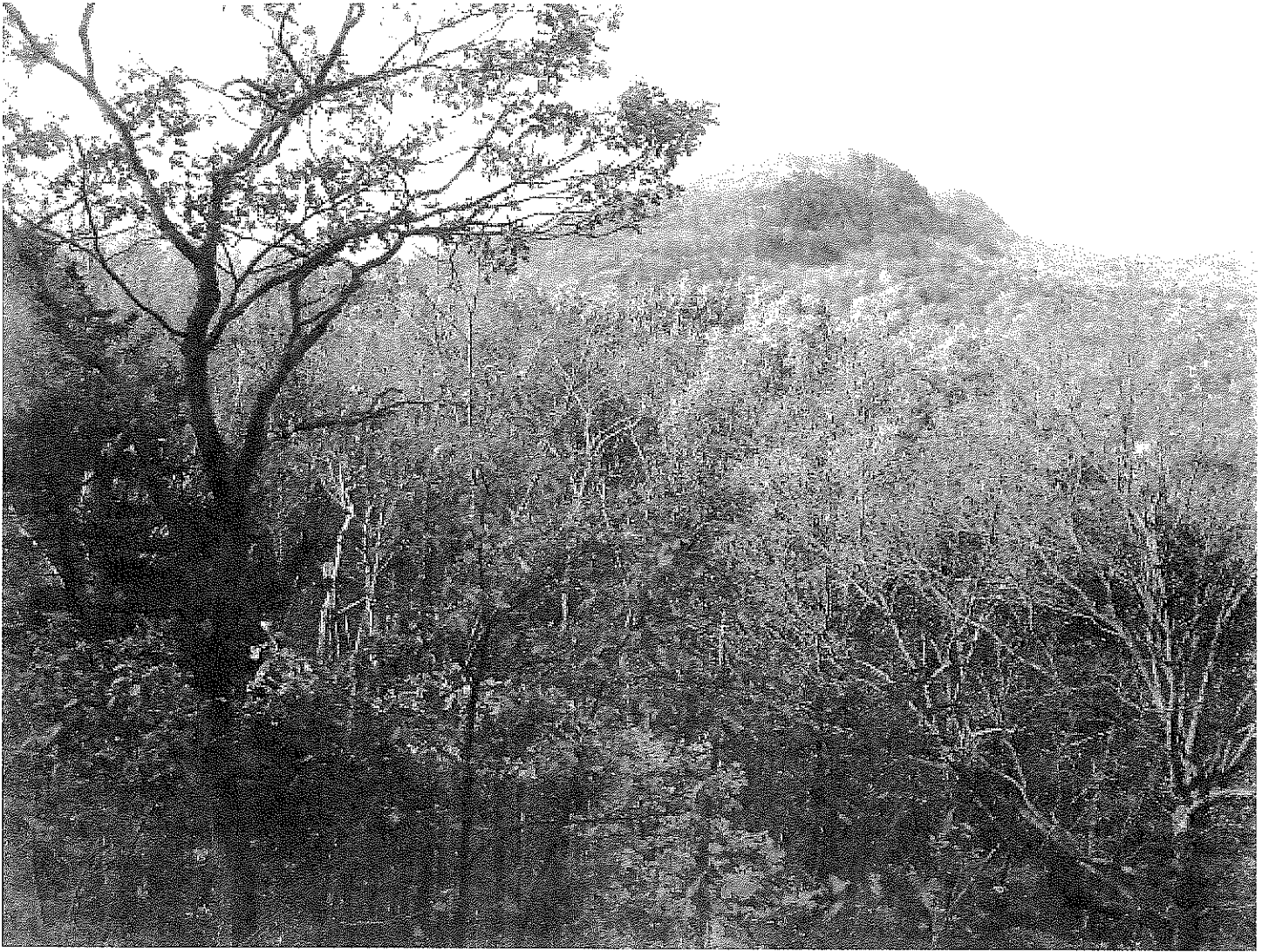
would be one of technical and financial assistance to existing trail partners, coordinated through the Trail Stewardship Council.

A New Name. A new, unifying name is suggested for National Scenic Trail purposes: New England National Scenic Trail. Traditional trail names would continue to be used where appropriate -- for example "Mattabesett Trail, part of the New England National Scenic Trail."

New Route Opportunities. In addition to the proposed extension to Long Island Sound in Guilford, CT, a new conceptual route for the National Scenic Trail is proposed in the Belchertown-Leverett area of Massachusetts. The route alternative is envisioned to take advantage of substantial state-owned lands that can provide a quality, protected trail route, while avoiding a segment of the Metacomet-Monadnock Trail almost completely devoid of protected lands. No specific alignment is suggested or proposed.



Ridgetop fall scene, Connecticut



View of Bare Mountain, Amherst, Massachusetts

Introduction and Study Background

A. Summary of the National Trails System Act

The National Trails System Act (Public Law 90-543, as amended through Public Law 107-325) institutes a national system of historic, scenic, and recreation trails. National Scenic Trails are trails at least 100 miles long that provide for maximum outdoor recreation potential, and for the conservation and enjoyment of nationally significant scenic, historic, natural, or cultural qualities of trail areas.

Section 2 [16USCr241] of the National Trails System Act notes that “trails should be established (i) primarily, near the urban areas of the Nation, and (ii) secondarily, within scenic areas and along historic travel routes of the Nation which are often more remotely located.”

Currently, there are a total of eight designated National Scenic Trails. See Table 1

B. Background on Metacomet-Monadnock-Mattabesett Trail Study

The Metacomet Monadnock Mattabesett (MMM) Trail System consists of three generally contiguous trails: the Metacomet, the Metacomet-Monadnock, and the Mattabesett, that travel 190 miles in a north-south direction from the Massachusetts-New Hampshire border south towards Long Island Sound in Connecticut. The portion of the Metacomet-Monadnock Trail included in the study is located entirely within Massachusetts, while the Metacomet and Mattabesett Trails are located entirely within Connecticut.

In December 2002, President George W. Bush signed Public Law 107-338, directing the U.S. Department of the Interior to conduct a feasibility study of the Metacomet Monadnock Mattabesett Trail System in Connecticut and Massachusetts for possible inclusion in the

National Trails System through designation as a National Scenic Trail. Note that the Metacomet-Monadnock Trail extends into New Hampshire, but that this portion of trail was not included in the study’s authorizing language.

The MMM Trail System Study was proposed jointly by U.S. Representatives John Olver of Massachusetts and Nancy Johnson of Connecticut. Representatives Johnson and Olver acted in response to public interest in the trail and to requests from constituents that it be preserved. House co-sponsors of the study legislation included Representatives DeLauro, Larson, Maloney, and Simmons of Connecticut, Representative Neal of Massachusetts, Representative Bass of New Hampshire, and Representative Udall of New Mexico. Senate co-sponsors included Senators Dodd and Lieberman of Connecticut, and Senators Kennedy and Kerry of Massachusetts.

The principal rationale for the MMM Trail Study, as expressed in testimony before Congress, is that without a concerted effort to protect the trail system it will cease to exist as a recreational resource for future generations.

C. Study Approach

Goals of the Study

The following goals were established at the outset of the study, and served to guide development of the work plan and study products:

- The primary goal of the MMM Trail System study is to determine the best approach to ensure the long-term viability of a continuous public use trail system from Long Island Sound through Connecticut to the Massachusetts/New Hampshire border.

Table 1. Designated National Scenic trails

Name of Trail	Year Designated	Authorized Length (miles)
Appalachian	1968	2170
Pacific Crest	1968	2638
Continental Divide	1978	3200
Ice Age	1980	1000
North Country	1980	4100
Florida	1983	1300
Natchez Trace	1983	440
Potomac Heritage	1983	700

- A secondary goal is to determine whether or not designation as a National Scenic Trail is an appropriate means of achieving the primary goal of long-term trail system viability.

The study engaged a full spectrum of trail stakeholders in an exploration of the trails as they exist today and their potential for future generations. GIS technology was used to map the trail and cross-reference the location with local landownership data in the 39 abutting communities, facilitating communication with trail landowners, in many cases for the first time.

The study team developed a set of principles based on the intentions of the study's Congressional sponsors, the operating principles of the National Park Service, and the input of trail stakeholders in Connecticut and Massachusetts. The principles are as follows:

- Meaningful investigation of the trail system's long-term viability can only occur with the full involvement of a wide range of trail advocates, landowners, and other interested parties.
- A particular emphasis of the study will be on strengthening existing partnerships and characteristics of use, maintenance, ownership, and voluntary stewardship.
- Respect for private property rights is a fundamental component of a successful study.
- Federal condemnation of land will not be considered as an option in establishing or protecting the trail system.

Overview of the Scope of Work

The major tasks identified and completed for the study were as follows:

- 1) Establish a detailed and current understanding of the MMM Trail System:
 - Map the existing trail system route using GIS and GPS technologies. Identify all landowners whose properties intersect the trail;
 - Identify the location and significance of natural communities, unique flora and fauna, soils, geology, topography, hydrology, known and potential archaeological areas, and historic resources;
 - Identify the location and quantity of land ownership types along the trail system, including private, corporate, municipal, conservation, state, and utility;



View from Peak Mountain, East Granby, Connecticut

- Identify the location and significance of features that make the recreational trail system experience unique, include scenic view points, multi-use areas, connecting trails, trail access points, road sections, and cultural and/or historic features.
- 2) Conduct a variety of public outreach activities designed to explain the study process and collect input, including:
 - Regional forums held in separate Connecticut and Massachusetts locations;
 - Written and/or verbal communication with municipal leaders and state legislators from each of the towns the trail system passes through;
 - Written and/or verbal communication with all landowners living along or directly abutting the trail system;
 - Meetings with state, corporate and utility landowners along the trail;
 - Establishment of a website to provide current information about the study process and progress.
 - 3) Research existing models and alternatives for successful long-distance trail management, protection, maintenance and administration among both designated and non-designated trail systems.
 - 4) Complete a blueprint for long-term management, protection and maintenance of the trail system based on a vision for the trail that reflects the concerns of property owners, trail user groups, and other stakeholders.
 - 5) Identify and evaluate broad management alternatives.

“in cooperation with interested interstate, State, and local governmental agencies, public and private organizations, and landowners and land users concerned.”

From the above five components this draft study report has been drafted for public review and comment.

D. Summary of Public Involvement and Participation

Extensive public involvement has been a central feature of the MMM Trail System Study, and is based on a recognition that meaningful investigation of the trail's long-term viability can only occur with the full involvement of a wide range of trail advocates, landowners, and other interested parties. Additionally, Sec. (5) (b) of the National Trails System Act directs that studies of trails under consideration for Federal designation shall be completed:

“in cooperation with interested interstate, State, and local governmental agencies, public and private organizations, and landowners and land users concerned.”

To achieve the primary and secondary goals of the feasibility study, the study has included many methods for public outreach and participation, as summarized below.

Quarterly Open Meetings of Trail Study Working Groups

Study Teams in both Connecticut and Massachusetts held public “working group” meetings on a quarterly basis throughout the study to keep trail stakeholders apprised of study progress and solicit input on work plan components. These meetings took place between the fall of 2003 and the spring of 2005.

In Connecticut, a single working group was formed and adopted the name “MMM Trail Study Steering Committee,” while in Massachusetts three separate working groups were formed by the Pioneer Valley Planning Commission (PVPC) and Franklin Regional Council of Governments (FRCOG), acting as consultants to the National Park Service. The quarterly meetings provided an effective vehicle for review, comment and insight on the development of study work products, beginning with the work plan itself and continuing through to the development of alternatives and production of the draft report. The development of the Blueprint for Management document received considerable attention, comment, and revision through these forums.

In Connecticut, the MMM Trail Study Steering Committee had fairly regular attendance from the following organizations and entities:

- Appalachian Mountain Club – Connecticut Chapter
- Central Connecticut Planning Agency
- Connecticut Department of Environmental Protection
- Connecticut Horse Council
- Connecticut Forest & Park Association
- Landowners (both individual and corporate)
- Local, non-profit land trust organizations
- Municipal government representatives
- New England Mountain Bike Association
- New England Orienteering Club
- Ragged Mountain Foundation

In Massachusetts, the Pioneer Valley Planning Commission (PVPC) convened one working group for the trail west of the Connecticut River (Hampshire County) and one working group for the trail east of the Connecticut River (Hampden County). The Franklin Regional Council of Governments (FRCOG) formed one working group for the Franklin and Worcester County sections of the trail.



Hikers on the MMM trail

The Massachusetts regional working group meetings had much more varied attendance over the course of the study. However, attendance was consistent from municipal representatives, property owners, and trail user groups. Individuals or representatives of groups who attended one of the meetings were automatically added to the mailing list to receive future meeting notices. Attendees included:

- Bay State Trail Riders Association
- Landowners (both individual and corporate)
- Local, non-profit land trust organizations
- Municipal government representatives
- New England Mountain Bike Association
- Snowmobile Association of Massachusetts

In both states, efforts to encourage participation were directed toward representatives of the communities through which the trail system travels, landowners along the trail, representatives of trail user groups, state agency representatives, trail maintainer organizations, and members of the general public who were interested in the project.

Trail Stakeholder Communications

As part of an ongoing effort to identify and contact all persons with a direct interest in the trail system (“stakeholders”), the Connecticut and Massachusetts study teams compiled a database containing the names of over 2,000 trail landowners, trail user groups, land trust organizations, local municipal officials, and other parties. During the study period a variety of outreach communications were delivered to these stakeholders, including:

- Announcement of the study and related activities
- Description of study goals, work-plan and timeline
- Description of frequently asked questions and answers
- Announcement of steering committee and regional working group meetings
- Solicitation of public comment on study activities
- Announcement of public forums
- Property owner questionnaire

Trail Stakeholder Meetings

During the course of the study, meetings were held individually with a number of key stakeholders to provide information about the study and to solicit input on issues concerning the trail system:

- Connecticut Department of Environmental Protection
- Connecticut Department of Public Health
- Connecticut Department of Transportation
- Connecticut Regional Water Utilities
- Massachusetts Department of Conservation and Recreation
- Corporate Landowners
- Land Trust Organizations
- Trail User Groups

In addition, the Connecticut study team met with representatives of municipal governments from seventeen of the twenty communities that the trail system passes through in Connecticut. The remaining three towns did not wish to meet, and received a packet of information to be shared among interested town officials.



View from MMM Trail in Connecticut

Typical meeting attendees included town selectmen, planning and zoning officers, recreation directors, environmental compliance officers, and representatives from natural resource commissions, land trusts, and trail user groups. Study team members provided a briefing on the study, a timeline for various activities, and materials to be posted or shared at municipal offices. Significant portions of each meeting were devoted to sharing of local concerns and to question and answer sessions. In Massachusetts, municipal officials were invited to attend all working group meetings.

Public Outreach Meetings

In late 2003 and throughout 2004, the Connecticut and Massachusetts study teams sponsored a series of public meetings designed to publicly introduce the trail study and solicit input on a variety of study and trail management issues. In Connecticut, three public forums were held in the northern, central, and southern regions of the state with approximately 200 citizens attending. In Massachusetts, three public forums were held: one in Hampden County, one in Hampshire County, and one in Franklin County. In addition, working committee meetings were held quarterly within the same areas.

Although the meeting formats varied slightly from state to state and region to region, the following agenda items were covered over the course of the public outreach meetings:

- Introduction of study purpose, background, objectives, principles, work plan components, and timeline.

- Description (using maps) of the trail system as it currently exists.
- Description of study tasks underway or completed, including trail system mapping, natural and cultural assessment reports, identification of current trail system recreational uses, and identification of trail system management issues.
- Solicitation of input on issues and concerns regarding the trail system, including maintenance, unauthorized use, signage, parking, and recreational use liability.
- Solicitation of input on the draft trail management blueprint.
- Presentation of findings from research on other long-distance trail systems.
- Distribution of trail study public materials, including a study brochure, question/answer document, vision statement, and management plan draft.
- Description of available methods for providing comment on the study process and trail system issues.

Data Collection from Trail Landowners

In 2004, two separate questionnaires were developed for use in Connecticut and Massachusetts. Each questionnaire was designed to gather input from property owners whose lands intersect (cross) or abut (lie near) the MMM Trail system.

The questionnaires sought to confirm the accuracy of trail property ownership data, to collect data on observed, allowed, and preferred trail uses, and to provide landowners with the opportunity to comment on the trail system and the study. Questionnaires were mailed in both states to property intersectors and abutters. In Connecticut, a follow-up postcard was mailed to encourage recipients to return the questionnaire.

Trail Study Public Website

A web site was developed for the purpose of disseminating public information regarding the study. The site (www.mmmtrail.org) has received over 4,000 separate visits since its inception. The key web site informational sections include a listing of study goals and principles, the study work plan, information on Connecticut Trail Study Steering Committee activities, a list of frequently asked study questions, photos and maps, and information on contacting study team members with questions and/or comments.



Mormon Hollow Brook along the MMM Trail in Wendell, Massachusetts



View from Summit House looking towards the Connecticut River

The Metacomet-Monadnock-Mattabesett Trail System

A. Development of the Trail

The earliest origins of the MMM Trail System in Connecticut and Massachusetts are largely unknown. Sections of trail in the lower elevations of both states probably originated as Indian footpaths that later were used by local hunters in search of game. It is known that some of the first sections of trail were located in areas that eventually became the cities of Meriden and Middletown in Connecticut.

Formal development and construction of individual sections of the Trail System began in the early 1930's. Over the next four decades, the MMM Trail System came to assume its present structure and route.

Connecticut

Organized trail construction and maintenance activities for the Metacomet and Mattabesett Trails officially began in the 1930's under the auspices of the Connecticut Forest and Park Association (CFPA). CFPA is the oldest non-profit conservation organization in Connecticut. Its mission is to conserve the land, trails and natural resources of Connecticut, particularly its woodlands, farms, and wildlife habitats.

CFPA was first organized as the Connecticut Forestry Association in 1895 and during its formative years worked to promote state legislation protecting forests. The nascent organization lobbied the state to appoint a forester, making Connecticut the first state in the nation to have one. The Connecticut Forestry Association also promoted laws to establish local tree wardens and protect shade trees.

In 1929, CFPA President Theodore Salisbury Woolsey sensed an emerging interest in hiking as a recreational activity and responded by creating CFPA's first trails committee. Woolsey appointed Edgar L. Heermance, a retired minister, as chairman of the committee, thus changing the direction of CFPA's work. At its first meeting on December 27, 1929, the committee agreed unanimously to create a system of hiking trails throughout the state to support growing public interest. With that decision, CFPA established the Blue-Blazed Hiking Trail System, which today consists of over thirty-five distinct trails totaling over 700 miles in length.

The creators of the Blue-Blazed Hiking Trails, being avid hikers and trail enthusiasts, brought considerable knowledge and experience to the task of setting up the Blue-Blazed Hiking Trail System. The trail system's colorful moniker references the blue paint used to mark the trails. On February 14, 1930, the committee voted to mark the trails with a distinctive shade of blue paint, one that Heermance had painstakingly mixed himself until settling upon a shade that could be seen at twilight. This unique hue is still used on the trails today.

On April 29, 1931, the trails committee voted to officially name the Meriden and Middletown sections of trail the Metacomet Trail and Mattabesett Trails, respectively, thus retaining a tradition of using Native American names for Blue Blazed Trails. The Metacomet Trail was named for the Indian Chief Metacomet, who directed many Indian raids throughout the Connecticut Valley region of northern Connecticut and Massachusetts. Frederick W. Kilbourne was one of the first trail managers (or section heads, as they were once known). Kilbourne, a librarian and associate editor of Webster's International Dictionary, was the first to formally blaze the Metacomet Trail through Meriden.

The Mattabesett Trail derives its name from the Native American word for Middletown. Karl P. Harrington was responsible for early construction and blazing of the Mattabesett, extending the trail to almost 50 continuous miles. Harrington, a professor at Wesleyan University, recruited the Wesleyan Outdoor Club to help create and maintain the Mattabesett Trail.

Massachusetts

By the 1950s, the Connecticut Forest and Park Association (CFPA) had succeeded in fully developing a significant percentage of the Blue-Blazed Hiking Trails System, including the Metacomet and Mattabesett Trails. It is believed that the Massachusetts section of the trail was established after discussions among CFPA members that a ridgeline trail connecting the Metacomet Trail to Mount Monadnock in New Hampshire would be a worthy project.

According to a July 1, 1993 article in The Springfield, Massachusetts Republican, "with Walter

Banfield as their leader, a corps of 15 hiking enthusiasts began laying out the (Massachusetts section of the) trail in 1951, taking up a dare to extend the Metacomet.” According to the article, the group worked every weekend for the next 15 years.

Walter Banfield was a professor of botany at the University of Massachusetts at Amherst (UMass), a resident of Shutesbury, and an avid hiker who had enjoyed the outdoors since childhood. He was also a member of Metawampe, the faculty hiking club at UMass. According to the Springfield Republican article, the route of the Metacomet-Monadnock Trail was determined by Banfield to follow “the beauty and attractiveness of the countryside.” Banfield is quoted in the article as saying, “I had no great vision of what it would be or what it would become. We had good beginnings. Mount Holyoke, for one, already had a good trail system.”

By the early 1960s, Banfield and his team finished the trail and published the first Metacomet-Monadnock Trail guide. The trail was described in the guide book using the United States Geological Survey (USGS) topographical maps as a base with the trail route over-laid in black.

B. Description of the Trail

The MMM Trail System consists of three largely contiguous trails: the Metacomet-Monadnock Trail, the Metacomet Trail, and the Mattabesett Trail. The trails collectively travel 190 miles in a north-south direction, from the Massachusetts-New Hampshire border south towards Long Island Sound. The portion of the Metacomet-Monadnock Trail included in the study is located entirely within Massachusetts, while the Metacomet and Mattabesett Trails are located entirely within Connecticut.

The Metacomet Trail in Connecticut follows a traprock mountain range running from the Hanging Hills of Meriden to the Massachusetts State line for approximately 57 miles. The Trail reaches elevations of over 1,000 feet at its highest point.

The Mattabesett Trail is approximately 53 miles in length. The trail begins at the Connecticut River, and roughly forms a large horseshoe as it travels south and west before assuming a northerly direction to its terminus at the Berlin Turnpike in Berlin. A road-walk then connects to the southern terminus of the Metacomet Trail.

The Metacomet-Monadnock Trail in Massachusetts is approximately 80 miles in length. The trail is located in Hampden, Hampshire, Franklin, and Worcester Counties, passing through 19 separate communities. The elevation of the trail varies from 100’ at its lowest point along the Westfield River in Agawam to 1,618 feet at its highest point on Mount Grace in Warwick. The trail enters New Hampshire at the state line and continues northward, eventually reaching the summit of Mt. Monadnock.

In order to understand the existing trail system, a detailed field survey and inventory was completed. In 2003 and 2004, a combination of regional planning professionals and volunteers hiked the trail system in both Connecticut and Massachusetts, utilizing a global positioning system (GPS) to record detailed data. The following information was collected and compiled into a geodatabase:

- General descriptions and photographs of the trails;
- Information on resources, scenic view sheds and other special assets;
- Physical characteristics including geology, hydrology, vegetation and wildlife;
- Cultural resources located along the trails or within close proximity;
- Wildlife habitats;
- Historic and archaeological features;
- Other characteristics that make the trail system unique.

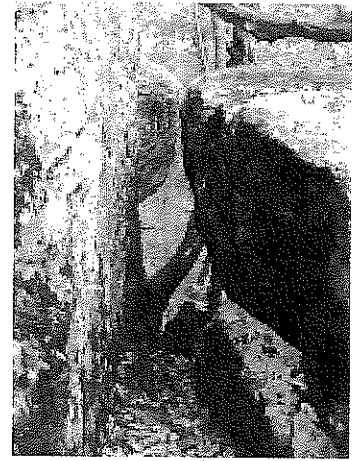
Other data collected during the field hiking included:

- Condition of the trails;
- Locations of trailheads and parking areas;
- Identification of problem areas needing attention;
- Trail route continuity;
- Maintenance issues.

A complete segment-by-segment description of the MMM Trail System, including information on connecting trails, may be found in Appendix A.

C. Management and Administration of the Trail

The Metacomet-Monadnock-Mattabesett Trail System is a publicly available trail that functions without cost to taxpayers. It exists largely due to private landowner permission, and is managed and maintained by volunteer organizations, their members, and other members of the public.



MMM Trail passage near Horse Cave



Blue-blazed trail in Connecticut

Connecticut

In Connecticut, day-to-day management responsibility for the Metacomet and Mattabesett Trails (and for Connecticut's entire Blue-Blazed Hiking Trail System) belongs to the Connecticut Forest and Park Association (CFPA), a non-profit conservation organization. As it has done for over seventy-five years, CFPA sets policies and oversees a network of volunteer trail managers.

No current management plan exists for the Metacomet and Mattabesett Trails. With one exception, CFPA does not own the lands that the Metacomet and Mattabesett Trails pass through. Where the trails traverse state lands they are subject to Connecticut state statutes and policies as administered by the state's Department of Environmental Protection (DEP). In practice, DEP approves trail placements and determines the types of recreational uses permitted. All maintenance and improvement tasks are left to CFPA to complete. This shared-management model also applies to land owned by municipal governments, corporations, non-profit organizations, and private citizens.

The primary management authority within CFPA for the Blue-Blazed Hiking Trails is its Trails Committee, which determines policy and implements actions for the trails with the stated goal of managing, maintaining, and protecting them for present and future users. The committee takes action consistent with the approved mission, plans and budgets of CFPA. Their responsibilities include assigning and training new trail managers, recommending long range activities and budgets for committee operations, and preparing and executing trail protection and maintenance plans.

Currently there are thirteen volunteer trail managers who, with the occasional assistance of other volunteers, oversee the care of the Metacomet and Mattabesett Trails. Trail managers come from a variety of backgrounds. Some are retirees, while others are members (and a designated representative) of local land trust organizations or trail user groups such as hiking clubs. Assistance is available to trail managers for major trail construction and relocation projects from two roving trail crews made up of CFPA volunteers.

Each trail manager is responsible for a variety of duties such as blazing, building bridges and erosion control measures, and trail clearing and brushing. They are also responsible for communicating with landowners and helping to try and

re-route trails when necessary. This is often a time consuming process that sometimes produces no suitable alternative route, forcing a trail manager to close a section of trail. In 2003 alone, trail managers and other volunteers donated over 600 hours of their time to work on the Metacomet and Mattabesett Trails.

CFPA also publishes the Connecticut Walk Book, a trail guide covering the entire Blue-Blazed Hiking Trail System. Since 1932, eighteen editions of the Walk Book have been published. A completely redesigned Walk Book was published in 2005, reflecting the latest information and maps for all trails including the Metacomet and Mattabesett.

Approaches to Trail Protection:

A current challenge in trail protection efforts involves trail closures due to unwilling landowners and development pressures. Because a significant portion of the Metacomet and Mattabesett Trails lie on private property, CFPA must work directly with landowners to ensure public access.

CFPA employs a variety of different types of agreements to protect the trail system, including conservation easements, rights of way, trail license agreements, and donations of land.

Conservation easements are restrictions placed on a piece of property to protect its associated resources. The easement is either voluntarily donated or sold by the landowner. It is legally binding, and may limit certain types of uses or prevent development from taking place on the land in perpetuity while the land remains in private hands. Conservation easements protect land for future generations while allowing owners to retain many private property rights and to live on and use their land.

CFPA currently has two easement agreements in the final stages of negotiation. Some towns and private land trusts have secured easements on significant tracts of land. The towns of Avon, Durham, Farmington, Guilford, Middlefield, and Simsbury have been active in obtaining easements or purchasing land which in turn may protect sections of the Metacomet and Mattabesett Trails.

Rights of way are less formal written agreements that are usually recorded in municipal property records. They often exist in perpetuity and transfer from old to new property owner when a parcel of land is sold.

The trail license agreement has proven to be successful, as it represents a revocable compact between an organization such as CFPFA and the landowner, documenting both parties' expectations for use and maintenance of the trail. To date, CFPFA has obtained at least four trail license agreements for the Metacomet and Mattabesett Trails. Additional, informal agreements exist with Northeast Utilities, the Hill-Stead Museum and the Town of Avon. CFPFA is currently pursuing trail license agreements with the Durham Conservation Commission and the towns of Farmington and Middlefield.

Private landowners understandably have many concerns regarding the public use of their land. Historically, many of these landowners did not live on the property in question and merely maintained their land as woodlots. Concerns typically involved the risk of fire and the proliferation of litter. To address these concerns and ultimately obtain permission to use their land, individual trail managers met with private landowners. After the meeting, most landowners allowed access across their land, often finalizing the agreement with a simple handshake or informal letter.

Today the job of securing landowner permission is a more complex matter. Landowners sometimes resist public access to their property out of liability concerns. However, in 1971, the General Assembly addressed this concern by enacting a landowner liability law (Connecticut General Statutes Sections 52-557), that (with exceptions) limits the liability of property owners who allow their land to be used for recreational purposes without charge. This critical legislation helps CFPFA to continue the Blue-Blazed Hiking Trail System on private lands without increased fear of liability.

Partnerships:

As the oldest non-profit conservation organization in Connecticut, CFPFA has found it advantageous to open lines of communication with corporations, private individual landowners, trail user groups, local land trusts, and other non-profit organizations to help facilitate constructive dialogue concerning the future of the trails. Discussions are held on trail management and maintenance issues, land protection strategies, educational opportunities, and other subjects. Partner groups that are involved in discussions and projects include:

- American Hiking Society
- Appalachian Trail Conference
- Appalachian Mountain Club

- Connecticut Agricultural Experiment Station
- Connecticut Department of Environmental Protection
- Connecticut Forest Stewardship Council
- Ensign Bickford Foundation
- Friends of Connecticut State Parks
- Green Mountain Club
- Meshomasic Hiking Club
- Metropolitan District Commission
- National Wildlife Federation
- National Woodland Owners Association
- Northeast Utilities
- New Haven Hiking Club
- Ragged Mountain Foundation
- Rockfall Foundation
- South Central Regional Water Authority
- Society of American Foresters
- University of Connecticut, College of Agriculture and Natural Resources
- USDA Forest Service
- Yale University School of Forestry

Massachusetts

In Massachusetts, the Appalachian Mountain Club (AMC) acts as the primary steward for the Metacomet-Monadnock Trail. The AMC is the oldest conservation and recreation organization in the United States, with over 90,000 members in total and over 3,400 members in western Massachusetts.

Soon after the release of the first Metacomet-Monadnock Trail guide book in the early 1960s, the Berkshire Chapter of the AMC assumed overall responsibility for maintaining and managing the trail. The Berkshire Chapter is an all-volunteer organization and is one of twelve chapters of the AMC in the northeast.

The Chair of the Berkshire Chapter's Trails Committee, who is also the Chair of the Metacomet-Monadnock Trail Committee, acts as the coordinator of all trail maintenance activities. The trail maintenance work is generally completed by approximately two dozen volunteers who are not necessarily members of the Berkshire Chapter of the AMC. Generally, the only qualifications for the trail maintenance crews are that they are committed and interested in spending time outdoors along the trail.

Although there is no formal trail maintenance and/or management plan currently in place, there is a process followed by the Berkshire Chapter of the AMC in its oversight of the Metacomet-Monadnock Trail. The Berkshire Chapter Trails Committee Chair recruits volunteer trail "adopters" who oversee the maintenance along a particular section of the trail. Generally, the trail



Looking out onto the Connecticut River from MMM Trail, Connecticut

sections (as defined in the AMC's Trail Guide) are divided and "adopted." Two sections of the trail are currently being maintained by the Pioneer Valley Hiking Club, but otherwise the trail is currently being maintained by individual adopters.

The role of the adopter is to complete three walk-thru or trail inspections for their section of the trail each year (spring, summer and fall). During each walk-thru the adopter will check for fallen limbs that may be blocking the trail, replace signs as necessary, and complete routine brush trimming to keep the trail open. Major maintenance tasks are reported back to the Trails Committee Chair so that group work days can be organized to complete any more large scale work projects that are needed. A webpage has also been established that enables hikers to provide feedback on the conditions of the trail. The Trails Committee Chair may then contact the appropriate adopter about the needed work.

An organizational meeting is held annually in January to plan for maintenance projects for the year. This meeting is advertised in order to attract new people who may be interested in providing help along the trail as well. In addition, a get together is usually held with the volunteers in June or July to coordinate other needed maintenance work and show appreciation for their efforts. The bi-annual meetings allow members time to discuss any issues or needed trail work. Decisions are made by consensus. Regular communication between Chapter members allows for ongoing discussions of trail issues and trouble shooting. Any changes that are made to the trails are relayed to the member whose responsibility includes the development and updating of the guide book and trail maps. A treasurer keeps track of the finances. Revenues that are generated from membership dues and the sale of the trail guide are used to print more trail guides and fund larger maintenance projects.

Approaches to Trail Protection

AMC's Berkshire Chapter employs a land protection approach that is similar to CFPA's in terms of its use of conservation easements, rights-of-way agreements, handshake agreements, and direct contact with landowners. The organization is also developing its first trail license agreement for a section of the Metacomet-Monadnock Trail.

The Berkshire AMC Trails Committee has also recently donated \$5,000 to the Mt. Grace Land Conservation Trust to assist its efforts in acquiring a 46 acre parcel of land in Northfield. The property contains a number of trails including the Metacomet-Monadnock Trail. The Berkshire AMC chapter has completed six such land protection projects using donations and profits from the sale of the Metacomet-Monadnock Trail Guide. Together the donations have protected several miles of the trail system.

Partnerships:

In Massachusetts, the work of AMC volunteers has been completed in collaboration with various partners. They include major landowners such as the managers of the Massachusetts Department of Conservation and Recreation (DCR) State Forests and Parks along the trail; conservation land trusts including the Mount Grace Land Conservation Trust and the Kestrel Trust.

In addition, organizations such as the Pioneer Valley Hiking Club have provided volunteer labor, assistance in maintaining the trail, and completed special projects. For example, the Pioneer Valley Hiking Club built a shelter off of the trail in Royalston. Another example of this collaboration in completing projects along the trail include the Berkshire Chapter of the AMC helping the manager of Wendell State Forest build a foot bridge to enable the trail to cross a brook.

D. Recreational Use of the Trail

The MMM Trail System is primarily used as a continuous hiking trail, with alternative uses (permitted or not) occurring on certain sections of trail. Overnight camping is permitted in a limited number of locations, usually on state park or forest lands. Public and private owners of land crossed by the trail retain ultimate control over what uses are allowed on the portion of the trail that crosses their property.

Connecticut

As the manager of the Metacomet and Mattabesett Trails in Connecticut, the Connecti-

cut Forest and Park Association (CFPA) has a trail use policy subcommittee that establishes recreational use policies. The current policies state (in part) that the Metacomet, Mattabesett and other trails in the CFPA Blue-Blazed Hiking Trail System are maintained as footpaths, and they "...are neither designed nor maintained to the standard necessary to accommodate hoof, bicycle, or motorized vehicle traffic."

CFPA acknowledges landowner uses that may differ from their policies for the trails. If, for example, a landowner permits horseback riding on his or her land and CFPA determines that the physical design of that section of trail is conducive to it, they (CFPA) will abide by the wishes of the landowner. If they determine that the trail is not conducive to a specific alternate use, they may seek to re-locate the trail.

In addition, the organization supports a number of diverse recreational use activities on the Metacomet and Mattabesett Trails, including: picnicking, running or jogging, outdoor photography, bird watching, wildlife viewing, snowshoeing and cross-country skiing, visiting cultural sites, and rock climbing. This support extends to hunting and camping where permitted by landowner. CFPA augments their support of such activities by providing education to hikers on safe trail use during hunting seasons and "leave no trace" camping practices.

CFPA acknowledges the use of motorized vehicles on the Blue-Blazed Hiking Trails by fire, police, rescue, and Connecticut Department of Environmental Protection vehicles in cases of emergency or when needed for enforcement, fire suppression or other purposes.

Recognizing Federal Universal Access laws, CFPA seeks to make sections of the Blue-Blazed Hiking Trails accessible to those who use wheelchairs and those who have difficulty walking where the host landowner has granted permission and where site and trail conditions (distance from trailhead, slope, wetness, rocks, roots, etc.) permit.

CFPA has employed a partnership approach to obtain more official support for their recreational use policies. The State of Connecticut has designated those portions of Blue Blazed Trails (including the Metacomet and Mattabesett) that cross state property as official State Hiking trails; with horse, bicycle and motorized vehicle use prohibited. The State of Connecticut also designated the entire Blue-Blazed hiking Trail System as an official State Greenway in 2001.

Use of motorized vehicles is a growing problem for most trail administrators. CFPA identifies motorized, illegal trespass as a "frequent occurrence" on certain sections of trails, and is supporting legislation to identify, develop and maintain specific areas for all-terrain and other motorized vehicle use.

Massachusetts

In Massachusetts, the Metacomet-Monadnock Trail is accessed by recreational users for a variety of passive and active opportunities, including hiking, snowshoeing, birding, horseback riding, wildlife and plant observation, cross country skiing, mountain biking, snowmobiling, and riding all terrain vehicles, (ATV).

Uses that are permitted on the individual sections of the trail are determined by the property owner hosting the trail. Although the trail route includes the use of abandoned roads and routes used by land owners for mechanized forestry equipment, hiking is a consistent and dominant use on the trail. It is the use for which the trail was developed, and for which it is currently maintained by the Berkshire Chapter of the AMC. Along some sections of the trail mountain biking, snowmobiling, and other motorized uses are occasionally permitted by owners. In many spots such uses are not physically possible because of the narrow, steep and rocky nature of the terrain. Like many trail systems, conflicts between recreational users can occur. Landowners have the ability to restrict certain user groups on their land, such as horseback riders, while permitting other groups, such as hikers.

On the Hampden and Hampshire County sections of the trail it was noted that passive and active recreation users access all segments of the trail, but higher concentrations of ATVs and mountain bikers can be found in a variety of locations. The Mount Tom Reservation is one area where there have been conflicts between hikers and mountain bikers, while sections of the trail in Holyoke are more frequently used (with or without permission) by all-terrain vehicle riders.

In Franklin County and Royalston approximately 17.5 miles of the trail travels through state forests including the Wendell, Erving, Northfield, Warwick, Mount Grace and Royalston State Forests. These forests are managed by the Massachusetts Department of Conservation and Recreation (DCR). DCR permits horseback riding, mountain biking and snowmobiling in the Wendell, Erving, Northfield, Warwick, Royalston, and Mount Grace State Forests. However, these activities do not occur on all

portions of the Metacomet-Monadnock Trail within these state forests because sections of the trail are too steep for uses other than hiking.

DCR does not permit all-terrain vehicle use in any of these state forests. However, a representative of DCR noted that un-permitted ATV use occurs regularly in the Erving, Warwick, and Mount Grace state forests and that such use has become an enforcement issue. In general, motor bikes and all-terrain-vehicles have become more common on the trail and are considered to be the two trail uses with the greatest negative impacts. The tire ruts created by these vehicles can lead to erosion problems. In addition, in some instances the riders of these vehicles have created side trails to bypass a footbridge or other route intended for hikers, which results in braided trails systems. This in turn expands the impact the trail has on bordering vegetation and habitats.

Research on Recreational Trail Use:

Within the resources and time constraints of the Trail Study an effort was made to develop an

understanding of the types and frequency of recreational trail use along the MMM Trail System. During the summer of 2004, NPS and its study partners developed and distributed a questionnaire to Connecticut and Massachusetts property owners whose lands intersect (cross) or abut (lie near) the trail system.

The questionnaire responses received indicated that a wide variety of recreational uses (permitted or not) have been observed along the trail system by property intersector and abutters. The types of uses observed and the number of observations of each use (by responding land parcels) were reported as follows, see Table 2

Property owners (both intersector and abutters) strongly indicated that hiking, other passive, and non-motorized uses of the trails are preferred. The types of uses desired and the number of responses (by land parcel) desiring them were reported as follows, see Table 3.

Table 2. Types and amount of observed recreational uses along the MMM Trail system in Connecticut and Massachusetts

Types of Observed Use	Number of Responses	Percentage of Responses
Hiking	482	87.4
Mountain biking	240	43.5
All-terrain vehicles	174	31.5
Horseback riding	145	26.3
Other passive uses*	139	25.2
Hunting	120	21.7
Snowmobiling	92	16.6
Other motorized uses**	22	3.9
Total Responses	1414	

* "Other passive uses" refer to a variety of uses including but not limited to: camping, cross-country skiing, dog-walking, nature photography, picnicking, rock climbing, and wildlife observation.

** "Other motorized uses" refers to truck and motorcycle uses.

Source: National Park Service, PVPC and FRCOG questionnaires, 2004

Table 3. Types and amount of observed recreational uses along the MMM Trail system in Connecticut and Massachusetts

Types of Observed Use	Number of Responses	Percentage of Responses
Hiking	468	84.9
Mountain biking	163	29.5
Other passive uses*	147	26.6
Horseback riding	144	26.1
Hunting	52	9.4
Snowmobiling	46	8.3
All-terrain vehicles	34	6.1
Other motorized uses**	7	1.2
Total Responses	1061	

* "Other passive uses" refer to a variety of uses including but not limited to: camping, cross-country skiing, dog-walking, nature photography, picnicking, rock climbing, and wildlife observation.

** "Other motorized uses" refers to truck and motorcycle uses.

Source: National Park Service, PVPC and FRCOG questionnaires, 2004

E. Demographics of Adjacent Trail Towns

Connecticut

The Metacomet and Mattabesett Trails in Connecticut travel through some of the more densely populated and developed areas of the state, while also crossing rural and lightly populated areas. Generally suburban in nature, these communities (similar to Connecticut as a whole) show signs of significant growth pressures occurring over the last two decades that are changing the area's landscape.

The communities of New Britain, Meriden and Middletown are considered to be small cities in their own right, with fairly high population densities and urban downtown areas. Avon, Berlin, Bloomfield, Farmington, Plainville, Southington, and West Hartford are bedroom communities for the City of Hartford, while North Branford, Guilford, Madison, and Wallingford serve as growing bedroom communities for New Haven and parts of upper Fairfield County. The towns of Durham, East Granby, Middlefield, Haddam, and Suffield have retained more of their rural nature than other Connecticut trail towns.

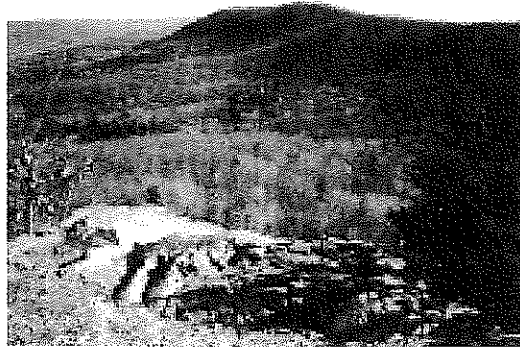
Most of the municipal economies are led by businesses in the service sector, followed by trade and manufacturing. The communities vary in size from 10 to 47 square miles, each operating independently and governed by a board of chief elected officials that is responsible for overall town management. A number of different town boards and commissions can address issues affecting the trail including the chief elected officials, conservation commissions, open space commissions, recreation commissions, planning commissions, and zoning commissions.

Massachusetts

In Massachusetts, the Metacomet-Monadnock Trail travels through communities that are urban, suburban and rural in character.

The southernmost section of the trail passes through the communities of Southwick, Agawam, Westfield, West Springfield, and Holyoke in Hampden County. These municipalities are mostly suburbs to the cities of Springfield, Massachusetts and Hartford, Connecticut and provide a mix of rural landscapes and urban amenities to the residents who live there. All the communities have in recent years have seen a sharp decline in the farming industry and an increase in residential and commercial development.

In Hampshire County, the trail passes through the communities of Southampton, Easthampton,



View from Mount Norwottuck on MMM Trail in Amherst, Massachusetts

Hadley, South Hadley, Amherst, Granby, Pelham and Belchertown, primarily along the ridgetop of the Mount Holyoke Range. These communities are more suburban and rural in character, and many of them continue to have a significant farming industry.

To the north, the trail travels through Franklin County and a small section of Worcester County (in the town of Royalston) before passing into New Hampshire. The Franklin and Worcester County sections of the trail pass through Shutesbury, Leverett, Wendell, Erving, Northfield, Warwick, and Royalston. These towns were originally settled in the mid-to-late eighteenth century, and still possess the historically rural character of that time period. Today, the towns remain relatively small and primarily rural, with less dense development patterns.

F. Population:

Along its entire length, the MMM Trail System passes through some of the most densely populated parts of the country. According to the 2000 U.S. Census, the 39 municipalities that the trail system is located in have a combined population of 775,604 people and an average population of 686 per square mile, over eight times the national average of 80 people per square mile. Population in the 39 towns grew 3.1% between 1990 and 2000, while overall population growth for the same period nationally was over 13% and in Connecticut and Massachusetts combined was 4.8%. Population growth in towns along the trail system varied greatly from over 22% to -9%.

When considering how many people live within certain distances from the trail, the dichotomy of a semi-wilderness trail experience located in the middle of a heavily populated area becomes clear. Nearly two million people live within 10 miles of the trail, and within 15 miles that number increases to over 2.5 million people. A more detailed summary of population by state follows.

Connecticut

The majority of the population along the MMM Trail System is located in Connecticut. In the twenty communities in Connecticut that MMM Trail System passes through, the total population was 526,575, according to the 2000 U.S. Census, representing 68% of the population for the entire 39 town area.

Population per town ranged from 4,203 to 71,538 with an average population of 26,329, and a median of 18,901. Population is less than 24,000 for 70% of the towns, and 20% have less than 8,000 people. While Connecticut ranks 4th in the nation with a population density of 703 people per square mile, the 20 communities through which the trail passes had a combined population density of 923 people per square mile, nearly 24% higher than the state average.

Between 1990 and 2000 population in the twenty town region, which represents approximately 15.5% of total state population, grew 3.7%, fairly consistent with overall statewide growth of 3.6% during the same period. Population change varied by town over the ten year period from -5.2% to 18.6% with 25% of the communities, primarily mature suburban and urban areas, having virtually no growth or negative growth, while 40% of the communities had growth rates at least twice the state average.

When considering population within certain distances from the trail, it becomes clear that the

trail provides a substantial outdoor recreational opportunity for a significant number of people in Connecticut. According to the 2000 U.S. Census:

- 811,000 people live within 5 miles of the trail;
- 1.35 million people live within 10 miles of the trail;
- 1.85 million live within 15 miles of the trail.

See Table 4.

Massachusetts

The Metacomet-Monadnock Trail passes through nineteen communities in Massachusetts. According to 2000 U.S. Census data, the total population of these communities is 249,029. The population per town ranges from 750 to 40,072, with an average population of 13,107 and a median population of 6,132 (see table below). Fifty-eight percent of the towns have a population of less than 12,000 for, with 37% having less than 2,000 people. Although Massachusetts ranks 3rd in the nation with a population density of 810 people per square mile, the Metacomet-Monadnock Trail travels through more rural area of the state. The 19 communities through which the trail passes have a combined population density of 453 people per square mile, 44% lower than the state average.

Between 1990 and 2000 population in the 19-town region, which represents approximately 4% of total state population, grew 2% less than half of the overall state growth rate of 5.5% during the same period. Population change varied by town

Table 4. Population Statistics: Metacomet-Mattabesett Trail in Connecticut 2000

Town Name	2000 Population	% Change 1990-2000
Avon	15,832	13.60%
Berlin	18,215	8.50%
Bloomfield	19,587	0.50%
Durham	6,627	15.50%
East Granby	4,745	10.30%
Farmington	23,641	14.70%
Guilford	21,398	7.80%
Haddam	7,157	5.70%
Madison	17,858	15.30%
Meriden	58,244	-2.10%
Middlefield	4,203	7.10%
Middletown	43,167	0.90%
New Britain	71,538	-5.20%
North Branford	13,906	7.00%
Painville	17,328	0.40%
Simsbury	23,234	5.50%
Southington	39,728	3.10%
Suffield	13,552	18.60%
Wallingford	43,026	5.40%
West Hartford	63,589	5.80%
Total	526,575	3.68%
Statewide	3,405,565	3.60%

Source: U.S. Census Bureau, 2000

over the ten year period from -8.9% to 22.6% with 58% of the communities having growth rates less than the state average, while 26% of the communities had growth rates at least twice the state average.

As the trail travels further north through Massachusetts, population becomes substantially less dense. The seven northern towns the trail passes through in Franklin and Worcester Counties represent only 4.4% of the total trail town population. This section of the trail is significant because it provides access within a short drive for many trail users to a recreational resource that is located in a pristine, rural environment with vast areas of unfragmented forest. In Massachusetts, according to the 2000 U.S. Census:

- 363,000 people live within 5 miles of the trail;
 - 612,000 people live within 10 miles of the trail; and
 - 690,000 people live within 15 miles of the trail.
- See Table 5.

G. Land Use

Of the 723,000 acres of land within the 39 town area the MMM Trail System passes through, 44% is forested, 20% is considered a combination of open land, agricultural and turf, and another 20% is considered developed. Overall land use trends in both states show an ongoing conversion of forest and open land to developed land over the last two to three decades. While the format of the land use data was somewhat different in each state, both data sets provide a strong

indication that residential, commercial and industrial growth continues to expand, while forest land, farmland and other open areas are in decline. Over a 28 year period between 1971 and 1999 Massachusetts trails towns lost 13,452 acres of forest land and 7,871 acres of agricultural land, while gaining 19,243 acres of developed area. In Connecticut trends were similar over a 17 year period between 1985 and 2002 where trail towns lost 11,965 acres of forest and gained 10,930 acres of developed area.

Connecticut

Overall land use patterns and trends within the 20-town Connecticut area show that, as with the rest of Connecticut and southern New England, there are ongoing growth pressures that are causing broad changes in the landscape. The trail corridor includes some of the most heavily developed areas of the state.

As of 2002, nearly 25% of the land area of the 20 Connecticut municipalities that the Metacomet and Mattabesett Trails pass through is considered developed, while statewide the figure is estimated at 19%. Developed area ranges widely by town from 10% to 68%. At the same time forest cover accounts for 45% of the 20 town area, while statewide it is over 55%. The range of forested area by town goes from a low of 11% to a high of 72%. Changes in land cover, which reflect to a certain extent growth pressures, tended to mirror statewide changes. Between 1985 and 2002 the twenty town region lost over 13,000 acres, or 7%, of its forest cover while increasing developed

Table 5. Population Statistics: Metacomet-Mattabesett Trail in Massachusetts 2000

Town Name	2000 Population	% Change 1990-2000
Agawam	28,144	3.00%
Amherst	34,874	-1.00%
Belchertown	12,874	22.58%
Easthampton	15,994	2.94%
Erving	1,467	6.50%
Granby	6,132	10.19%
Hadley	4,793	13.28%
Holyoke	39,838	-8.85%
Leverett	1,663	-6.8%
Northfield	2,951	4.0%
Pelham	1,403	2.18%
Royalston	1,254	9.3%
Shutesbury	1,810	15.9%
South Hadley	17,196	3.06%
Southwick	8,835	15.23%
Warwick	750	1.4%
Wendell	986	9.7%
West Springfield	27,899	1.31%
Westfield	40,072	4.43%
Total	249,029	2.0%
Statewide	6,349,097	5.5%

Source: U.S. Census Bureau, 2000

area by nearly 11,000 acres, or 14%. This compares statewide with a decrease of nearly 6% of forested area and an increase of almost 15% of developed area.

Within the twenty Connecticut towns, the developed area increased from 3.5% to nearly 28%, with three quarters of the towns experiencing an increase in developed area of more than 10%. All 20 towns saw a decrease in forested area ranging from -2% to over -15%, with 75% of the towns experiencing forest loss greater than the state average. See Table 6.

Massachusetts

In Massachusetts, an analysis of land use data for the years 1971, 1985 and 1999 revealed that the towns that the Metacomet-Monadnock Trail passes through continue to see a loss of farmland, forests, and other previously undeveloped land. In addition, there was an increase in developed land without a significant increase in population.

In 1999, 16% of the land within the 19 Massachusetts towns the trail passes through was considered developed, while statewide this figure was estimated at 23%. The percentage of developed area ranged widely by town, from under 3% to over 47%. At the same time forest cover accounted for 65% of the 19 town area, while statewide forest cover stood at 57%. The percentage of forested area by town ranged from 28% to over 90%. Between 1970 and 1999, residential, commercial, and industrial development increased 52% or 19,243 acres, while the acreage of farmland declined by 18% or 7,873 acres. Forests also declined by over 5%, or 13,543 acres. At the same time, the total population for the 19 towns increased by less than 3%.

Within the 19 Massachusetts towns along the trail, the increase in developed area ranged from 18% to over 157%. Fifty three percent (53%) of

the towns experienced an increase in developed area of more than 50%. All nineteen towns saw a decrease in forested land, which ranged from -2% to over -22%, with 32% of the towns experiencing forest loss greater than the state average. As noted in the population statistics, the northern Franklin and Worcester County towns are the most rural along the entire two-state trail route, with forest and agricultural land use dominating between 83% and 92% of the landscape in each town. Residential land use for these towns ranges from 6.6% to 2.3%. See Table 7.

H. Community Involvement with the Trail

Each of the 39 communities that the MMM Trail System passes through in Connecticut and Massachusetts has its own relationship to the trail. While primarily viewed as a recreational asset, some local governments have, through town planning efforts, taken steps to more formally recognize the trail system as an important natural, recreational and historic resource.

Connecticut

In Connecticut, the community connections between the trail system and towns are well established, with a range of citizens using the trail for recreational, social and educational purposes. Local hiking clubs such as the New Haven Hiking Club, Green Mountain Hiking Club, and the Connecticut Chapter of the Appalachian Mountain Club regularly sponsor guided hikes along the Metacomet and Mattabesett Trails for their members. Other organized recreational clubs, including rock climbing, snowmobiling, and horseback riding clubs use approved portions of the trails for their activities. The trails are regularly used by Boy Scout troops as an educational setting for earning merit badges.

School programs involving the trails range from informal class trips to more organized programs. An example of the latter is the Metacomet Ridge

Table 6. Metacomet-Mattabesett Trail in Connecticut Landcover Profile and Change in Landcover for 20 Town Trail Region-1985-2002

Landcover Type	2002 Landcover	Change in Landcover 1990-2000
Developed	23.43%	14.26%
Turf & Grass	7.63%	-1.28%
Other Grass & Ag	14.05%	2.16%
Forest (Deciduous & Coniferous)	45.21%	-6.61%
Water	2.60%	-10.97%
Non-forest Wetland	0.42%	73.03%
Forested Wetland	3.75%	-8.40%
Tidal Wetland	0.74%	2.21%
Barren Land	1.64%	52.53%
Utility ROW	0.52%	-2.68%
	100.00%	n/a

Source: UConn Center for Land Use Education and Research, 2002

Interdistrict Academy (MRIA), which brings approximately 500 middle and high school students each school year from eight different central Connecticut school districts to collaborate on an interdisciplinary study of the Metacomet Ridge.

This program involves multiple, interdisciplinary field studies, interschool visits and exchanges of information through technology. The participating students work in interdistrict teams to collect, organize, and analyze data and to produce reports that can be used by the Connecticut Department of Environmental Protection (DEP). The program enables students from a wide variety of racial, ethnic, and sociological backgrounds to acquire and use many specific scientific skills that are highly technical in nature. The students use Global Positioning System (GPS) technology for determining locations, and scientific equipment in the field to collect information on the Ridge's unique geology, plant life and animal habitats. Computers are incorporated to study the Ridge remotely using Landsat satellite images and Geographic Information System (GIS) software and databases. Citizens in a number of Connecticut towns are also involved with the Metacomet and Mattabesett Trails through participation in National Trails Day activities. The program was conceived by the American Hiking Society to focus attention on trails across the United States. In Connecticut alone, over 100 events were organized by CFPA in 2005 on a single day. The types of events varied from guided trail walks to work parties conducting trail maintenance. The events were hosted at sites all over Connecticut, including several on the Metacomet and Mattabesett Trails.

Inclusion in Town Plans:

In 2001, the Metacomet and Mattabesett Trails were designated by Connecticut's governor as



View of trail on Mount Holyoke range

official State Greenways. As such, they are included in the "State Plan of Conservation and Development" that is prepared by the Connecticut Office of Policy and Management. Municipalities are required to use this advisory document as a guide when preparing their own plans of conservation and development.

In each Connecticut municipality, state law requires that a plan of conservation and development be developed, maintained, and updated every ten years. These plans generally seek to promote the orderly and beneficial growth of towns through conservation of existing assets and through provision for, and regulation of, housing, commercial uses, mixed land uses, and recreational needs. The plans often reflect the desire of communities to promote economic growth while maintaining a sensitivity to quality-of-life and environmental issues.

Based on a survey of conservation and development plans, 11 of the 20 Connecticut towns surveyed had incorporated language discussing the importance of the Metacomet or Mattabesett Trails in their plans. An example of such language, taken from the Town of Farmington's 1995 Plan, reads as follows:

Table 7. Land Use Change in Massachusetts Trail Towns: 1971-1999

Land Use	1971		1985		1999		1971-1999	
	Acreage in Town	% in Town	Acreage in Town	% in Town	Acreage in Town	% in Town	Acreage Change	% Change
Forest	240,821	68.31%	233,355	66.25%	227,278	64.53%	-13,452	-5.53%
Agricultural	43,776	12.43%	41,217	11.70%	35,903	10.19%	-7,871	-17.98%
Other Open Space & Recreation	30,428	8.64%	31,615	8.98%	32,602	9.26%	2,080	7.38%
Residential	30,020	8.52%	37,279	10.58%	46,200	13.12%	16,182	53.91%
Commercial Industrial & Infrastructure	7,185	2.04%	8,763	2.49%	10,248	2.91%	3,061	42.60%
Total Acreage	352,231	100%	352,231	100%	352,231	100%	0	

Source: UConn Center for Land Use Education and Research, 2002

The Metacomet Trail crosses through the eastern portion of the Town of Farmington for approximately 5.5 miles. Such a trail system would be extremely difficult, if not impossible, to reestablish today. Farmington, therefore, possesses a trail of great importance not only to its own residents, but to Connecticut as a whole. For most of its length through Farmington the trail exists due to the willingness and support of private property owners. The continued support of these private property owners should be encouraged, while conservation easements or open space acquisition should be considered in some cases to ensure the trail's permanent protection.

Source: Town of Farmington Plan of Conservation and Development, 1995.

At least nine of the Connecticut trail towns are currently in the process of updating their plans of conservation and development. In some instances, language has been proposed for these plans by town officials or by private citizens that refers specifically to the Metacomet or Mattabesett Trails. An example of language proposed in the town of Wallingford reads as follows:

The Mattabesett Trail passes through the town of Wallingford, providing natural, cultural, and recreational benefits to its citizens. The town of Wallingford views the Mattabesett Trail system as an important component of its recreational and open space resources. Accordingly, the future viability of the trail system should receive priority within any recreational and/or open space planning activities.

Source: Connecticut Forest and Park Association

Towns have also worked together to protect the traprock ridgelines over which much of the Metacomet Trail travels. A statewide focus on ridgeline protection was initiated in 1998 with the creation of the Metacomet Ridge Compact. The Compact serves as a guide for local land use decision-makers when discussing land use issues in ridge-line areas. Ultimately signed by eighteen towns out of the nineteen ridge-line communities, this agreement committed local conservation commissions to:

- Conduct natural resource inventories in ridge-line areas.
- Prioritize these areas for protection and enter them into local open space, conservation and development plans.
- Help planning and zoning commissions to rework zoning and subdivision regulations.
- Educate citizens within their communities about the value of traprock ridge-lines.

Massachusetts

In Massachusetts, there are a number of community groups that are involved in preservation of the trail system, including conservation organizations, hiking clubs and youth groups. These groups organize hikes and activities to provide opportunities for outdoor recreation and stewardship of the trail.

The Pioneer Valley Hiking Club and the Friends of the Mt. Holyoke Range are hiking and backpacking clubs that help maintain several portions of the trail. The Pioneer Valley Hiking Club offers outdoor recreation activities centered on hiking in New England. They are committed to land stewardship and low-impact camping. The Friends of the Mt. Holyoke Range organizes hikes and maintains 11 miles of trail along the Mt. Holyoke Range.

The Berkshire Chapter of the Appalachian Mountain Club recruits and manages a group of volunteer "trail adopters" who maintain the trail. Two to four times a year work parties are held to complete trail maintenance and improvement projects. AMC also hosts a Youth Opportunities Program that provides training for young workers to lead groups into the outdoors. The program covers technical camping and leadership skills, and contains an environmental awareness component. The Holyoke Boys and Girls Club and the Bright Side program of the Sisters of Charity of Providence also help maintain sections of trail, under the supervision of the AMC. The goal is to bring kids who otherwise would have no interaction with nature into the outdoors.

Inclusion in Town Plans:

A research survey of conservation and development plans for each of the 19 Massachusetts trail towns revealed numerous references to the Metacomet-Monadnock Trail. Examples of such references include the following:

- The 1997 Southwick Master Plan discussed a connection between the Metacomet-Monadnock Trail and the Southwick Rail-Trail, which at the time was still in its planning stage.
- The 1999 Holyoke Master Plan emphasized the importance of protecting natural resources along the Mount Tom and East Mountain Ranges, which include a long segment of the Metacomet-Monadnock Trail. It addressed the need for a planning process to identify parcels that merit permanent preservation and parcels where development might occur without damaging natural resources.

- The 2001 Agawam Open Space and Recreation Plan made recommendations to protect and preserve Provin Mountain and the portions of the Metacomet-Monadnock Trail that run along its ridge. The mountain is relatively undeveloped due to its steep slopes and lack of public services. The report stated that the town will assist the Commonwealth of Massachusetts in its efforts to maintain the trail for public use.
- The 2002 Pelham Open Space and Recreation Plan identified the need to preserve access to lands and trails. The plan stated that numerous trails are minimally protected or unprotected, including abandoned roads, minor trails, and the Metacomet-Monadnock Trail. These trails were stated to be vulnerable to destruction by development and incompatible forestry practices.
- The existence of the Metacomet-Monadnock Trail is noted in the Shutesbury Open Space and Recreation Plan (1999), which is currently being updated by the town's Open Space Committee.
- The Metacomet-Monadnock Trail is mentioned in the Leverett Open Space and Recreation Plan. The town currently owns the Roaring Brook Conservation Area that the trail travels through.
- The Trail System is discussed in the Wendell Open Space and Recreation Plan as a resource worthy of future protection.
- There are numerous references to the Metacomet-Monadnock Trail in the town of Erving Open Space and Recreation Plan. The plan also mentions that the town is interested in developing a greenway recreational trail that could possibly link with the Metacomet-Monadnock Trail.
- The Warwick Open Space and Recreation Plan discusses the trail as it travels through Mount Grace State Forest to the north and west of Warwick Center. The plan also mentions hiking, cross-country skiing, horseback riding and snowmobiling trails that connect to the Trail.
- The trail is mentioned in the 2004 Royalston Open Space & Recreation Plan, Regional Trails section. The plan notes that a short section of the Metacomet-Monadnock Trail passes through the town and is maintained by the Appalachian Mountain Club's Berkshire Chapter.

I. Natural and Cultural Resources

The MMM Trail System hosts an array of diverse eco-systems, natural resources, and culturally-significant features. Resource specialists in Connecticut and Massachusetts conducted separate natural resource assessments of the trail system in 2004 and 2005. A summary of findings for both states follows. The full natural resource reports, offering additional information on topics including soils, climate, and rare and endangered species may be found in Appendix B.

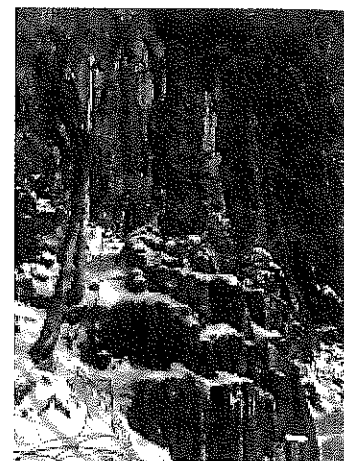
Geology and Glacial Geomorphology

The Metacomet Range is one of the best places in the world, and the only area on the eastern seaboard with a developed trail system, to view a broad array of well-preserved volcanic and sedimentary features such as columnar basalt. The term "trap rock," used to describe this columnar basalt, derives from the Swedish word, "trappa," meaning "step." Towers of columnar basalt create the precipitous, west-facing cliffs so characteristic of the Metacomet Range. Upon exposure to air, the iron-rich minerals of basalt turn a brownish rusty color.

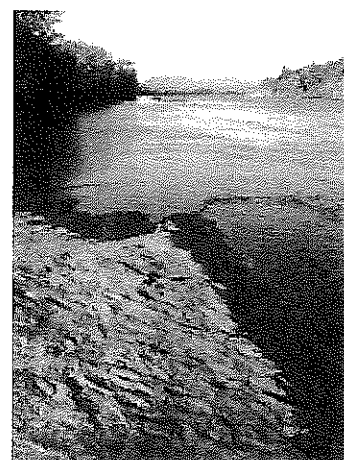
Other volcanic features of interest include pillow lava (magma that instantly cooled into rounded shapes as it bubbled into a water body) and lava tubes (formed as surface lava cooled while underground lava continued to flow), both of which are especially well exposed where the Metacomet Trail passes through Talcott Mountain State Park in Simsbury, Connecticut.

The sedimentary layers of the Metacomet Range hold their own fascination, principally in the form of fossils. Dinosaur footprints abound in certain areas, including the Mirror Lake area in Hubbard Park, Meriden, Connecticut, and in the sandstone bedrock at Dinosaur Footprints Reservation to the east of Mt. Tom, Massachusetts. Fossils of bony fish remain on Totoket and Pistapaug Mountains in Durham, Connecticut, reminders of when fish abounded in stagnant tropical lakes of the late Jurassic period.

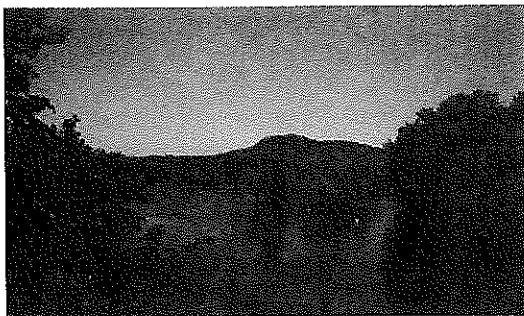
Glaciers made multiple advances through central Connecticut and Massachusetts between 2.3 million and 16,000 years ago, creating ice sheets more than a mile deep. Dragging enormous quantities of sediment and rock over the summits of the Metacomet Range and other local highlands, ice sheets rounded and scarified the bedrock surface; these scratches are still visible on Metacomet summits today. Glacial erratics, large boulders transported and strewn about by glaciers, are frequent features along the Trail.



Trap rock ridges on East Peak, Connecticut



Dinosaur footprints along the Connecticut River, Massachusetts



Mount Holyoke Range and Connecticut River in Massachusetts

Glacial till, the predominant soil type of the region, is a mixture of materials of varying size and composition – from sand grains to boulders – brought and deposited by the expanding and contracting rivers of ice. The underlying bedrock of traprock (basalt) results in soils that are near-neutral (circumneutral) in acidity. Circumneutral soils result in a number of plant communities that are rare or non-existent in the rest of the state. Other kinds of bedrock in these ridges include sandstone and shale that result in more acidic plant communities.

Hydrology

Fissuring and faulting of the basaltic bedrock, and interbedding with sedimentary layers, creates complex drainage patterns along the Metacomet Range. Precipitation evaporates quickly from the exposed summits. Off the summits, water drains rapidly through talus and glacial till, finding routes through bedrock crevices until it encounters impermeable strata. Water tends to collect at the surface along these bedrock shelves, forming vernal pools (seasonally flooded depressions), seeps, and more extensive wetlands.

The scattered vernal pools along the trail are temporary bodies of water that provide critical habitat for many vertebrate and invertebrate wildlife species. Many vernal pools are filled up by spring rains and snowmelt and dry up during the hot, dry month of summer. Vernal pools constitute a unique and increasingly vulnerable type of wetland.

The valleys associated with the Metacomet Range often constitute important groundwater recharge areas for drinking water. Valleys formerly covered by glacial lakes are particularly valuable recharge areas, as deep coverage of clay and gravel protects aquifers to a certain degree from direct surface contamination. No fewer than eight drinking water reservoirs occur in association with the range.

The MMM Trail System crosses three of New England's premiere rivers: the Connecticut, the

Farmington, and the Westfield. It also skirts around numerous ponds and public water supply reservoirs, countless babbling brooks, wetlands, vernal pools, and waterfalls. Portions of the Farmington and Westfield Rivers have been federally designated as National Wild and Scenic Rivers.

The Connecticut and Westfield Rivers are of special note. The Connecticut is New England's longest river, running 410 miles from the Canadian border south through Vermont, New Hampshire, Massachusetts and Connecticut to Long Island Sound where it meets the Atlantic Ocean. The huge watershed encompasses 11,260 square miles, with 148 tributaries, including 38 major rivers and numerous lakes and ponds. The river was designated a national American Heritage River by President Clinton.

Flowing through a break in the trap rock ridge, the Westfield River is the first designated National Wild and Scenic River in Massachusetts. The watershed is composed of 23 communities, 330,000 acres of land, 98,000 people, 89 state-listed rare species, 19 state forests and parks, 630 miles of rivers and streams, and hundreds of miles of trails and scenic roads. The watershed extends from the Berkshire Mountains to the Connecticut River. The Westfield River is also Massachusetts's only regenerating Atlantic Salmon habitat.

Biological Richness

The MMM Trail System traverses undulating terrain with numerous climbs and descents from sea level to over 1,600 feet. It crosses traprock ranges, valleys, open waters, streams, and wetlands that together create habitats for a wide array of species.

Two major attributes explain the biological richness and significance of the environments along the trail: 1) high diversity of landforms; 2) high connectivity among parcels that are protected for conservation purposes or that suffer minimal lasting damage from human disturbance.

Because the trail system visits such varied and unusual terrain, it is home to a concentration of plant and animal species, several of which are state-listed or globally rare. In fact, the trail system and its environs constitute a "hotspot" in the northeastern United States for rare and declining species.

The Silvio Conte National Fish and Wildlife Refuge, for example, has identified the Mt. Tom and Mt. Holyoke Range areas in Massachusetts as "special focus areas" containing significant biological features. The MMM Trail System

crosses both mountain ranges, which, according to the Conte Refuge, contain over 30 rare plant and animal species. Additional information concerning biological features along the Trail system may be found in Appendix C.

Vegetation

The traprock ridges along the Connecticut River Valley have a high diversity of plant communities and species. Traprock ridges have a characteristic ecology due to their exposed summits with little or no soil, steep rocky cliffs with scattered small ledges and cracks, and a talus slope built from boulders that have broken off the cliff. A few stunted trees grow on the summits including red cedar, dwarf oak, hickory, and white ash. Forests dominated by hemlock (*Tsuga canadensis*) are very common along the lower slopes and at brook crossings. The base of the talus slope is often the most diverse of the traprock habitats. This area is typically dominated by sugar maple, ash and basswood. Wetlands form in level areas and at the base of slopes.

The mixed transitional hardwood forests of hemlock and oak typically have a higher and denser canopy than the drier, upland woodlands. Red oak, sugar maple, white ash, and hickory share the canopy in various proportions. Hemlock is widespread and variable in the under-story, along with black, white, and yellow birch and hop hornbeam.

In sections, the trail passes through reclamation stands of young red pines and stands of old sugar maples on the sites of abandoned farms. Occasional specimen trees – black birch, red oak, white pine, white oak, or hemlock that exceed 40 inches in diameter – are found, but there are no known areas of old growth or virgin forest. The state forest land and private lands crossed by the trail tend to be harvested periodically.

Mountain laurel, witch hazel, striped maple, and maple-leaf viburnum are the most common shrubs forming a relatively dense shrub layer. The herb layer varies in density but includes a more acidic plant association of teaberry, clubmosses, marginal fern, Christmas fern, sedges, and grasses. Certain wild shrubs pose threats to the integrity of the natural communities, including Japanese barberry, multiflora rose, and glossy buckthorn.

The wooded swamp is the most common wetland type in southern New England and the type of wetland generally found along the trail corridor. These areas are dominated by red maple (*Acer rubrum*) with slippery elm often

present in smaller numbers. Other common plants of this habitat include the shrub known as spicebush (*Lindera benzoin*) and non-woody plants such as skunk cabbage, cinnamon fern and jack-in-the-pulpit.

Wildlife

Because they are relatively undeveloped, traprock ridges are home to many animals, including some rare and endangered species.

The Mount Tom ridge is an example of an important habitat for amphibians and reptiles. Thirty-eight species of amphibians and reptiles have been recorded on the Mount Tom ridge, representing 76% of all herp species found in Massachusetts (TTOR, 2005). Of these, the rarest species include marbled salamander, box turtle, wood turtle, copperhead snake, timber rattlesnake, and black rat snake.

Hemlock forested areas are popular places for deer in the winter due to their ability to hold a lot of snow in their canopy, leaving the forest floor less deep in snow pack. Hemlock needles are preferred food for white-tailed deer and porcupine like to feed on hemlock bark and twigs.

Ridge tops along the MMM Trail System are also a valuable stop-over habitat for migratory birds. A breeding land bird pre-survey conducted by the U.S. Fish and Wildlife Service in 2003 documented blackburnian warbler, black-throated blue warbler, blue-winged warbler, northern parula, and yellow-rumped warbler. Goat Peak and Mount Holyoke in Massachusetts are known for their hawk migration viewing spots.

Cultural and Historic Resources

Native American History

Connecticut and Massachusetts have been occupied by humans for at least 10,000 years, and human activity has resulted in critical influences on the landscapes of the MMM Trail System.

In Connecticut, Native American activity was intense throughout the central portion of the state, with the Niantic tribes focused on the mouth of the Connecticut River and the Mohegan-Pequot tribes inhabiting areas to the east. Quinnipiac Indians were known to create settlements in the Branford and Guilford areas. Numerous Archaic and Woodland sites dating from 9,000 BC are documented from the region, particularly where stream tributaries meet the main stem of large rivers like the Connecticut. Low, flat river terraces were preferentially occupied during spring to fall;



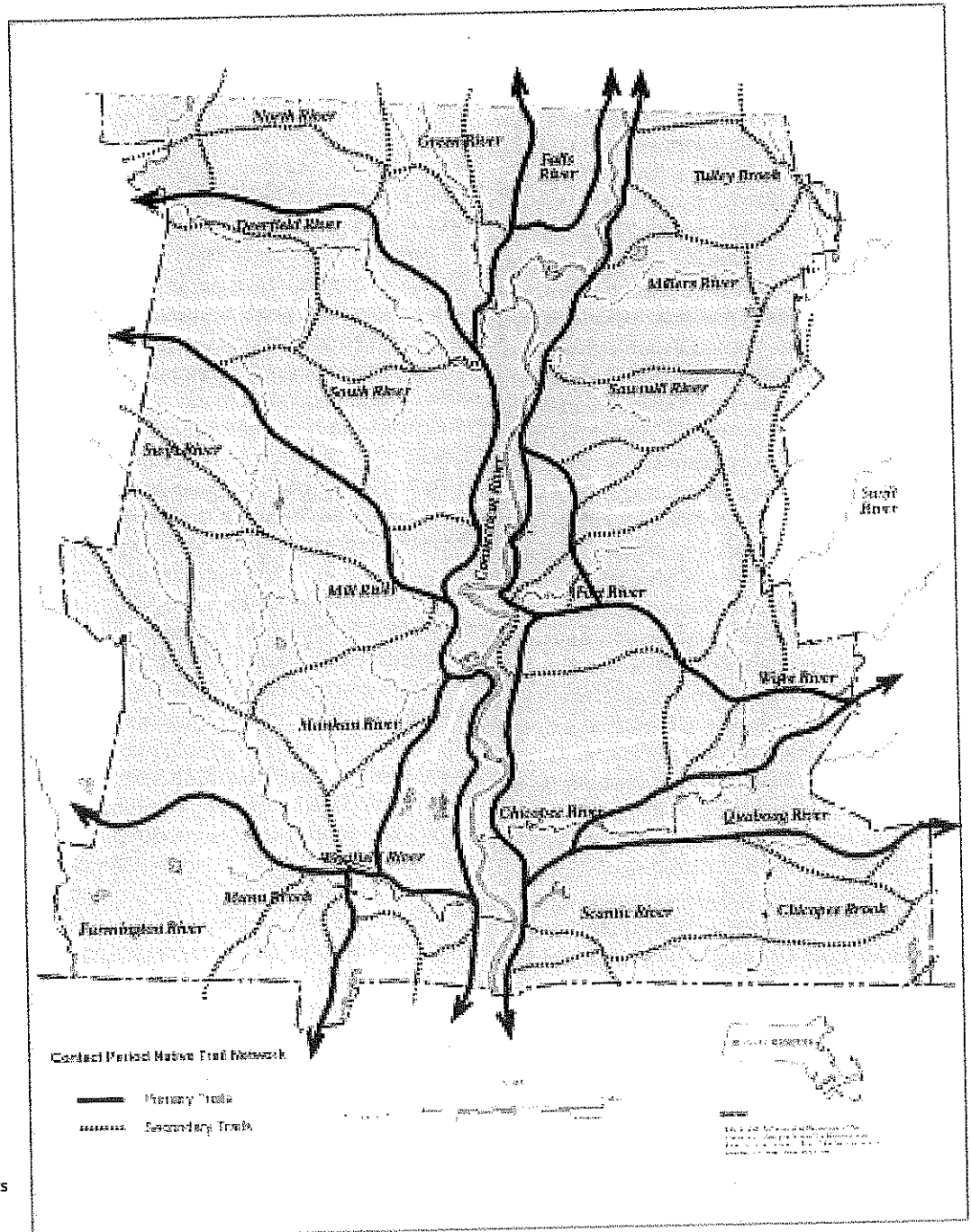
Box Turtle

when foragers exploited rich shellfish beds and anadromous fish. Basalt was used for flint and arrowheads.

The name of the Metacomet Trail commemorates an important Native American figure who once occupied the region. Chief Metacomet (aka "King Philip"), son of the Wampanoag ally of the Pilgrims, Massasoit, is the trail's most notorious namesake, leading some of the most damaging attacks against white settlers throughout Massachusetts and Connecticut in the 1670's. The promontories of the Metacomet Range served as strategic lookout points for mounting raids on the nascent towns of Connecticut.

Legends, many apocryphal, ascribe natural landmarks such as "King Phillip's Cave" (a lava tunnel visible from the Trail at Talcott Mountain) to famous battles between Native Americans and colonists.

Native Americans likely exerted profound local influences on the structure of natural communities in the region, but their precise impacts are still being reconstructed. Deer hunting, fishing, and plant gathering would have been the predominant activities during the Woodland Period. Intentional burns may have been used in limited ways to concentrate wildlife, or to promote growth of blueberries or nut-bearing trees, but evidence for major fires with large-scale impacts on forests is not conclusive.



The MMM Trail System in Massachusetts parallels several Native American trails

Pollen evidence suggests that forests during Native American occupation were dominated by chestnut (*Castanea dentata*), oak (*Quercus* spp.), beech (*Fagus grandifolia*), hickory (*Carya* spp.), and pine (*Pinus* spp.), with chestnuts and hickories providing a major food source. Sedentary agriculture did not commence until after 1,000 years AD, with some tribes in central Connecticut planting corn, sunflowers, and squash. Cultivation would have required only limited land clearing using axes and hoes.

Although no record has been found of specific Native American dwellings along the trail corridor in Massachusetts, their presence in the region is well documented. Regional control of the Connecticut River valley from Connecticut in the south to Vermont in the north was attributed to the Pocumtucs belonging to the Algonquian tribe.

The Pocumtucs were principally located near Deerfield in a town of the same name. A branch of the Pocumtucs, the Agawams were a native group who by the 17th century are said to have claimed control of the land situated within the Connecticut River drainage area between Enfield Falls in Enfield, Connecticut and South Hadley Falls in South Hadley Massachusetts. By around 1660, most of the Agawams had moved across the Connecticut River to live in a village on what is now Long Hill Street in Springfield. This corresponds to the dates at which the first permanent homes were established in Agawam.

The territory to the east was held by another Algonquin tribe called the Nipmucs. The Nipmuc occupied the central plateau of Massachusetts as far west as the Connecticut River, concentrating in the southern part of Worcester County, but also extending into Northern Rhode Island and Connecticut. The territory to the west of the Pocumtuc region was controlled by the Mohicans, extending over most of Berkshire County where they were represented mainly by the Housatonic or Stockbridge Indians. The fort of the Pocumtuc proper, on Fort Hill near Deerfield, was destroyed by the Mohawk in 1666. The Pocumtuc combined with the Narraganset and Tunxis in attacks on the Mohegan chief Uncas, and later joined the hostile Indians under King Philip. At the close of the [King Philip] war, they fled to Scaticook on the Hudson, where some of them remained until 1754, going then to St. Francis, Canada.

Estimates vary greatly, but it is probable that no more than 5,000 Indians were left in all of New England by 1636 when William Pynchon and his partners from the Massachusetts Bay Colony



View of the Mount Holyoke Range from Hadley farmland in Massachusetts

established the plantation of Agaam (or Agawam) which was later to be known as Springfield. The twenty-five square mile town was bisected by the Connecticut River and included Provin Mountain along its western boundary.

It is highly probable that the Agawam Indians traveled regular paths through the Provin Mountain Range to connect two well-traveled trails on each side of it. The mountain range and the Connecticut River separated two well documented native trails. The Podunk path led through their land on the east side of the Connecticut River and the great 'Maya' or trail that led from Quinnipiac (New Haven) to Canada, crossed through 'Mayawauk' (West Suffield) and Feeding Hills and Westfield. Old English records speak of this as the Hampton and Westfield paths. A secondary north-south trail along the east base of the Provin Mountain range existed from the Paucatuck ford on the Westfield River to Johnson Corner in Agawam.

Native American tribes, namely the Pocumtucks, maintained agriculture in the fertile river floodplains of the Westfield River. Native settlement probably concentrated in the floodplains during the spring fishing months. Historically (1500-1620), a possible ford existed at Paucatuck across the Westfield River at May Hole. Paucatuck is within the river floodplain, east of East Mountain and in the vicinity of the junction of Paucatuck Brook and the Westfield River. See map on page 33.

As the trail travels north to its intersection with the Connecticut River, there is evidence of a fortified native site on Fort Hill near the Connecticut River oxbow in Easthampton. Native Americans likely hunted on the Mount Tom Range with farming in the fertile river valley lowlands. Local natives were likely involved in the valley Anglo-Indian fur trades between 1500 and 1620.

Due to river meandering and seasonal flooding, Native American sites within the floodplain of the Connecticut River have never been fully documented. However, it is suspected that the Pocumtucs lived at the Hockanum flats area of the Connecticut River floodplain in Hadley. Local farmers and area historians have found numerous arrowheads and other stone implements. Further documenting their existence in the region, between 1675 and 1775, colonial troops were attacked repeatedly by native tribes at settlements in Hockanum Flats during King Philip's War. Today, this area is some of the most productive farmland in the entire valley.

Native sites are also suspected around Metacomet Lake, located southeast of the MMM Trail on Section 9 in Belchertown. The three area lakes (Metacomet, Holland, and Arcadia) were probably the focal point of native fishing.

European Settlement

Europeans entered Connecticut in the 1630s, and large-scale land clearing, homesteading, tilling, and grazing of the Connecticut River and Farmington River valleys began in the 1650's (Feder 1999). Intentional fires and logging became widespread throughout the next century, transforming a largely forested landscape to a pastoral one. This activity shifted forest composition to young, disturbance-tolerant stands dominated by birch (*Betula* spp.), maple (*Acer* spp.), pine (*Pinus* spp.), cherry (*Prunus* spp.), and poplar (*Populus* spp.). Many house foundations of the 1700's were built of trap rock collected from the bases of talus slopes along the Metacomet Range.

Industrialization during the early 1800's led to the construction of innumerable dams on large and small rivers, providing hydro-energy for mills, and altering the courses and flow dynamics of many waterways. Logging to provide wood fuel for local foundries and other industries may have denuded some portions of the Metacomet ridge from valley to summit. A large traprock quarry opened on East Rock (New Haven, Connecticut) in 1810, and large-scale extraction of traprock to provide crushed paving stone and brownstone for a large number of buildings in the Northeast and beyond began in the 1850's.

In the 1830's to 1850's, increasing urbanization, population pressure, and large-scale exploitation of the New England landscape stirred a new aesthetic appreciation among the populace for the remaining natural areas of the region. Henry David Thoreau, Ralph Waldo Emerson, and painters of the emerging Hudson River School

(Thomas Cole, Thomas Charles Farrar, William Henry Bartlett, and others) extolled the virtues of nature in writings and artwork. The painters in particular flocked to the Metacomet Range to capture its grandeur and views.

In 1836 Thomas Cole visited the summit of Mt. Holyoke and created one of the most well-known paintings of the era: *View from Mount Holyoke, Massachusetts after a Thunderstorm*. Interestingly, the paintings of this time reveal the mountains as some of the only forested land in a sea of agriculture and rural settlement, indicating that some of the mountains may have provided a critical refuge for plant and animal species for hundreds of years.

Buildings dating from this period began to spring up along the summits of the Metacomet Range from Massachusetts to Connecticut. The historic Heublein Tower atop Talcott Mountain, for example, was the fourth in a series of towers built at the site from 1810 to 1914 (Leary 2004). Eminent visitors to these landmarks made the range famous: Mark Twain quoted his friend, the Reverend Joseph Twichell issuing the cry, "Just look at this magnificent autumn landscape! Look at it! Look at it! Feast your eyes on it!"

While the ridge was never densely populated, it was (and continues to be) a popular day-trip destination for tourists, students, and artists. This popularity created the impetus for the establishment of a protected system of hiking trails, among the first of its kind in the United States.

Local hiking trails attracted visitors from medium-sized, decentralized urban areas (Hartford, Meriden, New Haven, etc.) throughout the state. In the late 1800's, philanthropic industrialists donated large areas of land for parks and recreational areas. By 1895, the Connecticut Forestry Association (later called the Connecticut Forest and Park Association) formed with a mission to preserve woodlands, and the state of Connecticut formed a park commission in 1913. Many of the protected areas cobbled together during this time were very small, but emphasized the same kind of views that had thrilled Twain and many others.

Frederick W. Kilbourne, a Meriden resident, pioneered the idea of a "Trap Rock Trail" to span the distance from Long Island Sound to the Massachusetts border in 1918, and Edgar Laing Heermance took the project forward. By 1929, the Connecticut Forest and Park Association devised its first Trails Committee, and the concept of the Blue-Blazed Hiking Trail System was inaugurated. The cumulative effect of this land protection and outreach was the creation of a trail of almost 50 miles, a corridor of green in an urbanized context unlike any other trail before it.

Socially, the trail system permitted a burgeoning number of recreation seekers to gain a new appreciation for Connecticut's natural ecosystems, and engaged a new class of volunteers in construction and maintenance. An utterly new literary genre – the trail guide – was invented to educate trail users about their environs, and the trail received a great deal of attention in the popular press of the time. Ecologically, the formation of the Metacomet and Mattabesett Trails led to the long-term conservation of dozens of contiguous miles of relatively intact habitat.

Historic and Culturally Significant Areas

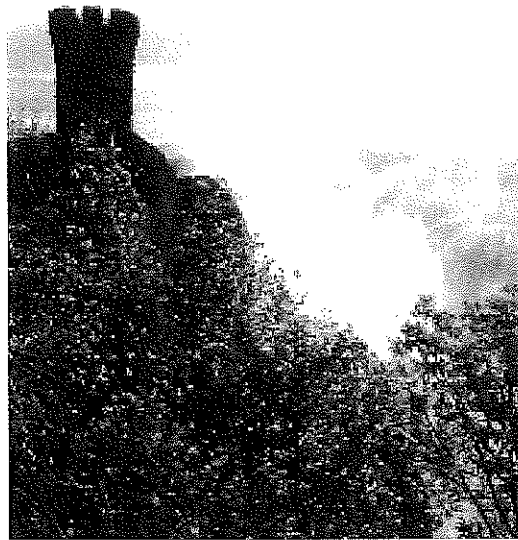
A number of noteworthy sites of historical or cultural significance exist along the MMM Trail System corridor in Connecticut and Massachusetts, including:

Connecticut:

The Connecticut State Archaeologists Office provided a list of 23 sites along or near the trail that are known archaeological or historic sites. Eleven of the sites are considered highly significant, with 8 of them having National Registry potential, and two are already listed on the National Register. In addition, the study team identified a number of other culturally significant areas. Some of the more significant resources include:

Castle Craig. A tower built with native trap rock and donated to the city of Meriden, Connecticut by local industrialist Walter Hubbard, this 32-foot tall structure is part of a 1,800-acre municipal park. Views to Long Island Sound and the hills of Massachusetts are visible.

Guilford Historic Town Center and Clapboard Hill District. A proposed extension of the Mattabesett Trail south to Long Island Sound would pass by homes included on the National Historic Register and through the Guilford Historic Town Center District.



Castle Craig in Meriden, Connecticut

Historic Town Center District. Numerous abandoned carriage and stagecoach roads intersect the Trail in the towns of Haddam, Durham, and Middlefield, providing evidence of early regional transportation routes.

Hospital Rock. A State Archaeological Preserve surrounds “Small Pox Hospital Rock” in Farmington, a monument to the quarantine at the site of colonial-era Farmington and Hartford residents afflicted by smallpox.

Heublein Tower. The present day tower (located in Simsbury in Talcott Mountain State Park) is the fourth in a series of towers built at the site from 1810 to 1914. Heublein Tower is recognized as a National Register Site and is open to the public. The Metacomet Trail travels approximately 1/4 of a mile to the south of the tower.

Nike Missile Installation. An abandoned concrete base that once stored Nike military missiles is located just off the trail in Plainville.

Table 8. MMM Trail System in Connecticut and Massachusetts: Landownership Profile

Ownership Type	Miles of Trail	% Total Trail	# of Owners	% Total Owners	# of Parcels	% Total Parcels
Individuals	37.2	19.58%	355.0	57.91%	391.0	36.54%
Corporate	28.8	15.14%	56.0	9.14%	130.0	12.15%
Municipal	17.7	9.32%	25.0	4.08%	67.0	6.26%
State	40.2	21.15%	9.0	1.47%	118.0	11.03%
Non Profit	11.2	5.88%	17.0	2.77%	43.0	4.02%
Water Utility	24.3	12.77%	11.0	1.79%	47.0	4.39%
Roads, crossings	24.9	13.10%	6.0	0.98%	16.0	1.50%
Miscellaneous	5.8	3.06%	134.0	21.86%	258.0	24.11%
Total	189.9	100%	613	100%	1070	100%

Old Newgate Prison. This 18th and 19th century prison and copper mine lies within one mile of the Metacomet Trail in East Granby, and can be seen from the Metacomet Trail atop Copper Mountain. The site is listed on the National Register of Historic Places and is maintained by the State of Connecticut with the support of local partners.

Selectman Stones. At a point on the Mattabesett Trail where the town boundaries of Durham, Guilford and Madison intersect lie a pile of inscribed rocks known as Selectman Stones. It was common practice once, and still is in some towns, for elected officials to be required to walk the boundaries of their towns once elected. As proof that they completed this task (called perambulating the border) they would inscribe a rock with the date or their name and leave it at the corner of the town boundary. These piles of stones still exist along the Mattabesett Trail.

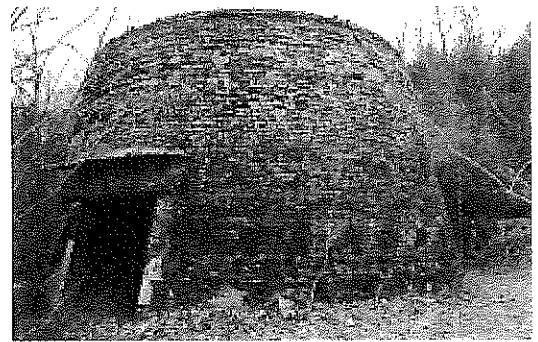
Washington-Rochambeau Route. The Mattabesett Trail intersects the Washington-Rochambeau Revolutionary Route, a network of land and water routes traversing nine states over which traveled the American and French armies and navies at various times between June 1781 and December, 1782. The Route was studied by the National Park Service in 2003 for possible designation as a National Historic Trail. Washington himself is believed to have traveled what is now the Mattabesett Trail twice, once on his way to assume command of the new American revolutionary army and again in 1789 when he was elected President.

Will Warren's Den. At a site along the Metacomet Trail in Farmington is a cave where, according to legend, a 17th century local citizen named Will Warren was hidden by Native Americans. Warren had tried to burn down the village of Farmington after he was flogged for not going to church. Driven out of town and pursued into the mountains, he hid in the cave, which

today bears a bronze plaque recounting the legend.

Massachusetts:

Beehive Kilns. East of the Rattlesnake Gutter area of the Metacomet-Monadnock Trail can be found a series of kilns used in the production of charcoal during the 1800's.



Beehive Kiln, Leverett, Massachusetts

Central Vermont Railroad. Built between 1845-1849 by Charles Paine, the 116-mile line was part of a railroading operation that by 1873 controlled 793 miles of track in four states, making it the largest railroad in New England and seventh largest in the U.S. The line was sold approximately ten years ago to the New England Central Railroad, and is still in operation today. The Metacomet-Monadnock Trail crosses the railroad tracks near Route 9 and Holland Glen in Belchertown.

Fifth Massachusetts Turnpike. In Warwick, the Metacomet-Monadnock Trail turns southeast down an old county road, formerly the old Boston-Albany Toll Road known as the Fifth Massachusetts Turnpike.

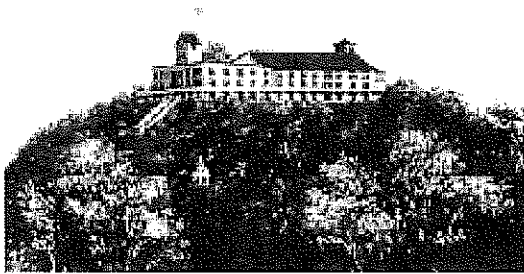
Hermit Mountain and Erving Castle Trail. In Erving, the Metacomet-Monadnock Trail crosses a side trail built in 1998 by a federally funded AmeriCorps trail crew to allow visits to the 1800's cave home of the hermit John Smith, who came to

Table 9. Metacomet and Mattabesett Trail in Connecticut: Landownership Profile

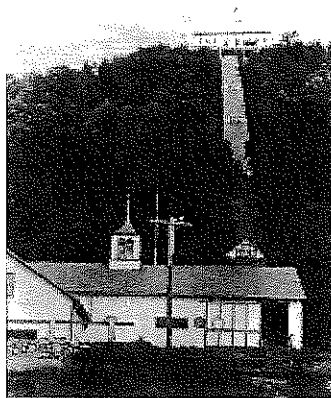
Ownership Type	Miles of Trail	% of Total Trail	# of Owners	% of Total Owners	# of Parcels	% of Total Parcels
Private Individ.	15.0	13.6%	204	74.5%	215	46.4%
Private Corp.	19.5	17.6%	31	11.3%	84	18.1%
Municipal	14.9	13.5%	15	5.5%	50	10.8%
State	14.7	13.3%	7	2.6%	41	8.9%
Non Profit	6.6	6.0%	10	3.6%	35	7.6%
Water Utility	15.4	13.9%	7	2.6%	23	5.0%
Roads	19.8	17.9%	0	0.0%	0	0.0%
Miscellaneous	4.8	4.3%	0	0.0%	15	3.2%
Total	110.7	100%	274	100%	463	100%

the area from the British Isles and lived an isolated, eccentric existence here for more than 10 years.

J.A. Skinner State Park. The 390-acre Skinner State Park in Hadley offers breathtaking views of the Connecticut River Valley. The summit is accessible by road from April through November, and by hiking trails year-round, including the Metacomet-Monadnock Trail. The Summit House, once a well-known mountain top hotel in the mid-1800's, is a popular destination point offering tours, programs, historical displays, and special events. Other historic sites within the Park include:



Historic illustration of Mount Holyoke Summit House



Cable car to Summit House

- Titan's Piazza – A well-known columnar trap rock formation and cliff named by Amherst College Geology Professor Edward Hitchcock in the 1830's. One is able to overlook the Connecticut River and valley while standing atop it.

Mount Holyoke Range State Park. The Metacomet-Monadnock Trail travels through this recreational area in Amherst in close proximity to the following sites:



The Horse Caves

- The Horse Caves – A series of overhanging ledges where Daniel Shays, a former Revolutionary Army captain, hid horses used in the farmer's rebellion known as Shay's Rebellion.
- US Air Force Bunker – The U.S. Air Force Strategic Air Command built a massive underground communications bunker featuring three-foot thick walls and steel blast doors. In the event of a nuclear war, it was designed to hold 350 people for 35 days. The facility was expanded in 1962. In 1972, the Bunker complex was sold to the Federal Reserve Bank for record storage.

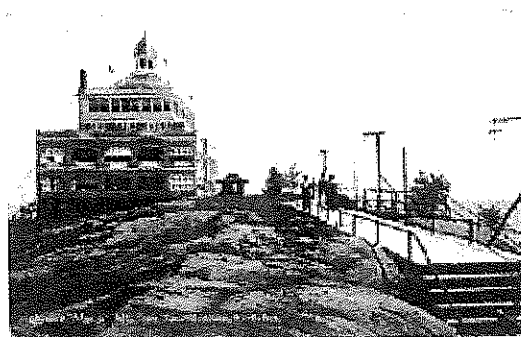
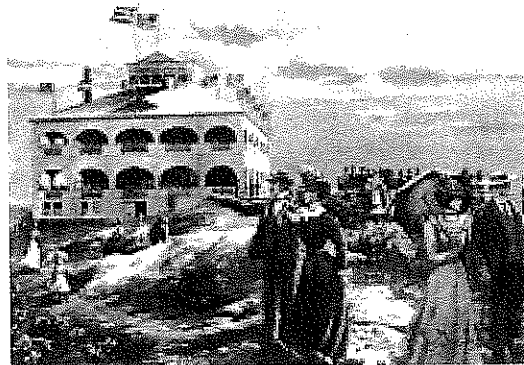
Mount Tom State Reservation. Mount Tom State Reservation in Holyoke is recognized for both its historic significance to the region and also its cultural importance today. Mount Tom itself boasts an unparalleled view of the Connecticut Valley north and south, the Berkshire

Table 10. Metacomet and Mattabesett Trail in Massachusetts: Landownership Profile

Ownership Type	Miles of Trail	% of Total Trail	# of Owners	% of Total Owners	# of Parcels	% of Total Parcels
Individuals	22.2	28.00%	151.0	72.25%	176.0	47.83%
Corporate	9.3	11.68%	25.0	11.96%	46.0	12.50%
Municipal	2.8	3.52%	10.0	4.78%	17.0	4.62%
State	25.5	32.14%	2.0	0.96%	77.0	20.92%
Non Profit	4.6	5.78%	7.0	3.35%	8.0	2.17%
Water Utility	8.9	11.18%	4.0	1.91%	24.0	6.52%
Roads, crossings,	5.1	6.42%	6.0	2.87%	16.0	4.35%
Miscellaneous	1.0	1.28%	4.0	1.91%	4.0	1.09%
Total	79.2	100%	209	100%	368	100%

mountains to the west, and the Pelham Hills to the east. The 1,800-acre reservation includes the following sites of cultural and historic significance:

- Eryie House, Mount Nonotuck - Ruins of an old hotel, the Eryie House is located on Mount Nonotuck, the northern most peak on the Mount Tom Range. The Eryie House was built in 1861 by William Street, a wealthy entrepreneur from Holyoke, and was located near the Mount Tom train depot at Smiths Ferry on the Connecticut River.
- Mountain Park - In 1895, the Holyoke Street Railway Company began construction of Mountain Park, a trolley and amusement park at the base of Mount Tom. The park opened in 1897 and was a popular attraction for both locals and tourists for decades. In its heyday, Mountain Park was the largest street railway park in the world, comprising more than 400 acres.
- Mount Tom Summit House and the Mount Tom Railroad - The Holyoke Street Railway Company opened the Mount Tom Summit House with the opening of Mountain Park in 1897. The Summit House featured a restaurant, constant entertainment, and a spectacular view. Access to the Summit House was by way of two counter-balanced trolleys.



Historic illustrations of Mount Tom Summit House

- The Airmen Monument - In 1946, a B-17 converted into a transport plane crashed into the side of Mount Tom, killing 25 people. A monument in memory of those who died was erected at the site of the crash.

Old Adams Homestead. The MMM Trail passes the Old Adams Homestead in Shutesbury, MA, formerly owned by Walter Banfield, the developer of the Metacomet-Monadnock Trail in Massachusetts. The site contains an old farmhouse, mill pond, and mill works.

Westfield-Holyoke Street Car Route. Between 1620 and 1675 an interior route across the East Mountain ridge was maintained as Whitney and Rock Valley Roads in the vicinity of Ashley Pond in Holyoke. Between 1870 and 1915 a trolley route to Westfield was established across East Mountain on a private way to Appremont Highway in Westfield. The streetcar service was abandoned in the 1920's. The abandoned road bed still exists today, and is briefly intersected by the Metacomet-Monadnock Trail.

J. Ownership and Protection of the Trail

Land Ownership Profile

The 190-mile MMM Trail System travels through 1,070 parcels of land owned by 613 landowners in Connecticut and Massachusetts. The largest group of trail landowners are individuals and corporations, who combined account for 35% of the total trail length. The states are the next largest landowner with 21% of the trail. Over 13% of the current trail (almost all of it located in Connecticut) is on roads, most of which are either woods roads or small local roads. These statistics do not include an additional 10 miles of trail that are not officially part of the MMM Trail System but connect various portions of the Metacomet-Monadnock Trail in Massachusetts. See Table 8.

Connecticut

The Metacomet and Mattabesett Trails in Connecticut travel approximately 110 miles, crossing 463 parcels of land owned by 274 landowners. Landownership along the trails is a diversified mix of ownership types. The largest portion of trail length, over 31%, is privately owned by individuals and corporations, with water utilities, municipalities and the state of Connecticut each owning approximately 13%. Private individuals account for nearly 75% of all trail owners, owning 46% of the parcels the trail passes through.

97% of the trail length owned by non-profit organizations is owned by land conservation organizations such as the Nature Conservancy

and local land trusts. While there are 31 corporate owners identified along the trail, five corporate landowners host 79% of the corporately owned trail. These major owners include two traprock quarry operations and the primary electric utility in the state.

While the largest portion of trail is shown to be on roads a majority of that, 53%, is either on woods roads traveling through state parks and forests or small local roads traveling through neighborhoods. Only 6.4% of the trail is considered to be on secondary roads and 2% on primary roads. Four key junctures in the trail account for 50% of the trail that is on road, these include where the Mattabesett Trail crosses Interstate 91 (3.4 miles), where the Metacomet Trail crosses Interstate 84 (1.6 miles), where the Mattabesett and Metacomet Trails come together (2.6 miles) and where the Metacomet Trail intersects with the Metacomet-Monadnock Trail traveling into Massachusetts (2.2 miles). See Table 9.

Massachusetts

The Metacomet-Monadnock Trail in Massachusetts travels 79 miles, crossing 368 parcels owned by 209 landowners. Private ownership, both individual and corporate, is the largest landowner type, accounting for 40% of the total trail length. The Commonwealth of Massachusetts owns another 32% of the trail while the remaining five landownership categories account for 28% of the trail length. Private individuals and corporations account for 86% of all 213 landowners and own 66% of the 407 parcels the trail passes through.

Over 6% of the total trail length is associated with roads or road crossings, substantially lower than Connecticut's nearly 18%.

As reported above, these statistics do not include an additional 10 miles of trail consisting of 44 parcels owned by a single private landowner, Cowl's Lumber, that is not officially part of the MMM Trail System but connects various portions of the Metacomet-Monadnock Trail in Massachusetts. See Table 10.

Level of Protection

Trail "protection" generally refers to efforts to establish or preserve the right for the trail to exist in a certain location and have public access. Most of the history of trail ownership and protection along the entire MMM Trail System has been that of handshakes and verbal agreements sufficing for permission to locate and maintain the trail route.

The amount of protected trail on the MMM Trail System was determined by the mileage of the trail which crossed lands that could be considered permanently protected open space. Lands considered permanently protected include state forest and park lands, municipal lands and nonprofit land conservancy lands. Water utility lands in Massachusetts were also considered permanently protected.

Currently 72.7 miles, over 38% of the total trail length, of the MMM Trail System is considered permanently protected. An additional 20.4 miles or nearly 11% of the trail is considered partially protected between the two states.

Connecticut

The Metacomet and Mattabesett Trails cross state forest and park lands, municipal lands and nonprofit land conservancy lands for 36.2 miles, or 33%, of the total trail system in Connecticut.

In Connecticut, there are only a very few instances where trail easements have been established to permanently protect the trail location and their total trail length was found to be an insignificant amount of the total trail.

The trail also crosses municipal and private water utility lands. In Connecticut lands owned by water utilities that are considered either class one or class two based on public health code definition, have a fairly high level of protection (see CT Dept. of Public Health Public Health Code 25-37c-1 for details). As a result it was determined these sections of trail that cross water utility lands could be considered partially protected in Connecticut. The total trail length on class one or two water utilities lands is 11.8 miles or 10% of the total trail length.

The overall trail length on either permanently protected or partially protected lands totals 48 miles, or 43%, of the total trail length in Connecticut.

Through Public Act 490 (CGS Sections 12-107a through 107-f) Connecticut has a local property tax abatement program that provides the ability for landowners to achieve substantial local property tax savings by agreeing to keep their lands in farm, forest or open space. While this may provide the trail with some partial protection data was not available to assess the amount of trail on "490" lands in Connecticut. All other land ownership types were not considered to provide any significant trail protection.

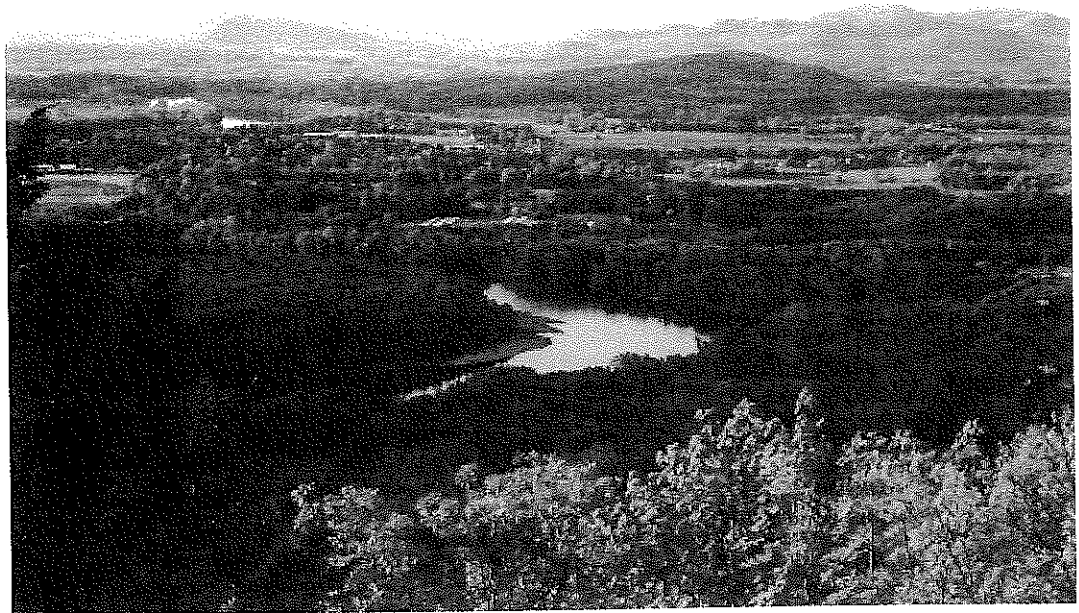
Massachusetts

A large portion of the Metacomet-Monadnock Trail in Massachusetts is located on protected lands. In all 36.5 miles, or 46%, of the trail travels across state parks, public water supplies, and municipal conservation properties and is considered protected. In Massachusetts it was determined that water utility lands provide permanent protection for the trail, which differs from Connecticut.

A total of 8.6 miles or 11% of the Metacomet-Monadnock Trail crosses lands in the Chapter 61 program and as such are considered temporarily protected. Chapter 61 is designed to encourage the preservation and enhancement of the

Commonwealth's forests. It offers significant local tax benefits to property owners willing to make a long term commitment to forestry. In exchange for these benefits, the municipality in which the land is located is given the right to recover some of the tax benefits afforded the owner when the land is removed from classification and an option to purchase the property should the land be sold or used for non-forestry uses. However, land that is protected for forestry purposes does not carry an obligation for continued trail permission.

The overall trail length on either permanently protected or partially protected lands totals 45.1 miles, or 57%, of the total trail length in Massachusetts.



View of Connecticut River from MMM Trail



Cedar tree along the MMM Trail

Significance Evaluation

Section (5) (b) of the National Trails System Act identifies a set of factors to be addressed in studies of potential new National Scenic Trails. The following sections describe each of the criteria in Section (5) (b), and specifies how the MMM Trail System meets them.

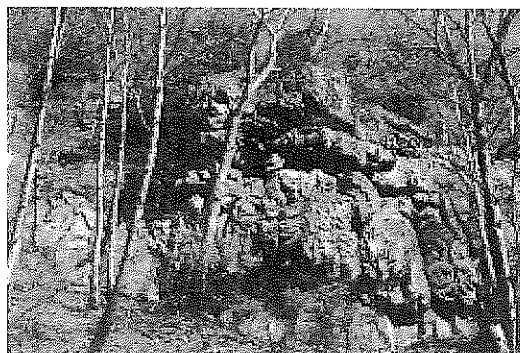
National Trails System Act Factors – Sec. (5) (b):

A. The proposed route of the trail:

The route of the MMM Trail System generally follows the existing route of three contiguous trails – the Metacomet-Monadnock, the Metacomet, and the Mattabesett – that travel more than 190 miles in a north-south direction from the Massachusetts-New Hampshire border south towards Long Island Sound. The portion of the Metacomet-Monadnock Trail included in the route is located entirely within Massachusetts, while the Mattabesett and Metacomet Trails are located entirely within Connecticut. As it exists today, this route is consistent with The National Trails System Act Section 3(b) description of an extended trail.

The MMM Trail System route avoids wherever possible highways and other roads, mining areas, power transmission lines, commercial and industrial developments, private operations, and other activities that might detract from the trail's recreational purposes. The historical design of the trail is tailored to highlight regional landscape features and to provide views of scenic, natural, and geologic resources.

In Connecticut, Public Law 107-338 directed the National Park Service to examine the feasibility of extending the Mattabesett Trail south to a new terminus at Long Island Sound. A route has been determined to be feasible and is one that would



Columnar basalt is displayed at Titan's Piazza, South Hadley, Massachusetts

add desirable new features to the overall trail system. The proposed extension of the trail would travel through state forests, protected water utility lands, two village sites listed on the National Register of Historic Places, and coastal environments including tidal marshes and a public beach.

In Massachusetts, the route that is proposed for inclusion in the National Scenic Trail program would also deviate from the existing alignment of the Metacomet-Monadnock Trail over an approximately fifteen-to-twenty mile section in the Belchertown-Leverett area. The deviation would re-route the trail between the Mt. Holyoke Range and Wendell State Forest, along existing unpaved roads and trails in the Quabbin Reservoir area, rejoining the existing Metacomet-Monadnock Trail alignment south of the Route 2 highway crossing. The intention of this proposed, conceptual National Scenic Trail route would take advantage of substantial protected lands owned by the Commonwealth of Massachusetts, while avoiding an area almost completely devoid of protected land areas.

B. The areas adjacent to the trail to be utilized for scenic, historic, natural, cultural or developmental purposes:

The MMM Trail System hosts an array of scenic features and historic sites. Long vistas of rural towns, agrarian lands, extensive unfragmented forests, and large river valleys, as well as pathways through important Native American and colonial landmarks showcase some of the best examples of classic New England landscapes that are unique in the nation.

The Trail System harbors a range of diverse ecosystems and natural resources, including mountain summits, forested glades, vernal pools, lakes, streams and waterfalls. Assessments of these ecosystems and resources have been completed for both the Connecticut and Massachusetts portions of the trail, as described in Section III and Appendix B.

At numerous points along the existing trail route, the MMM Trail System intersects or travels near a number of points of national or regional environmental, historic or cultural interest. These intersecting or adjacent features are

described throughout the study report document, and include:

Silvio O. Conte National Fish and Wildlife Refuge

This 7.2 million acre site protects the biodiversity of the Connecticut River Watershed. The Conte Refuge works with numerous partners to acquire key parcels, to better manage already protected land, and to educate the citizens within the watershed about important habitat issues.

The Connecticut River

Designated a National American Heritage River by President Clinton, the Connecticut River is one of New England's premier natural resources. The Mattabesett Trail begins near the banks of the Connecticut, and in Massachusetts the Metacomet-Monadnock Trail directly intersects the river.

The Metacomet and Mt. Holyoke Mountain Ranges

The MMM Trail System traverses these scenic ranges for much of its length. The Mt. Holyoke Range has been identified as an area of special focus by the Silvio O. Conte National Wildlife Refuge Action Plan of 1995.

National Historic Landmarks, National Historic Sites, State-registered Historic Districts and Properties

Several federally-recognized sites are located within close proximity to the MMM Trail System. They provide examples of New England colonial architecture, lifestyle, and industry. Chapter II of this report contains a summary of these resources and sites.

Connecticut and Massachusetts State Forests and Parks

The trail system intersects ten state-managed forests and parks at various locations along its length. See Chapter II and Appendix B for additional information.

C. The characteristics which, in the judgment of the appropriate Secretary, make the proposed trail worthy of designation as a national scenic trail

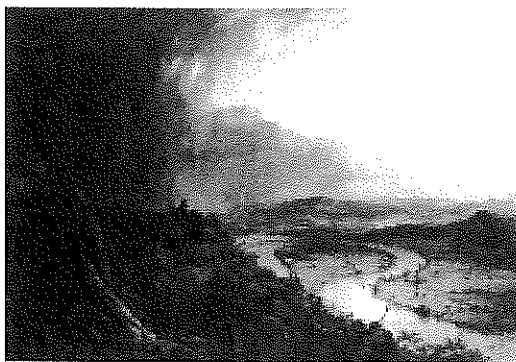
The MMM Study team has identified the main characteristics for consideration in evaluating National Scenic Trail status applicability, as described in the following sections.

Significance

The Recreational Experience

The MMM Trail System traverses an outstanding variety of New England landscapes, offering trail users a unique recreational opportunity. Highlights of the trail experience include:

- **Metacomet, Mt. Tom, and Mt. Holyoke Ranges**
The trail across these three ranges provides one of the best places in the world and the only area on the eastern seaboard with a developed trail system, to view a broad array of well-preserved volcanic and sedimentary features such as columnar basalt. The ranges provide outstanding views of the Connecticut River Valley, classic New England village settlement patterns, and a cross-section of the region's



Thomas Cole painting, "The Oxbow"

varied landscapes. One such view was immortalized in Thomas Cole's famous painting, "The Oxbow" depicting the view in 1835 of the Connecticut River Valley from Mt. Holyoke. The trails have existed across these ridges for more than fifty years, and warrant evaluation for listing on the national register of historic places.

- **Historic New England Villages** - The trail provides vistas of rural towns, agrarian lands, extensive unfragmented forests, and the river valley, and traverses important Native American and colonial landmarks. The trail also showcases some of the best examples of classic New England landscapes that are unique in the nation. Many side trails exist along the MMM trail route, and connect to or have the potential to connect hikers to village centers and historic districts. Over 50 national register listed historic districts are located in communities abutting the trail, many of which are visible (church steeples, municipal buildings, town greens, etc.) from the trail. The proposed extension of the trail to Long Island Sound would take the trail directly through the National Register listed Guilford Historic Town Center District.

- **Proximity** - The National Trail System Act places high priority on locating designated

trails “primarily near the urban areas of the Nation,” and being located “so as to provide for maximum outdoor recreation potential.” The MMM Trail System lies in close proximity to towns and suburbs of major cities while providing a near wilderness trail user experience. Over 2 million people live within 10 miles of the trail system.

Side trails in many communities connect neighborhoods to the trail, providing access to recreational opportunities for both casual and more serious athletes alike. Study investigations documented at least 25 formal, connecting trails in the two states, and as many as 100 informal connections. The trail system offers future opportunities to connect to other established trails. In addition to a proposed connection to Long Island Sound, the trail system could be connected to local trails within Connecticut and Massachusetts, or to larger regional long-distance trails such as the Appalachian Trail.

In sum, the existing MMM Trail System is very accessible both by proximity to population and existing and potential side trail connections.

Geology

The backbone of much of the Metacomet-Monadnock-Mattabesett Trail System consists of a series of knife-edged ridges collectively known



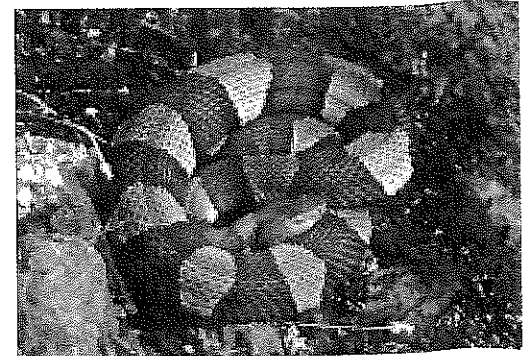
Glacial erratic along MMM Trail, Holyoke, Massachusetts

as the Metacomet Range. The range, as accessed by the trail, is known as one of the best places in the world to view an array of volcanic, sedimentary and glacial geology. Towers of columnar basalt create the precipitous west facing cliffs characteristic of the Metacomet Range. Additional volcanic features are well exposed to hikers on the ridge. The range is also rich in fossils left over from ancient glacial activity. In particular, the area is famous for “world class” dinosaur footprint and fish fossil locales. Professor Edward Hitchcock, President of

Amherst College, became world-renowned for his three decade study of the region’s prints in the 1800’s.

Endangered Species and Natural Communities

The trail system traverses mountain summits, forested glades, vernal pools, lakes, streams, and waterfalls, including some of the most rugged, picturesque, and diverse landscapes of southern New England. In Connecticut, the trail and its environs constitute a “hotspot” in the state and the northeast for rare and declining species. Overall, the trail visits 3 of Connecticut’s 13 most imperiled ecosystems, namely traprock summits, coastal beaches, and large riparian systems. There are 132 occurrences of rare species or natural communities recorded within 1,000 feet of the trail in Connecticut, including northern copperheads, timber rattlesnakes, Jefferson salamanders and Peregrine falcons. In addition two of the natural communities, poor fens and forest glades along rocky summit outcrops, are considered globally rare.



Broad banded Copperhead

In Massachusetts, the Silvio Conte National Wildlife Refuge has identified both the Mt. Tom and Mt. Holyoke Ranges as “special focus areas” containing significant biological features, containing over 30 rare plant and animal species. Thirty-eight species of amphibians and reptiles have been recorded on the Mount Tom ridge alone, representing 76% of all herp species found in Massachusetts.

Feasibility

The entire MMM Trail System under study has continuously existed for nearly 40 years, with the Connecticut sections in place for almost 75 years. It is clearly feasible that this route can exist, as it is already in place today, and is consistent with The National Trail System Act Section 3(b) description of an extended trail. However, the continued existence of this trail system along its current route is not assured as land ownership

and land use priorities continue to change and evolve, especially for those parts of the trail under private ownership.

Strategies regarding long-term trail continuity and viability were explored in depth during the study and captured in the Trail Management Blueprint. Implementation of these Blueprint strategies, which have broad stakeholder support, will help ensure that the trail exists for future generations.

A current challenge for maintaining the trail, especially in Connecticut, is growing number of trail miles currently on roadways. Efforts are continually being made to limit the amount of trail on road, but over the last several years the Connecticut Forest & Park Association has been forced to move approximately three miles of trail onto roadways. In other instances, however, proactive efforts have led to the elimination of certain road-walks by relocating sections of trail onto state forest land. This will continue to be an ongoing challenge with a trail system that travels through the 4th most densely populated state in the Nation.

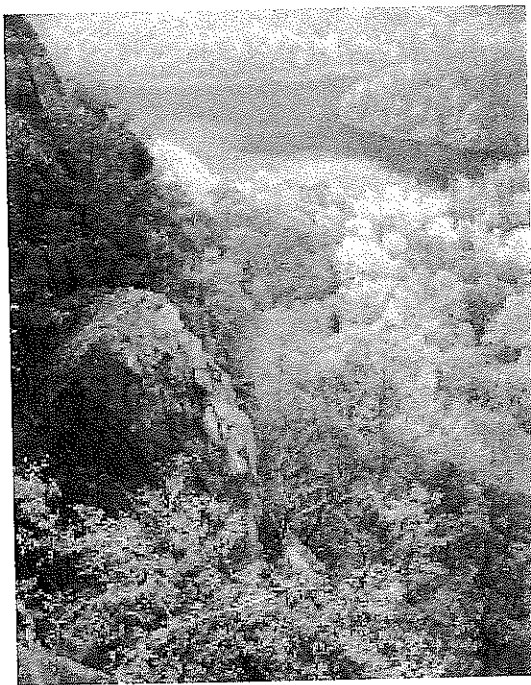
In Massachusetts, trail stewards have been able to avoid relocating the trail to roads. Several such relocations were accomplished during the study. However, there is concern that in the long term, options will dwindle, and the trail may be more often relocated on roads. Maintaining an off-road trail will require a concerted effort to secure permanent trail routes.

Desirability

The MMM Trail System is considered one of the most important long distance trails in New England and the most important in south-central New England. It is highly valued by communities, the states, landowners, non-profit organizations and user groups.

The great majority of the landowners who host the trail on their property, and attended public forums or responded to questionnaires showed strong interest in the long-term viability of the trail system.

Actions at the municipal level have shown a consistent interest in sustaining the long-term viability of the trail. From signing the Metacomet Ridge and Mt. Holyoke Range Compacts, to identifying specific goals in their plans of conservation and development and master plans, to taking actions through open space acquisition and the use of open space set asides when approving subdivisions, municipalities have



Fall view of Merrimere Reservoir, Meriden, Connecticut

shown a continued interest in the trail system. In 2001, the Mattabesett and Metacomet Trails were designated official state greenways in Connecticut, and officially listed in the State Plan of Conservation and Development. Likewise, the Commonwealth of Massachusetts has identified the Metacomet-Monadnock Trail as one of the state's highest long-distance trail priorities in a recent statewide planning/prioritizing effort ("Commonwealth Connections: A Greenway Vision for Massachusetts"). The Appalachian Mountain Club and Connecticut Forest and Park Association have been powerful trail advocates and include the trail system among their highest trail priorities.

D. The current status of land ownership and current and potential use along the designated route

A summary of landownership can be found in Chapter II of this report. Land ownership along the entire trail is varied with no one land ownership type overly dominant. Overall ownership of the trail is fairly evenly distributed between private individual landowners, private corporate landowners and the states, with water utilities and municipalities having smaller equal portions. In Connecticut 33% of this land is considered permanently protected, while in Massachusetts 46% is considered permanently protected.

The fact that the trail has existed in harmony with adjacent land uses for many decades speaks to a broad compatibility between the trail and present (and anticipated future) land use patterns.

E. The estimated cost of acquisition of lands or interest in lands, if any

No federal acquisition of land or interest in land is anticipated under the National Scenic Trail designation model proposed in this draft report.

There will be no eminent domain takings of land for the trail. The Blueprint for Trail Management document that was developed during the study process anticipates that significant portions of the trail system will continue to be hosted by private individuals, corporations, and others on a voluntary basis for the foreseeable future. Approximately 62% of the existing trail route is hosted in this manner today.

Permanent protection of the entire trail system footprint is a long-term goal; one that will require some level of funding for acquisition of lands and easements by entities such as land trusts, communities, state agencies, and others, working with willing and interested landowners as opportunities arise.

The study's congressional sponsors have indicated an interest in providing federal acquisition funds to local, non-profit and state partners if the trail system is designated as a National Scenic Trail. These funds might be provided through established granting mechanisms, directly through the NST designation, or through other means. The potential costs of such acquisitions are difficult to ascertain given changing national and local economies and real estate markets, and the wide variability of terrain and development potential associated with different portions of the trail.

F. The plans for developing and maintaining the trail and the cost thereof

Unlike other recently proposed National Scenic Trails, the MMM Trail System has already been developed. The entire general trail route has existed for 40 years (with large sections in place for seventy-five years) and has been managed and maintained by non-profit organizations with the assistance of citizen volunteers. Only the extension of the Mattabesett Trail to Long Island Sound and a proposed trail re-route in the Quabbin Reservoir area of Belchertown/Leverett in Massachusetts would need to be developed.

The estimated annual federal portion of the costs for implementing the Blueprint for Management is \$271,000 (see budget details in the Blueprint). These costs represent the level of federal funding estimated to be necessary to support the work of

the local partners who will have primary responsibility for implementing the Blueprint for Management. It is anticipated the funding will support one half-time equivalent staff person for each state. The staff may be either from the National Park Service or local trail system partners. It is anticipated that the Cooperative Agreement authority of the National Trails System Act will be utilized to allocate federal funds to trail partners including CFPA, AMC, state agencies and other appropriate partners consistent with the intent of the Trail Management Blueprint.

In addition to this estimated administrative and management funding need, it is anticipated that if the trail system were designated it would also have access to the National Park Service Challenge Cost-Share funding dedicated to the National Scenic and Historic Trails. This program provides an additional mechanism to support non-federal trail partners working in partnership with the NPS.

G. The proposed Federal administering agency

The National Park Service would be the lead Federal agency for the trail if designated as a National Scenic Trail. Administration and management would be accomplished through a partnership approach with the proposed Trail Stewardship Council as outlined in the Blueprint for Trail Management. It is anticipated that the Appalachian Mountain Club and Connecticut Forest and Park Association would continue to play leadership roles in trail maintenance and management, with support from the additional partner organizations comprising the Trail Stewardship Council, including the NPS, state agencies, communities, landowners, land trusts, and trail user groups.

H. The extent to which a State or its political subdivisions and public and private organizations might reasonably be expected to participate in acquiring the necessary lands and in the administration thereof

The National Scenic Trail designation model proposed in this draft report anticipates, and is based upon, an unprecedented level of commitment and involvement from landowners, communities, land trusts, state agencies, and other entities through creation of the Trail Stewardship Council. All of these parties have a history of commitment to the trail system that has been demonstrated over a seventy-year

history. The NST designation relies upon the interest and commitment of these partners in implementing all aspects of the Blueprint for Trail Management.

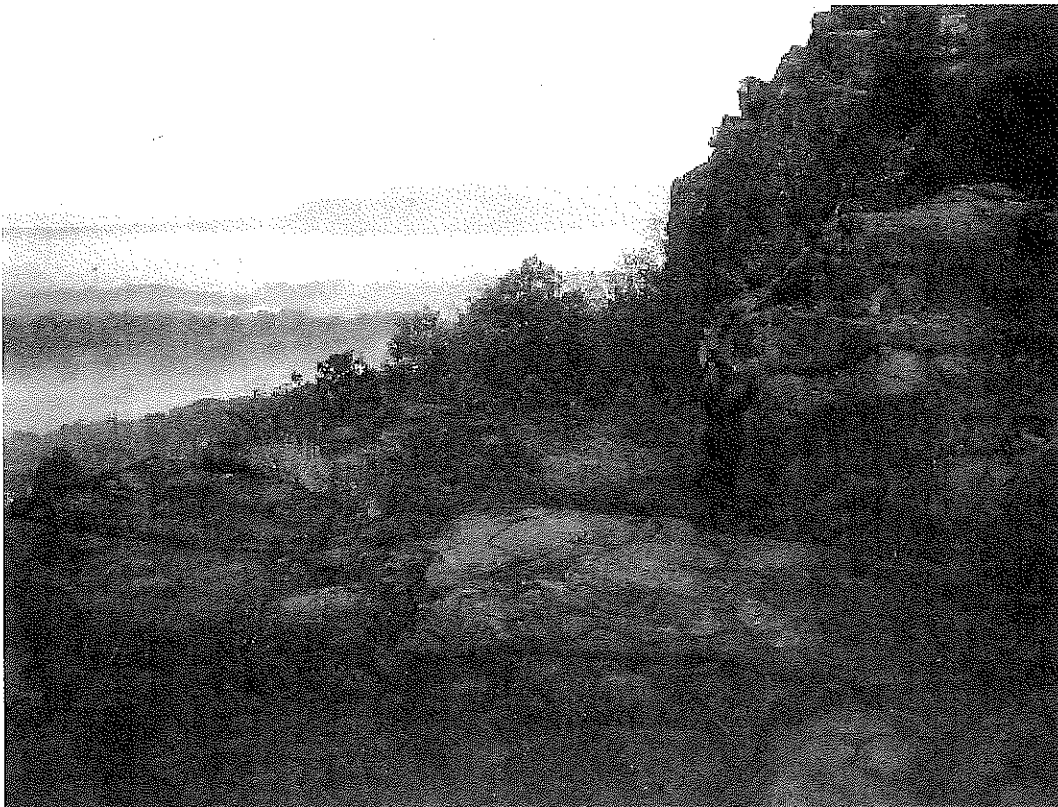
The envisioned Trail Stewardship Council, while not proposed to be a federally appointed Advisory Council, is consistent with the legislative intent of the National Trails System Act that each designated trail should have an “advisory council” of local, state and non-governmental trail interests. In this case, since the NPS would not own or directly manage any of the trail system, the Trail Stewardship Council would be more oriented to establishing an “implementation” dialogue among trail stakeholders than to advising the National Park Service.

- I. **The relative uses of the lands involved, including: the number of anticipated visitor-days for the entire length of, as well as segments of, the trail; the number of months which the trail, or segments thereof, will be open for recreational purposes; the economic and social benefits which might accrue from alternate land uses; and the estimated man-years of civilian employment and expenditures expected for the purposes of maintenance, supervision, and regulation of the trail**

The MMM Trail System is currently open 365 days per year. Occasionally segments of the trail system (such as the ascent of Ragged Mountain in Connecticut) are closed for safety related reasons during winter months when snow and ice are present. In these situations, the user is directed to a side-trail which skirts the closed section. Determining the number of anticipated visitor days was not possible due to a lack of existing use data, no availability of comparable data from other similar trail systems, and the limited time and resources to complete such an analysis during the study process.

Land uses patterns in the immediate vicinity of the MMM Trail System are not expected to be significantly altered by future management activities. All landowner-permitted existing uses will continue. A discussion of proposed management activities is contained in the Blueprint for Management section of the report.

A discussion of the estimated man-years of civilian employment and expenditure for maintenance, supervision and regulation purposes are addressed in the Blueprint for Management section of the report. It is noted that the Connecticut Forest and Park Association currently estimates that over 600 volunteer hours of maintenance labor are performed on the Mattabesett and Metacomet trails each year.



Chauncey Peak, Berlin, Connecticut

Trail System Issues and Opportunities

A substantial amount of time was committed during the study process to understanding trail management issues and the potential opportunities available to address those issues. The following is a summary of the findings received as a result of questionnaires and public input sessions. This information provided guidance for the development of the Blueprint for the Management of the Trail (Chapter V) and may continue to be used as a foundation for addressing future management issues.

A. Trail Use

The key trail use issues and problems facing the MMM Trail System are:

Wheeled motorized vehicle use: ATVs and other wheeled motorized vehicles cause erosion and damage to the trail in some areas.

Help in controlling unwanted trail users: Some private landowners want the trail, but want help in controlling unwanted trail users, such as ATVs and other wheeled motorized vehicles.

Trail users don't stay on the trail: Trail users sometimes wander off the trail onto private lands.

Hiking during hunting season: Safe hiking during hunting season is a concern.

Equestrian use: Equestrian groups have expressed a strong interest in expanding access to the trail for horse use.

Possible strategies or opportunities to address trail use issues include:

Limiting wheeled motorized vehicle use:

Some options available include:

- a) Post signs noting allowed and/or restricted uses at trailheads
- b) Create physical barriers to ATVs at trailheads, using boulders or gates
- c) Request help from state environmental police in severe enforcement problem areas
- d) Request help from ATV user groups to help police themselves.

Provide trail maps and information: Provide more detailed maps of the trail, posted at trail heads, with printed copies available for distribution.

Trail markings and blazes: Make sure trail blazes and markers are kept up to date and clearly delineate the route.

Land owner - Trail Steward agreements:

Written agreements could specify the terms of use for the trail on private lands, including the types of trail users that landowners want or do not want.

Volunteer trail rangers: Establish a system of volunteer "ridge runners" to be the "eyes and ears of the trail."

Safe hiking education: Educate hikers and trail users on hunting season dates and the use of blaze orange clothing during hunting season.

Equestrian Use: Explore options (based on landowner wishes) for increased equestrian access to the trail. Consider findings of "Equestrian Trail Survey Evaluations of the Metacomb & Mattabesett Trails" published by the Connecticut Horse Council.

B. Trail Protection

The key trail protection issues and problems facing the MMM Trail System are:

Development pressures along the trail: Land surrounding the trail will increasingly be developed over time if existing trends continue, and the trail will be located in an increasingly urbanized landscape, detrimentally altering its character.

Funding for trail protection: Few of the trail stewardship groups have sufficient funding to purchase properties or easements along the trail.

Sale of private lands on the trail: Some landowners may want to sell their properties, and an option to sell a trail corridor or property may be desirable to them.

Possible strategies or opportunities to address trail protection issues include:

Federal funds for land protection: Federal funds provided to local land trusts or trail stewards, or local land trust funds, could provide another option for landowners wishing to sell land for purposes other than development.

Municipal actions: In certain trail towns, municipal governments have taken steps to protect the Trail System. Examples are listed below.

State actions: Examples of state involvement in protecting trails are listed below.

Municipal Actions:

There are no specific local regulations in

Connecticut supporting the protection of the Metacomet or Mattabesett Trails. However, some communities have adopted zoning regulations to preserve the character of the various traprock "ridgelines". The Connecticut State General Assembly adopted ridgeline protection enabling legislation in February, 1998 (Public Act 95-239), allowing towns to create specialized ridgeline protection ordinances in accordance with their comprehensive plans.

Ridgeline protection ordinances may seek to restrict development on ridgelines by controlling the density, height and size of buildings, percentage of a lot that may be occupied, location and use of buildings for commercial purposes, or the height, size and location of advertising signs and billboards. Other zoning techniques involve the creation of ridge overlay districts, new zoning districts, and cluster subdivision regulations. The success or failure of these ordinances has not been fully evaluated.

A survey of the twenty Connecticut trail communities revealed that fourteen of them have included specific language related to ridgeline protection in town planning documents. An example of language from the town of Middlefield reads as follows:

Our traprock ridges have been a natural barrier to the push of progress across the state, creating towering vistas of rocks and trees that lift our eyes and refresh our minds, But the ruggedness of terrain is not sufficient to prevent inappropriate land uses that can destroy open space values. The fragile traprock ecosystem needs to be protected by controlling its disturbance and by maintaining an unbroken corridor of forest and the associated scenic vistas and provide public access via designated trails and overlooks where such provisions do not adversely impact the ridge ecosystem.

Source: Town of Middlefield, 2002 Plan of Conservation and Development.

Seven of twenty towns along the Metacomet and Mattabesett Trails in Connecticut have also (at times) taken regulatory or non-regulatory actions designed to enforce ridgeline protection policies. Examples of regulatory actions might include the enforcement of height restrictions on new home construction, or enforcement of the percentage of a lot within a ridgeline zone that may be cleared.

Open space conservation may also be considered to be a ridgeline protection tool. Non-regulatory actions in support of ridgeline protection goals primarily take the form of land purchases by municipalities for protection purposes. Such

actions have been aided considerably by legislation passed by the State of Connecticut in 1998 that created and funded a Department of Environmental Protection Open Space Grant Program. Under the program, land trusts and municipalities have received partial funding grants to help purchase and preserve important lands, including ridge tops.

An example of how this program has benefited the trail may be found on Mount Pisgah in Durham. For years a portion of the Mattabesett Trail remained closed due to an unwilling landowner until the Town was able to make an offer and purchase the land through an open space grant. This eventually led to the re-opening of this very popular section of trail. The towns of Avon, Farmington, Guilford, Middlefield, and Simsbury have also have been active in obtaining easements or purchasing land which in turn may protect sections of ridgeline along the Metacomet and Mattabesett Trails.

In Massachusetts, examples of municipal actions include the Hadley Land Development Ordinance, Section V-H, which mandates that there shall be no construction of residential dwellings or commercial buildings on any portion of land which is above 350 feet elevation above sea level within one mile of a State Park as defined by U. S. Geological Survey maps. If there is no buildable portion of a lot below 350 feet, no construction will be permitted without a special permit from the Planning Board. The Planning board will only grant the permit if it finds the applicant has taken all feasible measures to eliminate or diminish the effect of such construction on the scenic, natural and historic values of the Mount Holyoke Range.

State Actions:

The State of Connecticut is involved in efforts to protect land. In 1995, the Connecticut General Assembly acted upon the recommendations of the Governor's Greenways Committee and passed Public Act 95-335, which institutionalized Connecticut's Greenways program. Greenways are linear open spaces that help to conserve native landscapes and ecosystems by protecting, maintaining and restoring natural connecting corridors.

In 2001, Governor John Rowland and the Connecticut Greenways Council designated the Blue-Blazed Hiking Trails and the Metacomet Ridge system as official State Greenways. Because they are excellent examples of connective, open spaces that create new opportunities for outdoor recreation, and protect environmen-

tal, cultural and historical qualities they are now listed in the State Plan of Conservation and Development. This plan serves as a blueprint for state agencies and state-funded projects. This important designation will help attract state grant money that may be available and assist in the pursuit of federal designations. In addition to the greenway designation, the National Park Service selected a portion of the Metacomet Trail in cooperation with the New Britain Youth Museum as a National Environmental Study Area in 1981.

This legislation has helped with trail system extensions in recent years. While most extensions are small, adding just a few miles, in 1993 the Mattabesett Trail saw a major extension north from Reservoir Road to the Connecticut River through the Maromas section of Middletown. This extension increased the overall length of the trail and provided access to the Connecticut River, a valuable public resource.

C. Landowner Issues/Interests

The key landowner-related issues and interests facing the MMM Trail System are:

Permission for the trail: When the MMM Trail System was originally developed, some landowners, particularly in Massachusetts, were never asked for permission for the trail to cross their property. In other cases, the permission was informal, or granted many years ago. Lands have changed owners over the years and some new owners are not aware of any trail agreements.

Landowner liability: Landowners are concerned about liability and the potential for being sued by trail users in the event of accidents or injuries on the trail.

Trail users don't respect private property: Property owners have reported problems with trail users trespassing on private lands near the trail system, complaining about forest harvesting or other use of private lands, and related problems.

Landowners opposed to the trail: The trail system crosses some private properties where landowners do not want the trail to exist.

Concerns about National Scenic Trail designation: Some landowners are concerned that National Scenic Trail designation could adversely affect their property, through increased federal regulations or restrictions, community land use controls, or increased trail use and popularity. Private landowners should have the option to individually opt out of National Scenic Trail designation.

Concerns of hunters: Hunting clubs along the trail system do not want restrictions on hunting and shooting on private lands.

Concerns about local zoning restrictions: Landowners do not want local zoning restrictions along the trail corridor.

Concerns about eminent domain takings: Landowners do not want eminent domain takings by the federal government along the trail.

Possible strategies or opportunities to address landowner-related issues include:

Proactive Communication with Landowners:

There is an opportunity now, for trail stewards to reach out to landowners and establish better relations. Trail stewards should meet individually with each landowner to discuss trail use, landowner concerns and to secure agreements for trail access.

Liability Protection: There are several options for increasing liability protection for landowners, including:

a) Massachusetts and Connecticut law (MGL Chapter 21, sec. 17C, CGS Sec. 52-557g) limits the liability of landowners making land available to the public without a fee for recreational purposes.

b) Landowners on National Scenic Trails can enter into agreements with the National Park Service through its "Volunteers in Parks" program and receive liability protection from the federal government as if they were federal employees. *

c) Seek support from a stewardship or public entity to assume liability or establish a "landowner liability fund."

Signage for Private Lands: Trail stewards could increase public awareness of private lands, by posting signs at private property boundaries noting that trail users are entering private property and asking that they stay on the trail and respect private property rights and the generosity of landowners.

Trail Relocations: Trail stewards could work with local officials to relocate the trail in areas where landowners do not support the trail on private lands. In many cases it is possible to relocate the trail to publicly-owned lands.

Limit National Scenic Trail designation: Initial designation could include only publicly owned land parcels (i.e. state and municipal lands), with additional privately owned lands to be added individually at a later date based upon landowners' voluntary approval of a "certification" agreement. Private landowners should have the option to not participate in the National Scenic Trail.

Local zoning: Work with communities to ensure that zoning restrictions do not



Signs were posted along the MMM trail by PVPC and AMC to help address private landowner concerns

adversely affect landowners.

Prevent eminent domain takings: Ensure that any National Scenic Trail legislation specifically excludes eminent domain takings.

D. Maintenance and Trail Management Related Issues

The key trail maintenance and management issues and problems facing the MMM Trail are:

Erosion and blow-downs: In some areas of the trail, there is severe erosion caused largely by motorized vehicles. In other areas, the trail is partially blocked by large numbers of trees that have blown down.

Dumping of litter and garbage: This is a problem, particularly at some trailhead areas, where old tires, car parts, garbage bags, yard waste and other trash has been dumped.

Inadequate parking: Parking is very limited or unsafe or not well signed at some trailhead areas.

Beavers cause flooding: Newly constructed beaver dams have flooded some trail areas.

Logging can obscure trail: In some cases, logging directly on the trail makes the trail hard to find, and debris makes hiking difficult.

Increased trail traffic: There are some concerns that increased publicity about the trail system will result in increased traffic on the trail.

Noise pollution: Noise pollution from snowmobiles adversely affects wildlife in winter.

Possible strategies or opportunities to address trail maintenance and management issues include:

Volunteer work parties: Trail stewards can organize volunteer work parties to clean up trash, repair erosion, remove tree blow-downs and other work.

Parking improvements: Make parking and safety improvements with federal funds or other funding sources.

Relocate beavers or trail: Beavers damaging the trail could be trapped and relocated. Alternatively, the trail could be moved to loop around beaver areas.

Temporary signage in logging areas: Trail stewards may need to put up temporary trail signage or markers in logged areas. Trail stewards could also work with landowners to voluntarily minimize the impacts of harvesting activity on the trail experience.

Trail publicity: In order to minimize impacts associated with potential overuse, information on responsible recreational practices should be promoted or publicized.

Controlling trail use: Restrictions on the use of the trail by snowmobiles, ATVs or other motorized vehicles can only be determined by property owners.

Connecticut Horse Patrol: In areas where equestrian use is permitted explore the possible use of the Connecticut Horse Council's Horse Patrol program.

E. Administration

The key trail administration issues and problems facing the MMM Trail System are:

Access to trail stewards: Landowners don't know how to contact trail stewards.

Coordinated trail management: There is no single entity responsible for management and administrative decisions for the MMM Trail.

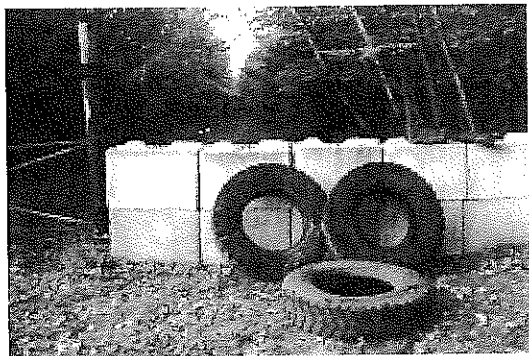
Trail maps and route information: Trail users often seek information on the trail route, parking, and maps. This information can be difficult to find.

Trail signage, rules and brochures: Very little signage and printed information materials exist to inform trail users about the trail and trail rules.

Conflict or problem resolution: There is no entity established to solve trail problems or resolve conflicts between users and/or landowners.

Possible strategies or opportunities to address trail administration issues include:

MMM Trail System website: Create a permanent website for the MMM Trail System that lists contact information for local trail stewards, as well as trail maps, trail rules and other trail information. Post the website address at trail-



Garbage left at trailhead, MMM Trail, Southwick, Massachusetts



Erosion caused by ATV use, MMM Trail in Holyoke, Massachusetts

head kiosks and on trail brochures and guides.

Trail signage and brochures: Create and install informational kiosks at trail-head areas to inform hikers of trail rules, private lands, etc. Create and make available trail system brochures with trail rules and map.

Trail Stewardship Council: Create a locally based MMM Trail System Stewardship Council, comprised of trail stewards, landowners, representatives from land trusts, communities and trail user groups. This group could assist with trail system management, administration and conflict resolution.

F. Community Connections

The key community connections issues and problems facing the MMM Trail are:

Community trail links: Some communities would like better links between the MMM Trail system and local trail networks connecting to residential areas.

Possible strategies or opportunities to address community connections issues include:

Grants for trail building: Trail stewards could work with communities to apply for Recreational Trails Act grants, Self-help grants and other funds to help build a better community linked trail system.

Federal funds for trail building: If designation occurs allocated a portion of potential federal funding to local community trail-related needs.

G. Trail Continuity and Relocations

Volunteer management organizations such as AMC and CFPA are continually seeking to protect the continuity of the MMM Trail System. When an individual landowner determines that the trail should no longer be located on his or her land, a suitable alternate route must be found. Often times, this involves extensive town hall research and negotiations with adjacent landowners to secure their permission. Only after permission is granted can the task of blazing the new trail begin. In cases where there are no suitable alternate routes, a portion of the trail system must be closed indefinitely or re-routed onto a road.

In general, relocations are initiated for one or more of the following reasons:

- Change in individual ownership of a parcel results in an unwillingness to host a section of trail
- New sub-division of land results in creation of a number of smaller land parcels that the developer deems are not appropriate for hosting a section of trail

- Specific instances of illegal or unwanted recreational use prompt owner to request a relocation of a section of trail
- Acquisition of land by a non-profit organization (primarily a land trust) or public agency creates an opportunity for a section of trail to be re-routed onto such property

It appears that relocations have increased along the MMM Trail System over the past several years. A survey of trail managers who are responsible for sections of the MMM Trail provided the following examples of trail relocations:

Mattabesett Trail

Eagle's Beak Point Section:

A section of the trail between Foothill Rd and Weise Albert Road was closed to public access by a property owner. The trail was subsequently relocated onto a paved road, resulting in a road walk section totaling approximately 0.7 miles

Mount Pisgah - Mica Ledges Section:

The trail was a road walk from Route 79 to Cream Pot Road of approximately 1.4 miles. The Town of Durham permitted the trail to be relocated over Mount Pisgah, eliminating all but 0.5 miles of road walk.

Mount Higby Section:

A section of the trail was rerouted due to the widening of State Route 66. No additional road walk sections were created.

Haddam Section:

A short section of trail was moved at the request of a property owner onto Cockaponset State Forest property. Distance: about 0.1 mile.

Durham Section:

Property containing the trail was sold to a developer who requested that the trail be removed. The trail was relocated onto Cockaponset State Forest and Town of Durham property. The relocation added approximately 0.8 mile to the trail.

Metacomet Trail

Crooked Brook Section:

The trail was rerouted onto newly-created, protected property as a result of a planning and zoning approval process for the planned construction of a gas power generation plant. The total distance of the relocation was about 0.5 miles.

Hanging Hills Section:

The trail was closed on West Peak by property owners. It was rerouted onto Meriden Water Company property to Edgewood Road, which

resulted in 1.4 miles on Edgewood Road. This re-route occurred in the late 1990's.

Hill-Stead to Talcott Mountain Section:

The trail was closed between Mountain Road and Route 4 due to development. It was rerouted onto property belonging to the Hillstead Museum. No road walks were created.

Prattling Pond Section:

The trail was rerouted off Prattling Pond Road onto land trust property, eliminating about 0.5 miles of road walk. The trail was also rerouted between the end of Prattling Pond Road and Old Mountain Road onto easements obtained by the town of Farmington. No road walk.

Tarriffville Gorge Section:

The trail was rerouted from the Farmington River Bridge to north of the bridge. A similar road walk section to the previous route was created.

Suffield to Massachusetts Section:

The trail was closed between Mountain Road (Router68) and the Massachusetts border, resulting in a road walk of approximately 2.3 miles.

New Britain Water Company lands:

The trail was relocated away from New Britain Water Company facilities in Berlin, New Britain and Southington. The new route is 6.5 miles while the old route was 4.0 miles. An 0.8 mile road walk was replaced by a different 0.8 mile road walk.

West Hartford, Metropolitan Water District property:

Sections of the trail on MDC lands were re-routed. No new road walks were eliminated or created.

Metacomet-Monadnock Trail

Massachusetts Fish & Wildlife Department lands:

A 3 mile section of trail was relocated onto public, protected land after a request for removal of the trail from private lands by the landowner.

Cherry Street Section:

A relocation of the trail off Cherry Street brought the trail down to an area where a direct crossing onto protected land could be accomplished. Length: .3 mile.

West Springfield Section:

A 1.5 mile section of trail was taken off a road and placed on YMCA lands.

West Springfield Section:

At the request of a private landowner, a 2 mile section of trail was successfully re-routed onto conservation land.

Pratt Corner Section:

A two-mile section of trail was relocated at the request of a private land owner.

Pratt Corner Section:

A one-mile section of trail was moved onto a road section because of logging operations and land owner concerns.

Atkins Reservoir Section:

A major relocation took 6 miles of trail off water company property and away from power lines.

Banfield Section:

0.3 miles of trail was relocated to place it on newly created Leverett Conservation lands.

Leverett Section:

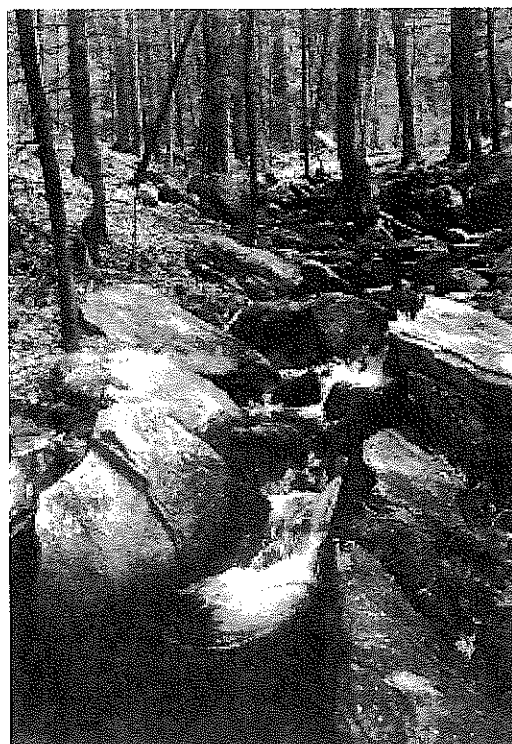
A five-mile relocation of the trail was necessary due to land owner request that the trail be moved off private property.

Erving Section:

A relocation of .05 miles of trail was needed because of new land owner building on trail.

Warwick Section:

A ten-mile section of trail was moved off an



Holland Glen, Massachusetts

abandoned road at the request of the landowner and onto Mass. DCR lands.

H. Trail Extension To Long Island Sound

Public Law 107-338 in part directed the National Park Service to examine the feasibility of extending the Mattabesett Trail in Connecticut south to a new terminus at Long Island Sound. The MMM Trail Study Steering Committee subsequently authorized a research team to report on possible extension routes and approval issues. This team, led by the Environmental Planner, Town of Guilford, developed a Geographic Information Systems (GIS) map showing the southernmost portion of the Mattabesett Trail and its relationship to roads and existing public and private parcel boundaries in both Guilford and western Madison.

After examining a number of possible trail extension routes, the team identified a general corridor of approximately fourteen miles through which a route to Long Island Sound could travel. They subsequently contacted a total of four landowners in Guilford over whose lands the proposed trail would travel to explain the nature of the trail extension project. The parcels along the generally proposed route are owned by the following entities:

- South Central Regional Water Authority
- Town of Guilford
- State of Connecticut
- Guilford Land Conservation Trust.

As a result of the research, it appears that a trail extension is feasible and that it would add desirable new features to the existing Mattabesett Trail. The proposed extension of the trail would travel through protected water utility lands, state forest lands, a National Register Historic District, two State of Connecticut historic districts, and coastal environments including a tidal marsh and public beach.

A map showing the generally proposed trail route is contained within this report. To finalize a route and construct a trail path, formal approvals will be needed from all landowners. Separate applications will need to be submitted to the South Central Regional Water Authority and the Connecticut Department of Public Health for permission for the trail to travel through watershed lands. It is estimated that this process could take six months or more once initiated.

I. Alternate National Scenic Trail Route in Massachusetts

In Massachusetts, this study identified a problem and an opportunity: the lack of existing pro-

Table 10. Summary of Trail Issues and Strategies
Issue or Problem

- 1) Liability for trail accidents is a concern for landowners.
- 2) ATVs and other wheeled motorized vehicles cause trail erosion and disruptions.
- 3) Trail users do not show respect for private property.
- 4) Trail crosses some private properties where landowners do not want the trail.
- 5) Trail users sometimes wander off the trail onto private lands.
- 6) Landowners are concerned that National Scenic Trail designation could adversely affect their property.

Potential Strategies

- a) Massachusetts law (MGL Chapter 21, sec. 17c) limits the liability of landowners.
- b) Landowners liability protection on National Scenic Trails under the federal "Volunteers in Parks" program.
- c) Seek support from a stewardship or public entity to assume liability or establish a "landowner liability fund".
- a) Post signs noting restricted uses at trailheads
- b) Create physical barriers to ATVs at trailheads
- c) Request help from state environmental police
- d) Self-policing by ATV user groups
- a) Post signage at private property boundaries noting that trail users are entering private property and asking that they stay on the trail and respect private property rights and the generosity of landowners.
- a) Work with trail stewards to relocate the trail.
- a) Provide better maps of the trail, posted at kiosks at trailheads, and printed copies for distribution.
- b) Make sure trail blazes and markers are kept up to date and clearly delineate the trail route.
- a) Initial designation could include only publicly owned land parcels (i.e. state and municipal lands), with additional privately owned lands to be added individually at a later date based upon landowner's voluntary approval of a "certification" agreement.

Table 10 (cont.d)

Issue or Problem

Potential Strategies

7) Landowners either were never asked for permission for trail to be on private land, or permission was informal, or was granted many years ago.

- a) Trail stewards should meet individually with all landowners, and seek formal permission for trail.
- b) Agreements could specify types of trail users that landowners want or do not want.

8) Landowners don't want any federal rules or impacts on their lands as part of National Scenic Trail designation.

- a) See 6a above. A "certification" agreement would provide a printed agreement between landowners and trail stewards assuring landowners that no restriction will be imposed.

9) Hunting clubs along trail do not want restrictions on hunting and shooting.

- a) See 3a, 6a and 8a above.

10) Some landowners want the trail, but want help controlling unwanted trail users (i.e. ATVs).

- a) Provide assistance to landowners to implement 2a-2c above.
- b) Landowner-Trail Steward Agreements could specify types of trail users that landowners want or do not want.
- c) Establish a system of volunteer "ridge runners" to be the "eyes and ears of the trail".

11) Erosion and blow-downs are problems in a few areas of the trail.

- a) Trail stewards can organize volunteer work parties to fix problems.

12) Dumping of litter and garbage is a problem at some trailhead areas.

- a) Trail stewards can organize volunteer work parties to clean up areas.
- b) Engage local law enforcement to help address this issue.

13) Beavers cause flooding in some trail areas.

- a) Relocate trail or beavers.

14) In some cases, logging directly on the trail makes trail hard to find, and debris make hiking difficult.

- a) Trail stewards will need to put up temporary signage in logged areas.
- b) Work with property owners to seek advance notice of harvesting activity in the trail area and to promote voluntary measures to minimize permanent impact to the trail.

15) Parking is not adequate in some trailhead areas.

- a) Make parking and safety improvements with federal funds or other funding sources.

16) Landowners don't know how to contact trail stewards.

- a) Publicize web address at trail-heads and through direct communication with landowners.
- b) Create a locally based "trail council" of trail steward and managers, and publicize their contact information.

17) Some landowners may want to sell their trail corridor or properties.

- a) Federal funds or local land trusts could provide another option for landowners other than development.

18) Landowners don't want local zoning restrictions along the trail.

- a) Work with local communities to help foster constructive dialogue concerning zoning issues.

19) Landowners don't want eminent domain takings by the federal government along the trail.

- a) Ensure that any National Scenic Trail legislation specifically excludes any eminent domain takings.

20) Land surrounding the trail will increasingly be developed over time, and trail will be located in an urbanized environment.

- a) See 17a above.

21) There are concerns about increased traffic on the trail with publicity.

- a) Develop a current understanding of the carrying capacity of the trail system.
- b) Design promotional activities consistent with objectives for managing trail traffic.
- c) See 3a above. a) Trail use to be determined by landowners.

Table 10 (cont.d)

Issue or Problem

Potential Strategies

22) Very little signage and printed educational materials exist to inform trail users about the trail and rules.

- a) Create and install informational kiosks at trailhead areas to inform hikers of trail rules, private lands, etc.
- b) Create and make available trail brochures with trail rules and map
- c) See 3a above.

23) Private landowners should have the option to individually opt out of National Scenic Trail designation.

- a) See 6a above.

24) Hiking during hunting season is a concern.

- a) Educate hikers and trail users on hunting season dates and appropriate precautions such as the use of blaze orange clothing during hunting season.

25) Noise pollution from snowmobiles may adversely affect wildlife in winter.

- a) Trail use to be determined by landowners.



Millers River along the MMM Trail, Massachusetts

tected lands on the Metacomet-Monadnock Trail in the Belchertown-Leverett area; and the nearby presence of large blocks of existing, protected state lands in the Quabbin Reservoir area.

Inquiries into the reasons for the lack of protected lands along the existing trail indicate that the area lies in between two high state land protection priorities: the Connecticut River Valley and the greater Quabbin landscape area. State officials have indicated that generally they are not able to make land protection a priority in this area, despite the desire to protect the Metacomet-Monadnock Trail. In addition, at least one large corporate landowner in this area, Cows Lumber, has expressed repeated and consistent opposition to land protection.

Based on these findings, state officials were asked about the feasibility of accommodating an alternative trail alignment utilizing state forest lands (west of Route 202) and, potentially, watershed protection lands surrounding Quabbin Reservoir (east of Route 202). The connection of these areas to the Metacomet-

Monadnock Trail (at the Mt. Holyoke Range on the south end and at Wendell State Forest to the north) would track established “greenway corridor” goals of the Commonwealth’s state-wide greenway priorities as articulated in: “Commonwealth Connections: A Greenway Vision for Massachusetts.”

Preliminary results of these inquiries indicate that an alternate Quabbin watershed “state-lands” alignment appears to be possible. Any portion of the alignment that entered the Quabbin watershed lands would need to meet strict protection standards, would be limited to hiking, and would not be available for overnight camping. Within the Quabbin Reservoir area, north-south running trails and old road alignments that are currently open to the public could be a suitable and desirable location for a new route.

Implementation of this alternate route, while conceptually feasible, will need further detailed exploration in partnership with the Commonwealth of Massachusetts and other trail partners.



View of Bilger Farm from the MMM Trail

A Blueprint for the Management of the Trail

The MMM Trail System Management Blueprint has two main purposes:

1. Collect the best recommendations and strategies that have come out of the Connecticut and Massachusetts Trail Study working groups to meet the Study's primary objective of ensuring long-term trail viability.
2. Establish a clear basis for management of the trail should it be designated as a National Scenic Trail.

The Blueprint is organized into seven sections, as follows:

Section A.	Landowners Issues
Section B.	Trail Use
Section C.	Trail Protection
Section D.	Trail Management and Maintenance
Section E.	Community Connections
Section F.	Administrative Framework
Section G.	Provisions If National Scenic Trail Designation Occurs
Section H.	Proposed Blueprint Budget

The implementation of this Blueprint will be coordinated through the Trail Stewardship Council as described in Section F: Administrative Framework.

The following Management Principles underlie the Blueprint and are critical to its success:

- There is full involvement of a wide range of trail constituents
- The Blueprint builds off of existing trail partnerships and traditions
- Private property rights are respected and landowners participation encouraged
- No new regulatory trail protection is proposed or advocated by this blueprint or by the trail stewardship council on private property.

The cost to implement this blueprint is estimated at \$271,000 and is described in Section H: Proposed Blueprint Budget.

Each section begins with a goal statement followed by a set of recommended tasks, policies and objectives that could be undertaken to support achievement of the goal.

A. Landowner Issues

Goal: Work with landowners hosting the trail to foster good communication along with support for, and involvement in, sustaining the trail.

1. Set up a system to communicate with landowners, including:
 - a. All landowners receive at least one newsletter per year with trail updates and contact information;
 - b. Keep up-to-date contact information on web site (trail maintainers, section leaders, town contacts).
2. Maintain an up-to-date landowner database (parcel map/ database updated annually).
3. Establish a mechanism to enforce trail policies.
 - a. Develop relationships with enforcement authorities and individuals (local, state, land owner)
 - b. Develop strategies to address trash, illegal dumping, trespassing and parking issues.
4. Provide increased liability protection for landowners hosting the trail.
 - a. Establish a "liability protection fund" to pay legal costs in the event of a suit;
 - b. Explore additional options, including the National Park Service VIP program; personal liability policies; adding landowners to insurance coverage of trail stewardship/ protection organizations.
5. Seek to formalize permission for trail access such as through voluntary, revocable written agreements that are mutually beneficial to trail stewards and landowners.
6. Trail relocation requests are to be expected and will be accommodated in a timely fashion.
7. All existing landowner uses and rights including hunting, fishing, timber management and trail uses such as equestrian, mountain biking, and snowmobiling will continue to be at the discretion of landowners.
8. Provide educational materials to local commissions, recreational users, and other stakeholders regarding private property rights associated with the trail.

B. Trail Use

Goal: Set trail system use policies to provide positive trail experiences, respect trail capacity and landowner rights.

1. Support the MMM Trail System primarily as a continuous, long-distance hiking trail with uses such as mountain biking, equestrian, or snowmobiling on sections based on landowner wishes and terrain suitability.
 - a. landowners have the final say regarding trail uses on their property
 - b. the Stewardship Council will be available to review and provide recommendations on multi-use issues brought forth by user groups or landowners.
2. Develop a conflict resolution process to address landowner and trail user issues, utilizing the Trail Stewardship Council.
3. Track trail use levels, types, impacts and conditions including using standard methodologies for comparison with other trails and trail systems.

C. Trail Protection

Goal: Secure a continuous off-road trail system that respects natural resources, from Long Island Sound to the MA/NH border.

1. Trail protection is defined as supporting the long-term existence and use of the MMM trail.
2. Trail protection will occur using a wide range of tools including but not limited to: conservation restrictions; revocable recreational easements; fee simple acquisition; or memoranda of agreement.
3. Trail protection will occur with landowners on voluntary basis only. No land takings will occur.
4. No specific trail system corridor width is required or established.
5. Trail protection will be encouraged and assisted (financial, coordination, establishing priorities) by the Stewardship Council, working with the Appalachian Mountain Club (MA), Connecticut Forests and Parks Association (CT), state agencies, land trusts, communities, and others.
6. Track the current level of protection on maps and database.

7. No regulatory protection of a "trail corridor" or "view corridor" is required.
8. New or relocated sections of trail will be laid out and constructed in an environmentally sensitive manner.

D. Trail Management and Maintenance

Goal: Support a volunteer-based trail stewardship program to ensure a well-maintained trail system.

1. AMC and CFPA will continue to be the lead volunteer-based entities for day-to-day trail system management and maintenance. The Trail Stewardship Council will assist and coordinate with AMC and CFPA as appropriate to ensure consistent and successful Trail management across the two states, including:
 - a. consistent guidelines for trail management and trail volunteers;
 - b. consistent trail signage standards;
 - c. consistent trail relocation procedures;
 - d. consistent mechanisms to monitor trail conditions;
 - e. evaluate and meet parking needs.
2. Use a trail guidebook and signage to clearly identify appropriate parking areas, as well as private land trail segments which need to be respected.
3. Additional organizations such as the Snowmobile Association of Massachusetts and Connecticut Horse Council have strong track records of volunteer maintenance on certain trails. These organizations may play lead roles on the MMM Trail System if sections of the trail are deemed appropriate for such alternative uses.

E. Community Connections

Goal: Engage towns as trail system partners, and maximize trail connections to communities.

1. Appoint town representatives to Trail Stewardship Council.
 - a. encourage towns to appoint two representatives: one trail landowner and one from an appropriate "lead" town board/committee
2. Identify and promote physical connections between the MMM Trail and other resources such as town forests and parks, state forests and parks, other existing trail systems, down towns, or other compatible resources.
3. Develop a small grants program for communities to promote trail stewardship, connections, and protection.

F. Administrative Framework

Goal: Create a locally based trail administrative structure to assist and support the leadership role CFPA and AMC will continue to have in overall trail management and maintenance.

- i. Establish a Trail Stewardship Council comprised of individual Councils in Massachusetts and Connecticut.
 - a. Each Trail Stewardship Council will have only advisory powers, and will use the management blueprint as a guiding document in the long-term management of the trail while working as a supportive partner with CFPA and AMC.
 - b. The Councils will decide if/when they need a formal Memorandum of Understanding;
 - c. By-laws will be developed by the Council based on similar groups, such as Westfield and Farmington Wild and Scenic Advisory Committees;
 - d. All meetings will be open to the public and governed by the applicable CT and MA state statutes (open meeting laws, etc.)
 - e. Working committees/subcommittees will be encouraged, and may be formed around trail segments and/or issues. Participation will be open to individuals and organizations beyond the Stewardship Council.
2. Members of the Council will include representatives from:
 - a. Massachusetts and Connecticut – two representatives for each state, to be determined by the commissioner of the appropriate state environmental agency.
 - b. The AMC – two representatives
 - c. CFPA – two representatives
 - d. Municipalities – one representative per town, ideally a pertinent town staff member or commission member, to be appointed by the chief legislative body
 - e. Landowner – one representative per town to be appointed by the chief legislative body
 - f. User Groups – four seats will be available on each state Council to represent user interests, including non-hiking interests such as equestrian, snowmobiling and mountain biking.
 - g. Regional Planning Agencies – one seat will be available for each regional planning agency that has the trail in their region
 - h. Nonprofit Land Conservation Organizations – one seat will be available for each land conservation group that owns or manages property over which the trail crosses.
 - i. Others as the Council sees appropriate including individuals, water utilities or corporate landowners.

3. The Stewardship Council will operate on a consensus-based decision-making process for most decisions; there may be certain decisions such as adoption of by-laws, changes to the management blueprint or election of officers where more formal votes will be desired.
4. Bi-state meetings to be held between Massachusetts and Connecticut as needed, but at least once a year.

G. Provisions if National Scenic Trail Designation Occurs

Goal: If NST designation occurs, provide federal assistance to implement this Blueprint, while supporting local management and property rights.

- 1) Trail Stewardship Council
 - a) The National Park Service will become a member of the Trail Stewardship Council and occupy a single seat.
 - b) The Trail Stewardship Council shall be established in a timely manner.
 - c) The National Park Service will not be eligible to chair the Council or hold other officer positions.
 - d) The Council and its subcommittees shall not be considered federal advisory committees for the purpose of the Federal Advisory Committee Act.
- 2) National Park Service Assistance
 - a) The primary role of National Park Service will be to assist the Council, its member institutions, and other partners in the implementation of this Management Blueprint, subject to Congressional appropriations.
 - b) The National Park Service will coordinate the expenditure of federal funds provided by Congress for the Trail with the Council, and will seek consensus from the Council on the most effective use of such funds.
 - c) Priorities for use of federal funds/assistance shall include: coordination and support of the Council itself and any subcommittees that the Council creates; trail continuity; maintaining up-to-date mapping and landowner contact information; signage; capital improvements such as parking and trailheads; trail maintenance; assistance to communities and other partners for trail connections, planning, enforcement, protection and enhancement; other priorities as established by the Council.
- 3) Limitations of NST Designation and Safe guards for Landowners
 - a) For the purposes of NST designation, no specific trail system corridor width will be established.

b) Federal funds provided to purchase land or development rights as a result of NST designation may only be used in conjunction with willing seller transactions. Such expenditures must have the support of the MMM Trail Stewardship Council. Such funds could be used to support state, local or non-governmental organization initiatives to protect portions of the trail.

c) The National Park Service will not acquire, own or manage any lands under authority of the NST designation.

d) No segment of the MMM Trail shall be officially recognized as a portion of the National Scenic Trail against the wishes of the landowner.

e) The National Park Service will not impose recreational use restrictions on any segment of the MMM Trail. If the NPS finds that a trail segment's uses are incompatible with NST designation, the NPS should seek the consensus of the Council to pursue alternative routes for the trail.

f) The National Park Service will not impose any land use restrictions or viewshed restrictions.

H. Proposed Blueprint Budget

The estimated annual federal portion of the costs for implementing the Blueprint for Management is \$271,000 (see budget details below). These costs represent the level of federal funding estimated to be necessary to support the work of the local partners who will have primary responsibility for implementing the Blueprint for Management. It is anticipated the funding will support one half-time equivalent staff person for each state. The staff may be either from the National Park Service or the local partners. It is proposed that funding will be distributed for use by the local partners, primarily CFPA and AMC, through cooperative agreements or similar type arrangements.

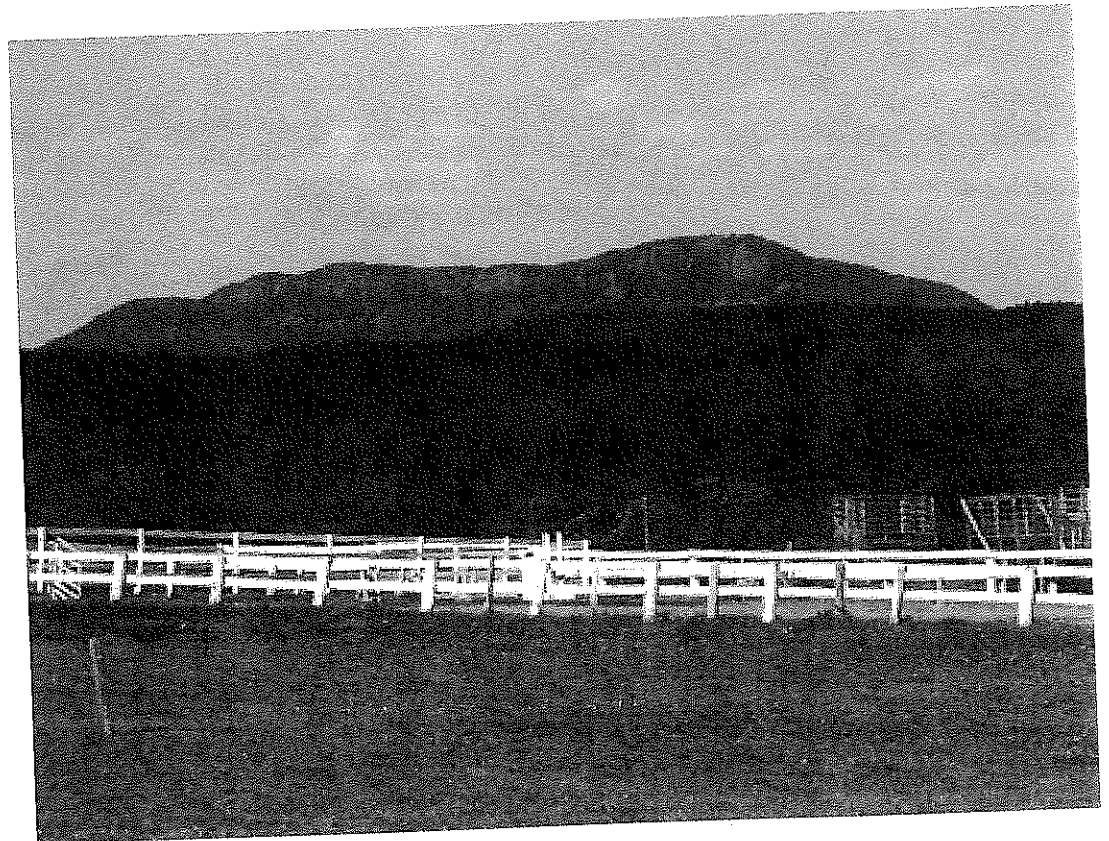
In addition to this estimated administrative funding need, it is anticipated if the trail were designated it would also have access to the National Park Service Challenge Cost-Share funding dedicated to the National Scenic and Historic Trails. As well, it is hoped a designation may also leverage opportunities for additional funding through statutory aid or other means to support local and state land conservation activities associated with protecting the trail system. See Table II.

Table 11. Metacomet-Monadnock-Mattabesett Trail Study Blueprint for Management Estimated Operating Budget-Federal Costs-Draft May 12, 2005

Category	Expense
I. Landowner Issues	
1a Newsletter - Printing, Design & Postage	\$5,000
1b Website Maintenance - outsource	\$5,000
2a Maintain and Update Landowner Database	\$5,000
3b Trash & Illegal Dumping Clean-up	\$4,000
4a Landowner Liability Protection Fund	\$20,000
8 Trail Brochure - Design, Print & Distribute	\$7,000
Sub-total	\$46,000
II. Trail Use	
3 Track Trail Use, Types, Impacts & Conditions	\$20,000
Sub-total	\$20,000
III. Trail Protection	
5 Support Voluntary Trail Protection Projects - surveys, appraisals, legal fees	\$10,000
7 Track current level of trail protection & GIS data upkeep - outsource	\$7,500
Sub-total	\$17,500
IV. Trail Management & Maintenance	
1d See Item II.3.	
2 Trail markers, trail head signs, road crossing signs, kiosks	\$20,000
Sub-total	\$20,000
V. Community Connections	
3 Community Small Grant Program	\$100,000
Sub-total	\$100,000
Staff and Administrative	
1 One Half-Time Equivalent for Each State	\$60,000
2 Stationary, envelopes	\$2,000
3 Office Supplies	\$2,000
4 Travel	\$2,000
5 General Postage	\$1,500
Sub-total	\$67,500
TOTAL	\$271,000

Budget Notes:

- This budget is for the entire two state trail system assuming designation occurs and the blueprint is implemented.
- This budget does not address any potential funding associated with voluntary land protection efforts associated with the trail.
- All other components of the blueprint for management not mentioned in the budget are considered to require only staff time and have no additional associated expenses.
- It is anticipated that the Landowner Liability Protection Fund (Item I.4a.) will not need to be replenished annually.
- It is anticipated that funding needs for the trail use impacts and conditions work (Item II.3.) will not need permanent levels of funding at the level budgeted. In future years funding would evolve to address issues identified in the trail use, impacts and conditions assessment, such as trail and trail head improvements, parking improvements or other related items.



View of Mount Tom, Easthampton, Massachusetts



The Connecticut River in the background from the porch of the Summit House, Holyoke, Massachusetts

Management Alternatives and Environmental Assessment

This chapter of the Feasibility Study discusses alternative schemes for the management and protection of the MMM Trail System and the likely environmental and socio-economic impact of those alternatives.

A. Purpose and Need

This document is being prepared in response to passage of Public Law 107-338, directing the National Park Service to study the Metacombet-Monadnock-Mattabesett Trail System in Connecticut and Massachusetts for potential inclusion in the National Trails System through designation as a National Scenic Trail. Based on the expressed intent of the legislative sponsors and principal trail steward organizations, two goals were established for the study:

Primary Goal: To determine the best way to ensure the long-term viability of a continuous public-use trail system from Long Island Sound through Connecticut to the Massachusetts/New Hampshire border.

Secondary Goal: To determine whether or not designation as a National Scenic Trail makes sense as a means of achieving the primary goal of long-term trail system viability.

In addition, the study had four guiding principles:

- Meaningful investigation of the trail system's long-term viability can only occur with the full involvement of a wide range of trail advocates, landowners, and other interested parties.
- Emphasis will be on strengthening existing trail system partnerships and characteristics of use, maintenance, ownership, and voluntary stewardship.
- Respect for private property rights is a fundamental component of a successful project.
- Federal condemnation of land will not be considered as an option in establishing or protecting the trail system.

These goals and guiding principles are the framework for the study and for the development of alternatives discussed in this Chapter.

B. Alternatives Considered and Rejected

Only alternatives considered practical and feasible are evaluated in detail, based upon realities of the trail system, advice of study partners, congressional intent and similar limiting factors. The study team eliminated from detailed consideration several trail management and protection approaches that relied on an unacceptable level of federal involvement and/or control.

Utilization of Federal Condemnation Authority

Consistent with Congressional intent and direction expressed prior to and after authorization of the MMM Trail System study, any alternative involving federal condemnation of lands was eliminated from consideration prior to commencement of the study.

Direct Federal Management of the Trail

In further developing the intent and direction of the study, the study team Goals and Principles emphasized strengthening existing trail traditions of management and protection. Through working groups, landowner feedback, and public forums, this emphasis has been widely supported. Little or no support has been voiced for any direct federal management of the trail. Existing local, state and nongovernmental institutions are well situated to implement management and protection strategies for the trail. Therefore, any alternative calling for direct federal management of the trail has been eliminated from consideration.

Federal Ownership of the Trail

As is the case regarding direct federal management of the trail, little support or need for direct federal ownership of the trail has been voiced. Direct federal ownership or acquisition of trail lands would unnecessarily complicate trail protection, management and administration. Direct federal ownership of lands under a potential National Scenic Trail designation has been eliminated from consideration.

Abandonment of Long-Distance Trail Continuity in Favor of Local/Regional Trail Segments

Any alternative that considered abandoning the goal of long-distance trail continuity in favor of working toward a series of shorter, unconnected day hikes was dropped from consideration based upon congressional intent, historical trail context,

established goals of the states of CT and MA, and the input of principal trail partners, including the AMC and CFPA.

National Recreation Trail Status

Although more than 50 miles of the Metacomet-Monadnock Trail in Massachusetts were designated as a National Recreation Trail in 2001, National Recreation Trail status for the entire MMM Trail System was not sought due in large part to the requirement that written approval of all participating landowners be obtained. With over 600 landowners and 1,000 separate parcels of land along the trail system, the process of gathering the necessary written approvals was not determined to be feasible.

C. Alternatives Considered

- **Alternative 1: Continuation of Current Practices**

Under this alternative, no specific actions or organized effort would be made to alter current trail management practices or administrative structures, and no comprehensive effort to implement the recommendations of the MMM Trail "Blueprint" would be made. Some of the Blueprint's recommendations might be picked up and implemented by groups such as the Connecticut Forest and Park Association in CT and the Appalachian Mountain Club in MA.

- **Alternative 2: Implementation of the Trail Blueprint through National Scenic Trail Designation for the Entire Existing Route of the MMM Trails in Connecticut and Massachusetts**

Under this alternative, the entire historical trail route of the MMM Trails in CT and MA would be designated as a National Scenic Trail to be managed in accordance with the MMM Trail Management Blueprint developed as a part of the Study. This alternative would adhere closely to the intent of the Study legislation, and would elevate the profile of the MMM Trail system as a resource of national significance. This alternative is not considered a feasible alternative due to significant landowner opposition and the general lack of existing trail protection in the trail section north of the Mt. Holyoke Range (western Belchertown town boundary). This section of trail includes several long stretches with little or no existing trail protection and substantial landowner opposition to either trail protection or NST designation.

- **Alternative 3: Implementation of the Trail Management Blueprint through National**

Scenic Trail Designation from Long Island Sound in CT to the NH Border, including a significant re-route in the Belchertown to Leverett area in Massachusetts.

Under this alternative the entire trail system from Long Island Sound to the NH border would be designated as a National Scenic Trail under a name such as the New England National Scenic Trail. The route would include a significant deviation from the existing Metacomet-Monadnock trail for the portion of the designation between the Mt. Holyoke Range and Wendell State Forest, consistent with the generalized map found within this report. This alternate route is conceptual only at this time. Preliminary discussions with state of Massachusetts officials indicate that this potential route alternative, which may be able to take advantage of existing State Forest and, possibly, Quabbin Reservoir lands, is conceptually feasible. The total length of the National Scenic Trail route from Long Island Sound to the New Hampshire border is estimated at 220 miles. This alternative and its implementation is more fully discussed below.

- **Alternative 4: Non-Federal Implementation of "Blueprint" Recommendations**

Under this alternative, another state-based or non-profit-based entity would take the lead in promoting the MMM Trail Blueprint in an organized and comprehensive fashion. The most likely possibility is that the CFPA and the AMC, cooperating with the states of Massachusetts and Connecticut, could form a bi-state partnership whose mission was to implement the MMM Trail Blueprint and ensure long-term trail viability and continuity. CFPA and AMC would need to raise funds privately and through various grant sources to fund this effort. This alternative is not considered feasible since neither the states of Connecticut or Massachusetts nor the AMC or CFPA are in a position to undertake the efforts necessary.

Discussion of Alternative 3: Implementation of the Trail Management Blueprint through National Scenic Trail Designation from Long Island Sound in CT to the NH Border, including a significant re-route in the Belchertown - Leverett area in Massachusetts

General

National Scenic Trail designation would elevate the level of importance associated with long-term viability of a continuous trail system from Long Island Sound to the New Hampshire border. The creation and support of the envi-

sioned Trail Stewardship Council would create a vehicle for increased coordination, communication, and partnering among all trail stakeholders in achieving the goal of long-term trail viability, enhancement and protection articulated in the Trail Management Blueprint developed as a part of this study. The potential availability of federal funds through the designation, as well as the leveraging effect of the national designation, would help support and catalyze the efforts of all trail partners. Continued leadership from the Appalachian Mountain Club and the Connecticut Forest and Park Association, augmented by increased funding levels and increased partnering opportunities through the Trail Stewardship Council appears to be an effective vehicle for achieving trail system goals, while maintaining the heritage and traditions of the trail system.

Deviations from Historical Routes

Extension to Long-Island Sound - Based on legislative direction and the interest of CFPA and other trail partners in CT, the study process in Connecticut has included investigation of potential alternatives to connect the existing Mattabesett Trail to Long Island Sound. A map contained within this report shows the conceptual route of such an extension that has been developed through the efforts of the CFPA and the Town of Guilford. This extension is believed to have a high degree of feasibility and is included as a part of the NST designation alternative.

New Alignment in Massachusetts North of the Mt. Holyoke Range - A new alignment for NST purposes is envisioned between the Mt. Holyoke Range and the Wendell State Forest in the Belchertown-Leverett area. This alternative route warrants exploration based on the potential to take advantage of existing state lands that lie to the east of the existing Metacomet-Monadnock Trail, and due to the high priority for future land protection in this Greater Quabbin Landscape area. By contrast, the existing route in this area is almost completely devoid of protected lands, and substantial landowner opposition in this area has been voiced against land protection and NST designation. Multiple potential variations on a new trail alignment in this area are possible, and full exploration of this new alignment and options associated therewith would be necessary before any specific alignment or route is proposed. It may be possible, for example to stay entirely west of Route 202, and continue to cross Mt. Lincoln (both suggestions that have been made through public meetings associated with the Study).

The traditional route of the Metacomet - Monadnock Trail through this area could continue to exist unchanged from present conditions, managed by the AMC and the landowners, but would not be considered part of the NST designation.

A New Name for NST Purposes

It is recommended that the National Scenic Trail designation be pursued under a new name, such as the New England National Scenic Trail. The historical trail names might be continued for individual trail segments, where appropriate, such that a guidebook or trail sign might refer to, "Metacomet Trail, part of the New England National Scenic Trail," or "Mattabesett Trail, part of New England National Scenic Trail," etc. This same technique has been used on other National Scenic Trails, where prior existing trail name segments have kept their historical identities as a part of a later, differently named NST designation. The Trail Stewardship Council, AMC and CFPA would need to determine how to name and sign various trail segments. For example, the Guilford extension to Long Island Sound could either become part of the Mattabesett Trail, or could simply be a segment of the New England National Scenic Trail, or some other variation under the NST umbrella.

A distinct NST name would also help eliminate confusion in Massachusetts where it is quite possible that the historical Metacomet-Monadnock Trail and a new NST route might exist as distinct alternative hiking routes in the portion north of the Mt. Holyoke Range.

D. The Affected Environment

The MMM Trail System consists of three largely contiguous trails: the Metacomet-Monadnock Trail, the Metacomet Trail, and the Mattabesett Trail. The trails collectively travel 190 miles in a north-south direction, from the Massachusetts-New Hampshire border south towards Long Island Sound. The portion of the Metacomet-Monadnock Trail included in the study is located entirely within Massachusetts, while the Metacomet and Mattabesett Trails are located entirely within Connecticut.

The Metacomet Trail in Connecticut follows a traprock mountain range running from the Hanging Hills of Meriden to the Massachusetts State line for approximately 57 miles. The Trail reaches elevations of over 1,000 feet at its highest point.

The Mattabesett Trail is approximately 53 miles in length. The trail begins at the Connecticut River, and roughly forms a large horseshoe as it

travels south and west before assuming a northerly direction to its terminus at the Berlin Turnpike in Berlin. A road-walk then connects to the southern terminus of the Metacomet Trail.

The Metacomet-Monadnock Trail in Massachusetts is approximately 80 miles in length. The Trail is located in Hampden, Hampshire, Franklin, and Worcester Counties, passing through 19 separate communities. The elevation of the trail varies from 100' at its lowest point along the Westfield River in Agawam to 1,618 feet at its highest point on Mount Grace in Warwick. The trail enters New Hampshire at the state line and continues northward, eventually reaching the summit of Mt. Monadnock.

In order to understand the existing trail system, a detailed field survey and inventory was completed. In 2003 and 2004, a combination of regional planning professionals and volunteers hiked the trail system in both Connecticut and Massachusetts, utilizing a global positioning system (GPS) to record detailed data. The following information was collected and compiled into a geodatabase:

- General descriptions and photographs of the trails
- Information on resources, scenic view sheds and other special assets
- Physical characteristics including geology, hydrology, vegetation and wildlife
- Cultural resources located along the trails or within close proximity
- Wildlife habitats
- Historic and archaeological features
- Other characteristics that make the trail system unique.

Other data collected during the field hiking included:

- Condition of the trails
- Locations of trailheads and parking areas
- Identification of problem areas needing attention
- Trail route continuity
- Maintenance issues

A complete segment-by-segment description of the MMM Trail System, including information on connecting trails, may be found in Appendix Section A.

E. Impacts of Alternatives

This section compares the likely trail viability, environmental, cultural and socio-economic impacts of the four alternatives.

Methodology

The study team has evaluated the impacts of the alternatives based on experience with similar trail systems in the past, and on the substantial data collected regarding the actual conditions and experiences on the MMM Trail System which has existed on the ground for decades in most places.

Context

The evaluation of existing trail conditions documents existing environmental damage, poor trail conditions, and opportunities for improvement in many sections of the existing MMM Trail System. The provisions of the Blueprint For Management have been specifically developed to minimize negative environmental consequences related to existing trail conditions, and to avoid such consequences in the future. The context for considering existing and potential future conditions and impacts requires generalization of these potentials. Each on-the-ground situation related to actual trail conditions and impacts must be evaluated on a case by case basis in the future as a part of ongoing trail management and maintenance.

Timing

The timing of any particular action or consequence related to the alternatives can also only be generalized. None of the alternatives would have immediate on the ground impacts distinguishable from the others. Only over the longer term will differences begin to emerge. No specific timeframe can reasonably be assigned to reflect this reality.

Intensity

Intensity of impacts and consequences is also very difficult to predict. The ongoing management of the Trail System, and provisions built into the Blueprint For Management will seek to track trail conditions and trail related impacts. Existing conditions provide a baseline for comparison in the future.

Direct and Indirect Effects

Direct and indirect effects of the alternatives are also addressed in a generalized way based upon the reasonably foreseeable consequences based on past experiences on similar projects and professional judgement.

Table 13
Comparison of Impacts by Alternative

Alternative 1: Continuation of Current Practices

Under this alternative, no specific actions or organized effort would be made to alter current trail management practices or administrative structures, and no comprehensive effort to implement the recommendations of the MMM Trail "Blueprint" would be made.

Alternative 2: Implementation of the Trail Blueprint through National Scenic Trail Designation for the Entire Historical Route of the MMM Trails in CT and MA

Under this alternative, the entire historical trail route of the MMM Trails in CT and MA would be designated as a National Scenic Trail to be managed in accordance with the MMM Trail Management Blueprint developed as a part of the Study.

Alternative 3: Implementation of the Trail Management Blueprint through National Scenic Trail Designation from Long Island Sound in CT to the NH Border, including a significant new route in the Belchertown - Leverett area in Massachusetts

Under this alternative the entire trail system from Long Island Sound to the NH border would be designated as a National Scenic Trail under a name such as the New England National Scenic Trail. The route would include a significant deviation from the historical Metacomet-Monadnock trail for the portion of the designation north of the Mt. Holyoke Range, consistent with the generalized map found within this report.

Alternative 4: Non-Federal Implementation of "Blueprint" Recommendations

Under this alternative, some alternative State-based or Non-profit-based entity would take the lead in promoting the MMM Trail Blueprint in an organized and comprehensive fashion. The most likely possibility is that the CFPA and the AMC, cooperating with the States of Massachusetts and Connecticut, could form a bi-state partnership whose mission was to implement the MMM Trail Blueprint and ensure long-term trail viability and continuity. CFPA and AMC would raise funds privately and through various grant sources to fund this effort.

Impacts on Long-Term Trail Viability

This alternative would do nothing to increase the current level of organization, effort, and funding devoted to the long-term viability of the MMM Trail System. Over the long-term, it is expected that breaks in the trail, road walks, and similar threats to trail continuity will increase, and that the trail may evolve into a series of unconnected ridge hikes and shorter trail segments.

This alternative would confer the benefits of National Scenic Trail designation (potential federal funding, national recognition and status, organization and commitment to the Trail Stewardship Council and Trail Management Blueprint) to the entire existing trail system. Long-term trail continuity and viability would be enhanced. However, in the Belchertown-Leverett section of the trail, in MA, short and long-term trail continuity could be adversely affected by significant landowner opposition and potential trail closings

The impacts of this alternative on long-term trail viability are similar to alternative 2, except that trail viability and continuity in the Belchertown-Leverett section would be enhanced by a new NST route that takes advantage of nearby state-owned lands and simultaneously avoids an area largely devoid of protected lands, in which substantial landowner opposition to NST designation and long-term trail protection has been voiced. The new alignment would track existing state greenway priorities and land protection priorities of the greater Quabbin landscape.

This alternative has the potential to enhance long-term trail viability beyond the status quo. However the lack of increased stature conferred by potential NST designation, and the lack of potential federal funding support are significant drawbacks to realizing this alternative. To date none of the likely entities (states, CFPA, AMC) have expressed any interest in this alternative.

Impacts on Recreational Trail Use

No comprehensive data currently exists on trail use levels. Certain trail segments are known to be heavily used (Mt Tom, Metacomet Ridge, for example). Very little "end-to-end" usage is believed to occur. Breaks/road walk sections (especially in CT) likely limit the use of some sections and long distance use attractiveness. Types of usage are currently governed by the landowner, with hiking a pervasive use and other uses occurring in some areas.

NST designation would likely serve to publicize the trail above current levels and could result in increased usage. Over time, if additional resources of designation and attention of the Stewardship Council served to improve overall trail conditions and continuity, this would likely result in increased usage of currently under-used areas and long distance (end-to-end type) usage.

Types of usage would not be expected to change, since usage would continue to be governed by the landowner. Additional resources available for stewardship and enforcement might have the effect of reducing unwanted or illegal uses, such as unauthorized ATV use.

The impacts of this alternative would be similar to alternative 2, except that the new alignment of the NST in the Belchertown-Leverett area would likely result in increased usage for that area, as would the creation of the NST extension through Guilford to Long Island Sound. The extent of increased use cannot be known until plans move beyond the conceptual stage, and may vary considerably depending upon actual routes chosen. This issue will require more attention if and when the new route options move beyond the conceptual stage. Impacts on types of usage would be similar to alternative 2.

Implementation of this alternative would have similar use impacts to alternative 2 if increased attention to the trail resulted in similar improvements to overall trail conditions and continuity. Impacts on types of usage would also be expected to be similar if additional resources for stewardship and enforcement were made available.

Table 13 (cont'd)

Comparison of Impacts by Alternative

Alternative 1	Alternative 2	Alternative 3	Alternative 4
<p>Impacts on the Natural Environment</p> <p>Under current practices, the MMM Trail system traverses many significant natural landforms, landscapes, and habitat types. The trail serves to connect people to these natural features and encourages their appreciation and preservation. Over time, trail protection efforts have increased protected lands and preservation of associated natural features. At the same time, some negative human impacts are generated through man's presence, erosion, litter and similar impacts. Under this alternative this pattern would continue unchanged.</p>	<p>Under this alternative, it is expected that efforts at trail and associated natural resource protection would be increased over the status quo, resulting in a likely increase in long-term natural resource and habitat protection. Additional resources would also be available for user education, trail maintenance and similar aspects the Trail Management Blueprint identifies that may be expected to reduce negative human impacts associated with the trail.</p>	<p>Impacts of this alternative on the natural environment are similar to alternative 2, except that in the Belchertown-Leverett area additional federal resources and attention of the Trail Stewardship Council would be directed away from the historical route of the Metacomet-Monadnock Trail and toward the new NST route to the east. This would increase natural resource protection and stewardship efforts for the new alignment of the NST, while such efforts and attention on that portion of the historical trail would remain status quo or potentially decrease. The new NST segments in both MA and Guilford, CT also have the potential to increase human use in these areas, potentially increasing negative human impacts as well. This issue will require further consideration if and when these new route options move beyond the conceptual stage.</p>	<p>This alternative has the potential to increase natural resource protection and stewardship efforts similar to alternatives 2 and 3. However, the lack of resources and known institutional interest in this alternative makes realization of this potential unlikely. Over the long and short term it is expected that the natural resource impacts of this alternative would be most similar to alternative 1: status quo.</p>
<p>Impacts on Sensitive Habitats such as Wetlands, Vernal Pools and Floodplains</p> <p>The existing trail system traverses or impacts sensitive habitats such as wetlands, vernal pools, and floodplains in a variety of locations, and some of these areas have been noted to be causing environmental damages in need of remediation. Little funding has been available for a systematic approach to such issues, though the AMC and CFPA do attempt to address serious issues as they become aware of them.</p>	<p>NST designation of the existing trail system has the potential to increase the amount of attention, funding and resource devoted to such issues through implementation consistent with the intent of the Blueprint For Management. It may be possible to utilize the baseline information collected as a part of this Study to implement a systematic approach to identification, prioritization and resolution of problem areas. Over the long-term, it is reasonable to predict that impacts to sensitive environmental areas will be reduced under this alternative.</p>	<p>Impacts of this alternative are similar to those described for Alternative 2, except that the development of new trail sections in Guilford and the new NST section proposed in Massachusetts. For these new trail areas, conceptual plans reflect the intent of the Blueprint For Management to avoid negative impacts to sensitive environmental areas. When moving from conceptual to on-the-ground layout, these issues will need to be reassessed to ensure that long and short-term impacts are avoided.</p>	<p>Over the long and short-term it is likely that the impacts of this alternative to sensitive environmental areas would be similar to those of Alternative 1: status quo.</p>
<p>Impacts on the Cultural Environment</p> <p>The trail as it exists provides access to and through a variety of culturally significant landscapes, sites and features. Opportunities to experience the New England Landscape through vistas and physical trail connections are high. Appreciation and protection for these cultural resources and sites is increased by human awareness and understanding. There is little evidence of negative human impact on the cultural environment from the trail.</p>	<p>Under this alternative additional resources and attention would be devoted to cultural resource interpretation and connection through efforts of the Trail Stewardship Council and implementation of the Trail Management Blueprint. The opportunity to connect with the New England Landscape as a significant aspect of the nation's cultural heritage would be emphasized by the NST designation. The Blueprint's emphasis on "community connections" would</p>	<p>The impacts of this alternative would be similar to alternative 2, except that a significant new opportunity to connect the NST to the unique history of the Quabbin Reservoir area and to the Historic District and features of the Town of Guilford could be developed. The potential for a trail overlook and interpretive signage telling the story of the communities removed and flooded in the development of the Quabbin Reservoir could add to the culturally significant</p>	<p>As with natural resources above, this alternative has the potential to increase the attention paid to cultural resources associated with the trail, but the lack of implementation options makes it likely that actual impacts would be similar to the status quo.</p>

Table 13 (cont'd)

Comparison of Impacts by Alternative

Alternative 1	Alternative 2	Alternative 3	Alternative 4
<p>Impacts on SocioEconomic Resources</p> <p>The MMM Trail system is highly valued by communities, landowners and users as a positive contributor to quality of life in the areas through which the trail passes. Many communities formally recognize this contribution in local planning documents, town web sites, and similar venues.</p> <p>Numerous studies have indicated that proximity to trails and open space recreation has a positive effect on property values, and it is likely that the MMM Trail System has such an effect, though no research on this topic was conducted as a part of this Study.</p> <p>There are no known negative socio economic impacts related to the Trail System.</p> <p>Under this alternative, it is likely that the positive socio economic value of the MMM Trail System will be diminished in some areas of the trail over time, as trail breaks, road walk sections, and similar trail issues increase.</p>	<p>enhance the opportunities to connect the trail with heritage resources at the community level.</p> <p>Under this alternative, additional attention and resources devoted to the quality, continuity and protection of the trail, together with the prestige of the NST designation itself, should increase the socio-economic value of the trail as a community resource and contributor to quality of life factors. This would be expected to have a positive impact upon property values and related socio-economic factors.</p>	<p>resources associated with the trail, as could the connection to the historical resources of the Town of Guilford.</p> <p>The short and long-term impacts of this alternative on socio economic factors are expected to be similar to alternative 2. The development of the new NST routes in the Belchertown-Leverett section of MA and in Guilford, CT would be unlikely to generate significantly different socio-economic impacts from alternative 2, though, over time, the benefits of the Trail System would be expected to accrue to the new NST routes, as they become established and recognized.</p>	<p>The short and long-term socio economic impacts of this alternative are expected to be similar to alternative 1:status quo.</p>
<p>Indirect and Cumulative Impacts</p> <p>Under the status quo alternative there is expected to be a slow erosion of the MMM Trail System long distance trail viability. Increased development pressure will likely continue and accelerate the current trend of breaks in the trail, need for frequent relocations, and ultimately fragmentation of the Trail System into a series of unconnected short hiking opportunities. Such a system will still have substantial value as a recreational and socio economic resource, though the value will be diminished over time and likely lost in some areas completely. The indirect and cumulative impacts of such a pattern are not expected to be large or intense, rather minor and subtle. Over time impacts on secondary values such a property values, less attention to open space preservation, and quality of life indices in negatively impacted areas may be noticed.</p>	<p>The indirect and cumulative impact of NST designation will relate principally to increased attention to open space preservation, side and connecting trails, Trail System connectivity, partnerships formed through the Trail Stewardship Council, and related efforts stimulated and supported by NST designation. Property values, quality of life measures, open space preservation will be accentuated and fewer areas will experience the long-term decline in such spin-off values that may occur under Alternative 1: status quo.</p>	<p>The indirect and cumulative impacts of this alternative are similar to those expected for Alternative 2, except that the two proposed NST route extensions are anticipated to increase the long term MMM Trail System viability, and therefore extend long-term indirect and cumulative benefits. Because this alternative anticipates development of new trail routes that are currently only conceptual in nature, the indirect and cumulative impacts of the trail in these new areas is less well understood than for the existing trail areas, and will need to be considered in the further planning of these extensions.</p>	<p>The lack of likely implementation of this alternative makes indirect and cumulative impacts of this alternative similar to that of Alternative 1: status quo.</p>

Table 13 (cont'd)

Comparison of Impacts by Alternative

Alternative 1

Costs

There are no new costs associated with this alternative. The AMC and CFPA would continue to lead trail management and protection efforts through primarily volunteer efforts, with some paid staff support and involvement. Communities, the states, and other partners would contribute to efforts on an ad hoc/ opportunistic basis, as they have in the past. Taken as a whole, the existing local, state, NGO commitment to the trail is substantial and is expected to continue to be so.

Conclusions

The existing MMM Trail System, together with existing management and protection systems, represents an excellent recreational feature providing positive environmental and socio economic values for southern New England and the 40 abutting communities. Continuation of current practices will generally continue this success, however, increased development pressure and trail management/ protection issues are evident and expected to increase. Over time, this alternative will continue a trend of Trail System fragmentation, relocations, encroaching development and other similar factors. A long-term downward trend in the overall value of the Trail System can therefore be expected.

Alternative 2

The federal component of management costs associated with NST designation in accordance with the Blueprint For Management are estimated at \$271,000 annually (assuming congressional appropriations equaling the recommended funding level). A breakdown of how this figure is arrived at is included in Chapter V, Section H). This can be seen as a "match" to existing local, state and NGO resources represented in the status quo. Non-federal commitment of resources would also be expected to increase, based on an increased level of activity stimulated by federal seed \$\$, the Trail Stewardship Council activity, and additional opportunities that NST designation might reasonably be expected to generate.

NST designation of the existing MMM Trail System, in accordance with the Blueprint For Management, will have the effect of increasing the level of attention paid to the Trail System. Formation and support of the Trail Stewardship Council will increase communication and coordination, and will likely stimulate local, state, and NGO attention and resources devoted to the Trail System, associated open space protection, and side/ connecting trails. Long-term impacts compared to the status quo will include less trail fragmentation, increased open space protection, and positive effects on socio economic factors such as property values and quality of life factors. This alternative, however would fail to realize extension opportunities in Guilford, CT, and would fail to address trail protection and landowner conflict issues in the Belchertown-Leverett section of Massachusetts.

Alternative 3

The costs associated with this alternative are expected to be similar to those associated with Alternative 1. The conceptual route extensions might therefore divert resources from other MMM Blueprint priorities. This balancing of resource allocation priorities would be one of the main functions of the Trail Stewardship Council.

NST designation according to the Blueprint For Management, and including conceptual new routes in Guilford, CT and Belchertown/ Leverett section of Massachusetts offers the potential to realize the positive impacts of Alternative 2, plus additional positive benefits associated with the new route proposals. The fact that the new route extensions are conceptual at this time will necessitate further planning and resources devoted to realization of these benefits. This could result in a diversion of resources from other MMM Trail issues/opportunities. It will be up to trail partners on the Trail Stewardship Council to balance these competing needs to avoid negative impacts from this alternative, while realizing positive potential long-term benefits.

Alternative 4

Implementation of the Blueprint For Management in the absence of NST designation would carry with it the same \$271,000 annual price tag. However, actual implementation of this level of support would require local, state and NGO partners to greatly increase their existing levels of staff and funding to the MMM Trail System.

Implementation of the Blueprint For Management without NST designation is conceptually attractive, but is not considered practical, as none of the key parties (States, NGO's, communities, etc.) have to date shown any interest in this alternative. Therefore, the overall impacts of this alternative are considered to be the same as for Alternative 1: status quo.

F. Environmentally Preferred Alternative

The Study concludes that the long-term viability of the MMM Trail system as a high quality, continuous, long-distance trail will require a sustained level of increased focus and resources

by a wide array of trail partners. National Scenic Trail designation as described in Alternative 3 appears to be the most feasible way to generate such an increased level of attention and resources.

SOURCES:

Connecticut Commission on Culture and Tourism

Connecticut Department of Environmental Protection

Connecticut State Office of Archaeology

Massachusetts Historical Commission. Connecticut Valley Study Unit Part I and II, Commonwealth of Massachusetts, Office of the Secretary of State, 294 Washington Street, Boston, MA: 1982.

Kingsley, Elbridge. Hadley: The Regicides, Indian and General History. Picturesque Publishing Company, Northampton, MA: May 7, 1895.

LaFrancis, Edith. Agawam, Massachusetts: A Town History. The Pond-Ekberg Co., Springfield, MA: 1980.

Lockwood, Rev. John H. Westfield and Its Historical Influences 1699-1919. Press of Springfield Printing and Binding Company, Springfield, MA: 1922.

Parmenter, (No First Name Listed). History of Pelham, Massachusetts. (Publisher Page Missing): 1896.

Swanton, John R. The Indian Tribes of North America. Smithsonian Institution Press, City of Washington: 1968.

Swift, Esther M. West Springfield Massachusetts: A Town History. The West Springfield Heritage Association, West Springfield, MA: 1969.

Walker, Alice Morehouse. Historic Hadley. The Grafton Press, NY: 1906.

Anderson, M. G. and M. D. Merrill. 1998. Connecticut River watershed: Natural communities and neotropical migrant birds. Report for The Nature Conservancy, Boston, Massachusetts.

Anonymous. 1932. Hiking interest is increasing in Connecticut: Trail building in state results in more than 200 miles of trails. Christian Science Monitor, July 9.

Anonymous. 1933. Connecticut trail system lures many hikers: Forests, lakes, woodland brooks provide setting. Telephone News Volume VII, No. 11, July 1933.

Bell, M. 1985. The Face of Connecticut: People, Geology, and the Land. Bulletin 110 of the State Geological and Natural History Survey, Hartford, Connecticut.

Berlin Conservation Commission, Meriden Conservation Commission, and Middletown Conservation Commission. 1994. Lamentation Mountain Tri-Town Project Land Use Plan, Connecticut, USA.

Bertness, M. D., P. Ewanchuk, and B. R. Silliman. 2002. Anthropogenic modification of New England salt marsh landscapes. Proceedings of the National Academy of Science 99:1395-1398.

Bonneau, L. R., K. S. Shields, and D. L. Civco. 1999. Using satellite images to classify and analyze the health of hemlock forests. Biological Invasions 1: 255-267.

Brumbach, J. J. 1965. The Climate of Connecticut. Bulletin 19 of the Connecticut State Geological and Natural History Survey, Hartford, Connecticut.

Camacho, A., S. A. Canham, R. Ferik, H. H. Moore, and H. M. Richards. 2002. A management plan for Yale University's Peabody Museum Natural Area, Branford and Guilford, Connecticut. Yale School of Forestry and Environmental Studies, New Haven, Connecticut.

Clapp, M. and D. Kohl. 1978. The Metacomet trail: A resource guide. Revised Edition, New Britain Youth Museum, New Britain, Connecticut.

Connecticut Department of Labor. 2004. Connecticut Economic Digest, June 2004. Available at <http://www.ctdol.state.ct.us/lmi/misc/cedjuno4.htm>.

Connecticut Forest and Park Association. 1997. Connecticut Walk Book, 60th Anniversary Edition. Rockfall, Connecticut.

Connecticut Office of Policy and Management. 2003. Census 2000 Population Counts for Connecticut Municipalities & Counties. Available at <http://www.opm.state.ct.us/pdpd3/data/estimate.htm.42>

Connecticut State Climate Center. 2004. Overview of climate in Connecticut. Available at: <http://www.canr.uconn.edu/nrme/csc/CTweatherstationintroduction/connecticutintroduction.htm>

Connecticut State Climate Center. 2004b. Summary climatic data for Bradley International Airport, Windsor Locks, Connecticut. Available at <http://www.canr.uconn.edu/nrme/csc/CTweatherstationintroduction/middletown.htm>

Connecticut State Climate Center. 2004c. Summary climatic data for Middletown, Connecticut. Available at <http://www.canr.uconn.edu/nrme/csc/CTweatherstationintroduction/middletown.htm>

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Hill and Wang, New York, New York.

Doezema, M. (Editor). 2002. Changing Prospects: The View From Mount Holyoke. Cornell University Press, Ithaca, New York.

Dowhan, J. J. and R. J. Craig. 1976. Rare and Endangered Species of Connecticut and Their Habitats. State Geological and Natural History Survey of Connecticut, Report of Investigations No. 6, Hartford, Connecticut.

Environmental Protection Agency. 2004. AirData Monitor Values Report for Connecticut. Available at <http://www.epa.gov/air/data/monvals.html?st~CT~Connecticut>.

Farnsworth, E. J. 2001. *Corydalis flavula* (Yellow Corydalis) Conservation and Research Plan. New England Wild Flower Society, Framingham, Massachusetts.

Farnsworth, E. J. 2003. Planning for the future of over 100 rare species. *New England Wild Flower* 7: 6.

Farnsworth, E. J. In press. The rich get richer while the poor get poorer: A conservation biologist's perspective on invasive and rare species. *Trends in Ecology and Evolution*, commissioned article.

Fitzgerald, H. 2001. Establishing conservation priorities on Connecticut's traprock ridges: A site conservation plan. Report prepared for The Nature Conservancy, Middletown, Connecticut.

Griffith, G. E., J. M. Omernik, and S. M. Pierson. 2004. Ecoregions of Massachusetts, Connecticut, and Rhode Island. U. S. Environmental Protection Agency, Western Ecology Division, Corvallis, Oregon. Available at http://www.epa.gov/wed/pages/ecoregions/mactri_eco.htm.43

Hall, B., G. Motzkin, D. R. Foster, M. Syfert, and J. Burk. 2002. Three hundred years of forest and land use change in Massachusetts. *Journal of Biogeography* 29: 1319-1336.

Higbee, M. 2003. Mother's Day hike becomes nightmare. *The Middletown Press* 119: 1, May 12.

Hitchcock, E. 1857. On surface geology, especially that in the Connecticut Valley in New England. Pages 1-76 in *Smithsonian Contributions to Knowledge: Illustrations of Surface Geology*. Collins Publishers, Philadelphia.

Hubbard Brook Research Foundation. 2003. Nitrogen pollution from the sources to the sea. Science Links Report, Concord, New Hampshire. Available from <http://www.hubbardbrook.org/hbrf/page.php3?subject=Publications>.

IPCC (Intergovernmental Panel on Climate Change). 2001. *Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, UK.

Juli, H. D. 1994. Late prehistory of the Thames River: Survey, landscape, and preservation along a Connecticut estuary. *Northeast Anthropology* 47: 21-44.

Keegan, W. F. and K. Noble Keegan. 1999. *The Archaeology of Connecticut: The Human Era - 11,000 Years Ago to the Present*. Bibliopola Press, UConn Co-op, Storrs, Connecticut.

Kerlinger, P. 1989. *Flight Strategies of Migrating Hawks*. Chicago University Press, Chicago, Illinois.

Klemens, M. W. 1993. *Amphibians and reptiles of Connecticut and adjacent regions*. State Geological and Natural History Survey, Hartford, Connecticut.

Kizlinski, M. L., D. A. Orwig, R. C. Cobb, and D. R. Foster. 2002. Direct and indirect ecosystem consequences of an invasive pest on forests dominated by eastern hemlock. *Journal of Biogeography* 29: 1489-1504.

Lapin, B. 1992. *Lamentation Mountain natural resources inventory report*. Unpublished report for The Nature Conservancy, Middletown, Connecticut.

Lareau, A. 1997. *Needless discord: The debate over the future of Connecticut's traprock ridges*. Thesis, Wesleyan University, Middletown, Connecticut.

Leary, J. 2004. *A Shared Landscape: A Guide and History of Connecticut's State Parks and Forests*. Friends of Connecticut State Parks, Rockfall, Connecticut.

44

Lee, C. 1985. *West Rock to the Barndoor Hills: The Traprock Ridges of Connecticut*. *Vegetation of Connecticut Natural Areas No. 4*, State Geological and Natural History Survey, Hartford, Connecticut.

Little, R. D. 2003. *Dinosaurs, Dunes, and Drifting Continents: The Geology of the Connecticut River Valley*. Third Edition. Earth View, L. L. C., Easthampton, Massachusetts.

- Lobel, M., D. Ballou, A. Hausman-Rogers, and M. Mirvis. 2002. Progress, triage, and traprock: A study of traprock ridge protection efforts in Middletown. Unpublished report, Wesleyan University, Middletown, Connecticut.
- Longwell, C. R. and E. S. Dana. 1932. Walks and Rides in Central Connecticut and Massachusetts. Yale University Press, New Haven, Connecticut.
- Lyell, C. Sir. 1865: Elements of Geology; Or, The Ancient Changes of the Earth and Its Inhabitants as Illustrated by Geological Monuments. J. Murray Publishers, London.
- McCartney, J. M., P. T. Gregory, and K. W. Larsen. 1988. A tabular survey of data on movements and home ranges of snakes. *Journal of Herpetology* 22: 61-73.
- McDonald, N. 1996. The Connecticut Valley in the Age of Dinosaurs: A Guide to the Geologic Literature, 1681-1995. Bulletin 116, State Geological and Natural History Survey, Hartford, Connecticut.
- McShea, W. J., H. B. Underwood, and J. H. Rappole 1997. The Science of Overabundance : Deer Ecology and Population Management. Smithsonian Institution Press, Washington, D. C.
- Menunkatuck Audubon Society. 2001. Biodiversity Day 2001: Report of the survey of biodiversity in Guilford, Connecticut, September 8, 2001. Guilford, Connecticut.
- Metzler, K. J. and D. L. Wagner. 1998. Thirteen of Connecticut's most imperiled ecosystems. Connecticut Department of Environmental Protection, Hartford, Connecticut.
- Moorhead, W. H. III. 2003. Farmington River Watershed Association 2002 Biodiversity Project, rare plant and natural community inventory. Summary Report, Farmington, Connecticut.
- Motts, W. and O'Brien, Geology and hydrology of wetlands in Massachusetts, Publication No. 123, Special report, Water resources research center, University of Massachusetts at Amherst, 1981, 45
- National Oceanic and Atmospheric Administration. 2004. Connecticut climate summary, April 2004. Available at <http://www.ncdc.noaa.gov/oa/climate/research/cag3/CT.html>
- NatureServe Explorer. 2004. NatureServe: An online encyclopedia of life [web application]. 2000. Version 1.0. NatureServe, Arlington, Virginia. Available at: <http://www.natureserve.org>.
- New England Regional Assessment Group. 2001. Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change. New England Regional Overview. U. S. Global Change Research Program, University of New Hampshire, Durham, New Hampshire.
- Orwig, D. A. 2002. Ecosystem to regional impacts of introduced pests and pathogens: historical context, questions and issues. *Journal of Biogeography* 29: 1471-1474.
- Orwig, D. A., D. R. Foster, and D. L. Mausel. 2002. Landscape patterns of hemlock decline in New England due to the introduced hemlock woolly adelgid. *Journal of Biogeography* 29: 1475-1488.
- Parshall, T. and D. R. Foster. 2002. Fire on the New England landscape: regional and temporal variation, cultural and environmental controls. *Journal of Biogeography* 29: 1305-1318.

Peterson, R. C. and R. W. Fritsch, II. 1986. Connecticut's venomous snakes: The timber rattlesnake and northern copperhead. Bulletin III, State Geological and Natural History Survey, Hartford, Connecticut.

Reynolds, C. 1979. Soil survey of Middlesex County, Connecticut. United States Department of Agriculture, Soil Conservation Service, Washington DC.

Ruf, C. 1985a. Natural Resources Inventory of Higby Mountain Preserve. Report for The Nature Conservancy, 55 High Street, Middletown, Connecticut.

Ruf, C. 1985b. Natural Resources Inventory of Bluff Head Preserve. Report for The Nature Conservancy, 55 High Street, Middletown, Connecticut.

Searcy, K. B., B. F. Wilson, and J. H. Fownes. 2003. Influence of bedrock and aspect on soils and plant distribution in the Holyoke Range, Massachusetts. Journal of the Torrey Botanical Society 130: 158-169.

Shaw, H. B. 1989. Connecticut's Central Park. M. A. Thesis, Wesleyan University, Middletown, Connecticut.

Sultzmann, L. 1997. First Nations Histories. Available at <http://www.tolatsga.org/Compacts.html>

The Mineral Database. 2004. Regional report: Connecticut, USA. Available at <http://www.mindat.org/rloc.php?loc=Connecticut%2C+USA>.

Thorson, R. M. 2002. Stone by Stone. Walker and Company, New York, New York.

Tuttle, M. D. 1995. The little-known world of hoary bats. Bats Magazine 13: 3-6.

Twain, M. 1876. Old Times on the Mississippi. Belford Brothers Publishers, Toronto, Ontario. Quote from reprint of "A literary nightmare" from the Atlantic Monthly, February 1876.

U. S. Fish and Wildlife Service. 1996. No ordinary refuge: The Silvio O. Conte National Fish and Wildlife Refuge Action Plan. Turner's Falls, Massachusetts.

Waterman, L. and G. Waterman. 1989. Forest and Crag : A History of Hiking, Trail Blazing, and Adventure in the Northeast Mountains. Appalachian Mountain Club, Boston, Massachusetts.

Wetherell, D. V. 1992. Traprock Ridges of Connecticut: A Naturalist's Guide. Department of Environmental Protection Bulletin 25, Hartford, Connecticut.

Woodside, C. 2004. The trail pioneers. Connecticut Woodlands 69: 8-15.

<http://home.mtholyoke.edu/offices/artmuseum/images/pages/exhibition/cole.html>

<http://www.holyokemass.com/historic/mttomrr/mttomp29.html>

<http://www.defunctparks.com/parks/MA/mountain/mountainpark.htm>

<http://wgby.org/localprograms/mountainpark/summithouse.html>

<http://fomhr.tripod.com/history2.html>

<http://www.mass.gov/dcr/parks/central/robn.htm>

<http://www.mass.gov/dem/parks/skin.htm>

<http://www.mass.gov/dem/parks/hksp.htm>

<http://www.mass.gov/dem/parks/mtom.htm>

<http://www.mass.gov/dem/parks/crgw.htm>

<http://www.agawamrevolver.org>

<http://vermonthistory.org/arccat/findaid/vtcentrl.htm>



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