

An aerial photograph of a vast forest landscape. The foreground and middle ground are filled with dense green trees, with some patches of yellow and orange foliage visible, suggesting early autumn. A small, cleared grassy area with a few evergreen trees is visible in the lower right. The background shows rolling hills under a bright blue sky with scattered white clouds.

2022 TRAIL SUSTAINABILITY PLAN

STURBRIDGE, MA

WINTER 2022
THE CONWAY SCHOOL
HENDRA | MARQUIS | MCSULLA

A photograph of a person wearing a red helmet and a grey shirt riding a black mountain bike on a dirt trail through a forest. The trail is surrounded by lush green foliage and tall trees. The sun is filtering through the leaves, creating a dappled light effect. A dotted line runs across the top of the page.

2022 Trail Sustainability Plan

On the Albutus Trail. Photo by Nick Sokol

Prepared for the Town of Sturbridge, MA

Winter 2022

Evan Hendra | Amanda Marquis | Jessica McSulla

Acknowledgments



Image courtesy of Sheila McCormick

The Conway Team



Jess, Amanda, & Evan

We would like to thank the Sturbridge Trails Committee, particularly Tom Chamberland and Brandon Goodwin, who shared with us their deep knowledge, dedication, and passion for the town and its trails. A special thanks as well to Jean Bubon and Jeneé Lacey at the Planning Department, and Rebecca Gendreau at the Conservation Commission for always setting aside their time to answer our questions and share their expertise. We greatly appreciate Mary Blanchard, Chair of the Board of Selectmen, for recognizing the value of the Sturbridge trails. We would also like to thank the community of Sturbridge, stakeholders, and experts whose valuable feedback shaped this plan, as well as the photographers who generously offered the use of their work throughout the document to illustrate Sturbridge's rich and beautiful landscape. Martin Drexhage's capture of Heins Farm is featured on the cover.

Contents

Executive Summary

<i>Part One: Where We Are</i>	7
Introduction	8
• History of the Land	
• Town Beginnings	
• Highways & Growth	
• Town Identity	
Existing Conditions	14
• Sturbridge Trails Committee	
• Plan Consistency	
• Existing Trail System	
• Implementation Status	
Why Trails?	19
<i>Part Two: Where We're Going</i>	23
Vision	24
Goals	25
Community Engagement	26
Analysis	30
• Roadways	
• Complete Streets and Safe Routes to School Initiatives	
• Land Use	
• Open Space and Land Ownership	
• Habitat	
• Ecology	
• Topography	
• Parking	
• Connectivity	
<i>Part Three: How to Get There</i>	43
Goal 1 - To continue developing a trail system that connects people.....	44
Goal 2 - To continue designing and building trails efficiently and thoroughly	53
Goal 3 - For Sturbridge trails to be equitable, just, and sustainable	59
Goal 4 - Use the trail system to boost economic development	62
<i>Appendix</i>	68
Appendix A - Progress Report	69
Appendix B - Survey Questions and Results	76
Appendix C - Rare Species List.....	89
Appendix D - Stakeholder List.....	90
Appendix E - Map Thumbnails	91

The map that appears in the background of this page and periodically throughout the document was adapted from an 1893 US Geologic Survey map of Brookfield (and surrounding area), and accessed via oldmapsonline.org.

*"You can walk the same trail twice, but you'll never
take the same hike." - unknown*



Executive Summary

What does a sustainable trails system look like? The 2022 Trail Sustainability Plan (TSP) is a guide to be used by the Town of Sturbridge to continue creating, completing, and maintaining sustainable trails that connect residents and visitors to open spaces and points of interest with minimal adverse ecological impact. The plan works towards a safe network for a variety of users to traverse the town, whether to engage with Sturbridge's natural surroundings, reap the benefits of active transportation, access social infrastructure, or support the local economy. The TSP builds upon the 2012 Recreation Trails Master Plan (RTMP) and documents the current status of the trails system, reestablishes the vision and goals, and recommends potential connections for the trails based on the goals.

The Town of Sturbridge adopted the RTMP in 2012, which recommended the construction of a comprehensive trail network that would connect residents and visitors to community gathering spaces, cultural and historic sites, open spaces, and the abundant natural resources Sturbridge has to offer. The trail system would also generate trails-based tourism through this connected network while being mindful of the ecology of the land surrounding it.

Through the development of this system of trails, Sturbridge has offered the community and visitors the benefits of increased physical and mental health and a safe area for recreation. In addition to these benefits, the trails provide opportunities for ecological conservation, economic development, and social connection. The TSP analyzes the previous Trails Plan's intent, preserving relevant connections and organizational concepts while updating those that no longer serve the trail system, and providing a guide to achieve the sustainability the Town and residents desire.

Through community feedback, discussions with the Town and stakeholders, and independent research and analysis, the vision and goals for the 2022 Trail Sustainability Plan were developed. The goals for the TSP are:

1. To continue developing a trail system that connects people between residential, recreational, educational, commercial, social, and civic areas in Sturbridge, and with neighboring towns, without the use of a vehicle.
2. To design and build trails in an efficient and thorough manner, maximizing the potential of all parties involved in the process.
3. For Sturbridge trails to be equitable, just, and sustainable.
4. To attract residents and tourists to in-town opportunities and boost economic development by using the trails to facilitate connections to shops, dining, and other attractions.

The recommendations associated with the first goal revolve around the creation and maintenance of a trail system that connects people with destinations and open spaces without using a vehicle. Recommendations for the second goal address the trail planning process and aim to support collaboration among the various parties involved in trail planning, building, and maintenance. For the third goal, recommendations explore equitable use of the land, recognizing areas of ecological importance, and trail resiliency. The fourth goal's recommendations recognize the potential for trails to contribute to the Town's local economy and offer strategies for maximizing this potential.

The 2022 Trail Sustainability Plan reflects on the Town of Sturbridge's previous trail work and planning, identifies the present community perspectives of the trail system, and provides a guide for the Town to continue the generation and maintenance of a sustainable trail network.

*"Of all the paths you take in life, make sure a few
of them are dirt." - John Muir*



Part 1

Where We Are

*On Raven Rookery Trail, by
Maria Dubois, Sturbridge
Media*

Introduction



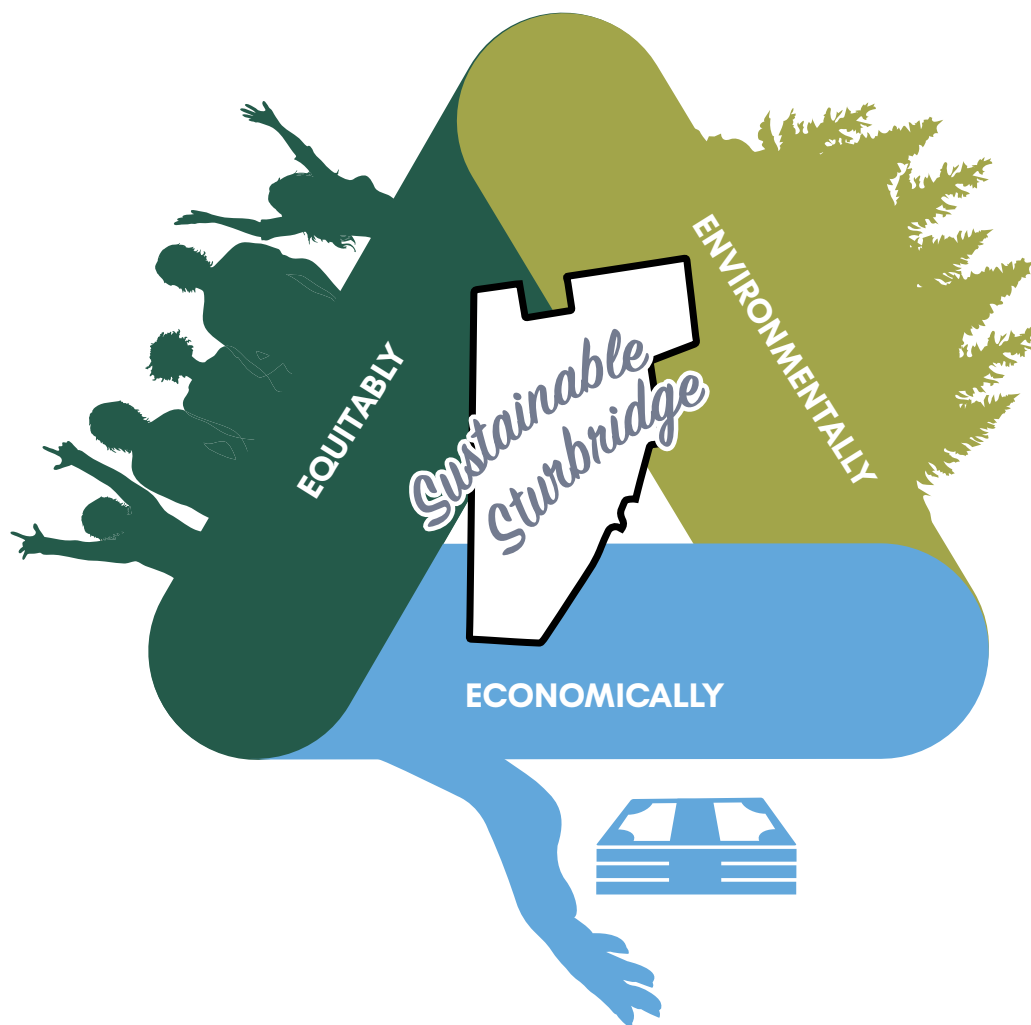
Image courtesy of the STC

In 2010, The Sturbridge Trails Committee (STC), a ten-member volunteer town committee that sites, builds, and cares for the Town of Sturbridge's trails, hired a group of consultants versed in trails design to create a trails plan, the Recreation Trails Master Plan (RTMP). The RTMP, adopted by the Town in 2012, was commissioned to create goals and objectives to guide the Town in developing a diverse, interconnected trail system within Sturbridge. In 2020, after eight years of tireless work implementing the report's recommendations, committee member Tom Chamberland reached out to the Conway School to update the original document.

The RTMP called for the construction of over 50 miles of trails throughout town-, state-, federally-, and privately-owned lands with the goal of generating trails-based tourism. While the RTMP laid out several recommendations for ecologically sound construction practices and methods for parcel-to-parcel connectivity, some analyses were not considered or lacked guidelines for implementation.

The Plan's original purpose was to lay out a comprehensive trail network and the STC has implemented much of the trails it wishes to see on town open space lands. The next steps are to 1) Assess where the town is with trail development, and 2) Use data and analysis, as well as public feedback, to develop recommendations for the sustainable development of trails going forward. Sustainably developed trails require exploring how trails can benefit the environment, the economy, and social wellbeing of the Town of Sturbridge. The purpose of this update is to provide a cohesive report that reflects the work accomplished over the past ten years and help assist the Town and the community with their vision for the future of the town's trail system.

What does a “sustainable” trail system look like?



The word “sustainability” can take on different definitions depending on context. To offer a framework for this complex definition, sustainability is commonly illustrated as a triangle with three dimensions (three E’s) at each corner. Examples of these three dimensions working in tandem can be found throughout the Trail System.

- Environmental: The trail system should be built and maintained according to best conservation practices, supports biodiversity in the region, and does not pollute or degrade the environment.
- Economic: A trail system should be affordable to build and maintain while offering the potential for economic growth in the community.
- Equitable (Social): People should have equitable access to the health and quality of life that access to nature can provide.

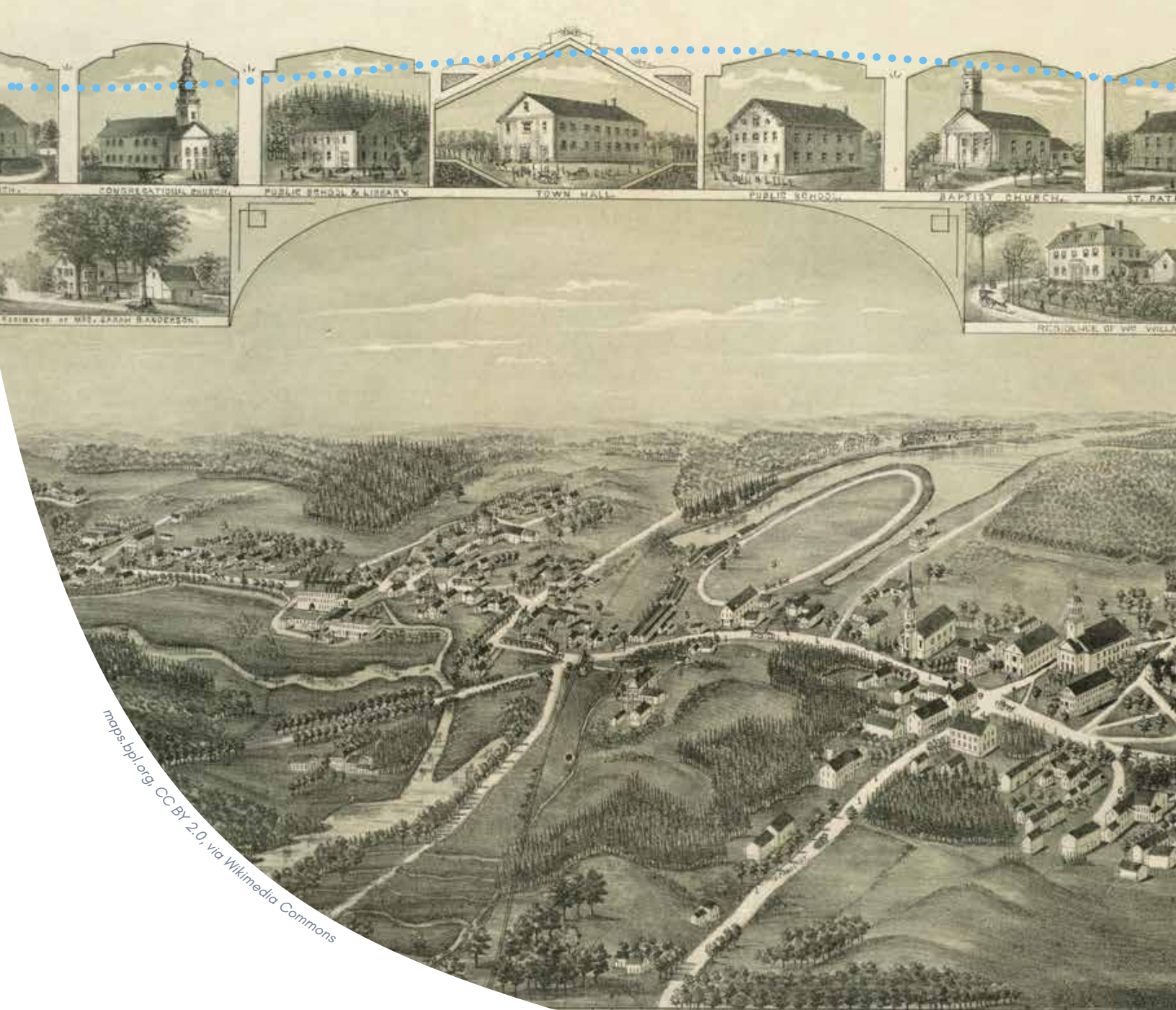
What this diagram illustrates is that each one of these three factors, held in balance, contributes to a sustainable system. This report attempts to examine the Sturbridge trail system from all three angles and offer insight into how to proceed while balancing the environmental, economic, and equitable dimensions of trails within the community.



Daderot, Public domain, via Wikimedia Commons

History of the Land

The region where the town of Sturbridge is currently located was originally inhabited by the Nipmuc, who called much of central Massachusetts home. The Nipmuc name is commonly defined as “fresh water people,” which is fitting given the plentiful ponds and streams in the area (Our History - Tribal Government of the Nipmuc Nation). They called the place where Sturbridge is now located Tantiusques, meaning “to a black deposit between two hills” (Tantiusques - The Trustees of Reservations), referring to the graphite deposit located there. Located near the important indigenous trade and traveling routes known as the Connecticut and Bay Paths, European settlers came into contact with the Nipmuc population as early as 1640. European settlers co-opted the graphite deposit from the Nipmuc people and continued to extract minerals from the mine commercially throughout the following two centuries (thetrustees.org).



Town Beginnings

The Town of Sturbridge was established in 1729 and incorporated in 1738, with 50 residential lots apportioned to families interested in moving to the area. Soon after, a number of saw and grist mills were constructed along the Quinebaug River, and much of the surrounding area was used for agriculture. After the Industrial Revolution, these mills were replaced by larger factory operations located mostly away from the center of town in the Fiskdale and Westville neighborhoods. During this period Sturbridge was still primarily a farming community, and much of this rural character remains today (OSRP).



I-84 and I-90 interchange. Photo by Maria Dubois, Sturbridge Media

Highways and Growth

By the late 1950s, the state of Massachusetts finished construction of Interstates 84 and 90, two major highways which converge in the center of Sturbridge and today carry tens of thousands of vehicles daily (MassDOT). Following their completion, Sturbridge's population began to increase rapidly. From 1950 to 1990, the town's population grew at an average rate of 28.5% every decade, and despite a decline in the mid 1990s, still expanded by more than 8.5% every decade from 1990 until present (OSRP). This rate of growth far outpaced the rest of the state, with Massachusetts growing only 4.8% from 1990 until present. Since 1950, the town has grown from 2,805 to 9,867 residents as of 2020 (Mass: 2020 Census_census.gov).



Carol M. Highsmith. Public domain, via Wikimedia Commons

Town Identity

The brisk growth in population and development, although being a boon for Sturbridge's economy, conflicts with maintaining its historic, rural character. Sturbridge is a tourist destination for those interested in early American life, with Old Sturbridge Village, New England's largest living museum, showcasing a collection of homes, shops, and industries common in the 1830s with over 500,000 visitors annually. Throughout the town, old houses, stone walls, and artifacts of history dot the landscape, but face increasing pressure to accommodate higher density driven by development. In response, Sturbridge has been proactive in acquiring open space for conservation, encompassing roughly one third of the total land area in town (OSRP).

Existing Conditions



Leadmine Mt. property in autumn. Photo by Martin Drexhage.

Sturbridge Trails Committee

In the 1970s, Sturbridge resident Craig Lyman wrote his master's degree thesis on a proposed "river walk" on an abandoned railway along the Quinebaug River, which runs from east to west through the middle of town. Despite receiving little attention at the time, the idea became a reality in 2000 on Earth Day, when ground broke on the construction of the Grand Trunk Trail. In 2003, the Town designated a three-member committee to focus on the rail trail's completion, and by 2009 had grown to become the Sturbridge Trails Committee (STC).

The ten-member, town-authorized volunteer group tasked itself with creating a comprehensive trails network to highlight the town's history, ecology, and natural beauty. In order to help guide their objectives, the STC hired Kay-Linn Enterprises, Trails Dynamics, and Applied Trails as outside consultants to write a Recreation Trails Master Plan which was completed and adopted by the Town in 2012. This report laid out goals and objectives for the STC to follow and suggested a trails system that could be enjoyed by the community and attract further tourism to the town.

Plan Consistency

This 2022 Trail Sustainability Plan seeks to strengthen and support the existing planning efforts adopted by the Town of Sturbridge, building upon the goals and vision identified in the 2012 Recreation Trails Master Plan.

"The Sturbridge Recreation Trails Master Plan seeks to highlight the community's small-town character, vast open spaces, scenic character, and abundant natural resources through the development of a diverse, interconnected system of recreation trails and signed touring routes. These facilities will provide improved access to protected lands, the Quinebaug River, community gathering places, and cultural/historical sites. The trail system will bolster Sturbridge's brand as a conservation leader and the ample recreation opportunities will incentivize visitors to spend additional time in Town exploring our natural environment."

- Vision from the 2012 Recreation Trails Master Plan

The following information was reviewed as a basis for generation of this document:

- Recreation Trails Master Plan (2012)
- A Guide to the Trails and Open Spaces of Sturbridge (2019)
- Town of Sturbridge Open Space and Recreation Plan (2018)
- Sturbridge Complete Streets Policy (2018)
- Department of Conservation and Recreation Trails Guidelines and Best Practices Manual (2019)
- Central Massachusetts Metropolitan Planning Organization (CMMPO) Regional Pedestrian Plan (2018)
- Central Massachusetts Metropolitan Planning Organization (CMMPO) Regional Bicycle Plan (2018)
- Sturbridge Massachusetts 2011 Master Plan
- Master List of Goals Report on the Accomplishment of Goals from the Master Plan and Commercial Tourist District Revitalization Plan (2017)
- Grand Trunk Trail Study Report (2020)
- Sturbridge Reconnaissance Report, Massachusetts Dept. of Conservation and Recreation (2007)

Geographic Information System (GIS) data for the Town of Sturbridge was evaluated to determine spatial relationships and identify conservation areas and priority habitats, using information from MassGIS and including the following layers from MassMapper:

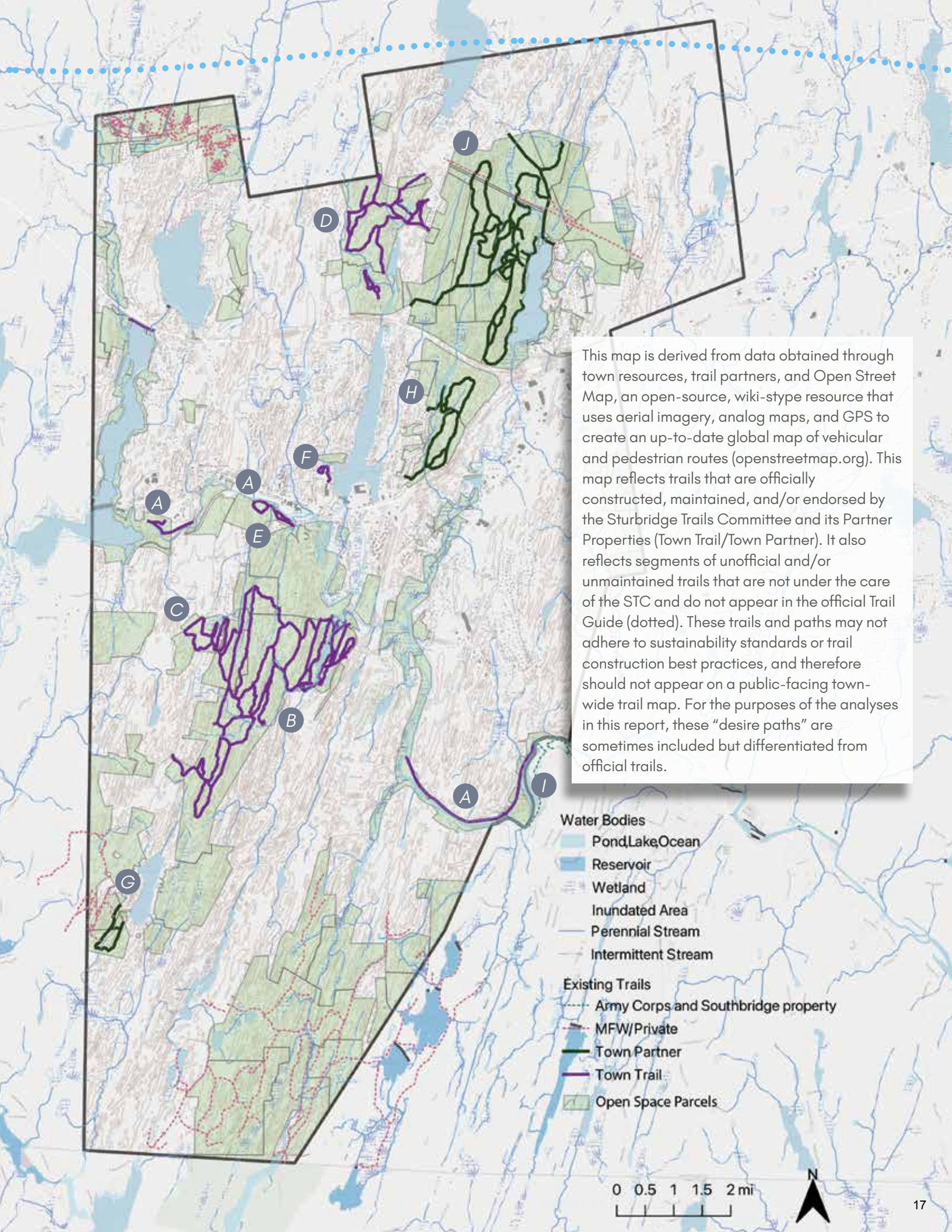
- BioMap2 Core Habitat
- NHESP Priority Habitats for Rare Species
- NHESP Estimated Habitats for Rare Wildlife
- NHESP Certified Vernal Pools
- NHESP Natural Communities
- Areas of Critical Environmental Concern
- Bicycle Trails
- OSM Open Street Maps
- MassDOT Roads
- Massachusetts Tax Parcels
- Massachusetts Open Space Land



Existing Trail System

Sturbridge has around 20 miles of diverse trails on town-owned properties with almost 16 additional miles on privately-owned land open to the public. Visitors have a variety of choices for what they want to see, how long they want to explore, and how challenging they wish their experience to be.

- A Grand Trunk Trail** (Town and Army Corp of Engineers): This central, shared-use, accessible trail is still under construction. Once finished, it will travel from the Brimfield Reservoir to Westville Reservoir, and serve as a six mile link of the 66 mile Titanic Rail Trail from Palmer, MA to Franklin, MA. Completed sections of this cross-town, east-west trail are surfaced with hard pack, are 10'-12' wide, and slope gently at an average 2% grade. Current sections follow the Quinebaug River from Westville Lake to Old Sturbridge Village and the Riverlands property.
- B Leadmine Mountain Conservation Area** (Town): Located geographically in the center of Sturbridge, this 880-acre property features forests, wetlands, and high points of elevation. Visitors can choose from almost 14 miles of trails of varying difficulty along ponds, ridgelines, and an old-growth forest stand.
- C Heins Farm** (Town) This property abuts the Leadmine Mountain Conservation Land and offers 2+ miles of gentle trails through open meadows, shrublands, and by a small pond. The Pond View Loop trail is universally accessible, and visitors to this heritage landscape have the chance to experience this increasingly rare grassland habitat.
- D Plimpton Community Forest** (Town): Purchased by the town in 2015, this parcel is located just across New Boston Road from Wells State Park. Encompassing nearly 281 acres, this property contains over 4 miles of trails (3 of which are still under construction) through actively managed woodland.
- E Riverlands** (Town): The Riverlands property runs along the southern edge of the Quinebaug River to the west of Old Sturbridge Village. A 1/2 mile portion of the Grand Trunk Trail is currently under construction in this area, and once completed will be an important step in creating a town-to-town, east-west corridor. A bridge across the Quinebaug to the Commercial Tourism District (CTD) is currently being planned and designed, and will be an important piece in linking the trail to Sturbridge's economic center.
- F Burgess Discovery Trail** (Town): With the trailhead located at Burgess Elementary, this trail is offers a short, less than 1/2 mile walk for families, children, and people of all abilities. This accessible loop travels through a wetland and serves as an educational resource.
- G Tantiusques** (Trustees of Reservations): The Tantiusques property holds sites of historical significance, including a graphite mine used by the native Nipmuc people. This 1.5 mile hike takes visitors along a trail lined with interesting topographical features, and beautiful areas lined with mountain laurel.
- H Opacum Woods** (Opacum Land Trust): Located just south of Interstate 90, the Opacum Woods offers visitors almost 2.5 miles of trails that go through shady forests to a beaver pond, with excellent views of the pond from Perry's Point. One can follow the gentle trail that follows the stream or check out the rock shelter historically used by the Nipmuc people.
- I Westville Lake Recreation Area** (Army Corps of Engineers): Westville Lake, formed by a dam standing 78 feet tall and holding back over three billion cubic feet of water, provides the public access to opportunities for fishing, kayaking/canoeing, and picnicking. The property consists of 578 acres of forests, 1.8 miles of trails looping around the Westville Lake, and provides a welcome respite along the 2.5 miles of the Grand Trunk Trail as it makes its way into the town of Southbridge.
- J Wells State Park** (Department of Conservation and Recreation): This is Sturbridge's largest contiguous property of open space with almost 1,500 acres. Walker Pond, located in the eastern portion of the park, can be viewed from Carpenter's Rocks, which looks out over uninterrupted forests to the east in Charlton. There are over ten miles of trails, which range from gentle, surfaced, accessible paths to those traversing steep terrain.



This map is derived from data obtained through town resources, trail partners, and Open Street Map, an open-source, wiki-type resource that uses aerial imagery, analog maps, and GPS to create an up-to-date global map of vehicular and pedestrian routes (openstreetmap.org). This map reflects trails that are officially constructed, maintained, and/or endorsed by the Sturbridge Trails Committee and its Partner Properties (Town Trail/Town Partner). It also reflects segments of unofficial and/or unmaintained trails that are not under the care of the STC and do not appear in the official Trail Guide (dotted). These trails and paths may not adhere to sustainability standards or trail construction best practices, and therefore should not appear on a public-facing town-wide trail map. For the purposes of the analyses in this report, these “desire paths” are sometimes included but differentiated from official trails.

- Water Bodies**
- Pond/Lake/Ocean
 - Reservoir
 - Wetland
 - Inundated Area
 - Perennial Stream
 - Intermittent Stream
- Existing Trails**
- Army Corps and Southbridge property
 - MFW/Private
 - Town Partner
 - Town Trail
 - Open Space Parcels

0 0.5 1 1.5 2 mi



Implementation Status

The Sturbridge Trails Committee met on December 7, 2021 to review their progress on implementation of the vision, goals, and strategies outlined in the 2012 RTMP (see Appendix A). A status report was created that shows that a few of the strategies outlined in the RTMP are completed, including allocating funding and obtaining cost estimates for planning, design, and construction for the Leadmine Mountain & Heins Farm property, as well as for the Riverlands property. A majority of the strategies are currently in progress while others have not yet been started.

The following table shows the breakdown of trail miles Completed, Under Construction, and Proposed. Approximately 26.5 miles are completed on the Sturbridge-owned properties and those of open space partners. Under Construction miles account for 10.65 miles and Proposed miles, 7.5 miles.

Sturbridge: Miles of Trails by Property				
Property	Completed	Under Construction	Proposed*	Total
Leadmine	10.63	2.5	2.5	15.63
Heins Farm	2.2	0	0	2.2
Riverlands	0	3.5	2	5.5
Plimpton	0.3	3.9	0	4.2
Long Pond	0	0.75	1	1.75
Fiske Hill	0	0	2	2
Totals:	13.13	10.65	7.5	31.28
Open Space Partners: Miles of Trails by Property				
Property	Completed	Under Construction	Proposed*	Total
Opacum Woods	2.8	0	0	2.8
Tantiusques	1.5	0	0	1.5
Wells State Park	9.5	0	0	9.5
Westville Lake	1.9	0	0	1.9
Totals:	15.7	0	0	15.7
* trail planning is ongoing; trails developed in phases				
Total Miles of Trails				46.98

Why Trails?

Benefits of Trails Systems

Trails have been shown to improve physical and mental health; promote inclusivity; drive economy; provide opportunities for recreation and transportation; and develop a sense of community. “When communities invest in trails, they are also building a trail culture. Outdoor recreation opportunities attract new residents, new businesses, and create a sense of pride for the communities that build them” (American Trails, 6). Trails connect people by building social infrastructure and creating opportunities for citizens and visitors to come together for events such as trail days and races. Sturbridge already hosts events like these, creating awareness of the trail system the town has to offer.

Physical & Mental Health

For every one dollar spent on trails, there is a three dollar savings in healthcare costs (American Trails, 4). Time outdoors can combat depression, anxiety, obesity, heart disease, and other health conditions. Trails have seen an increase in use over the last few years due to the Covid-19 pandemic, making it clear that people need access to an active area that provides proper distancing from others while allowing access to fresh air and connections to community amenities such as grocery stores and schools.

Inclusivity

When possible, trails should be developed to be accessible to people of all ages and abilities. Shared-used trails, accessible trails, discovery trails, and others can “enrich understanding and fellowship for all people” (American Trails, 7). Sturbridge currently offers a variety of trail types, from the universal design of the Grand Trunk Trail to the more challenging Trek Trails to the educational Burgess Discovery Trail near the elementary school. Based on feedback from stakeholders and residents, the Town and community value the creation of more accessible trails in Sturbridge as a priority, going forward.



On the Arbutus Trail, image courtesy of Marissa Cournoyer



Economy

Trails provide many economic benefits including job creation and increases in local business revenue, tourism, and health care savings. Trails also add real estate value to communities by enhancing the value of properties located along trails (Crompton, nrpa.org).

Recreation & Transportation

Providing trails that accommodate those walking and bicycling creates opportunities for the utilization of trails for various purposes including recreation/leisure or transportation/commuting. Shared-use trails can be used by walkers, hikers, wheeled users, mountain bikers, and more in a safe environment surrounded by the natural amenities the town has to offer. Residents and workers are able to use some of the town's trails to commute or travel to other destinations.

Community Development

Trails build communities. According to the Rails-to-Trails Conservancy,

"Trails and greenways have the potential to deliver powerful benefits to communities—providing people of every age, ability and socioeconomic background safe and inexpensive spaces for outdoor physical activity, commuting and recreation. Trails can serve as economic catalysts—opening up opportunities for outdoor tourism and small business development, and they can also provide critical "social infrastructure"—public spaces where people can meet, interact and build relationships."



Case Study: Virginia Creeper Rail Trail

In 2003, an impact study was conducted on the Virginia Creeper Trail (VCT) in southwestern Virginia to estimate the economic value it brought to the surrounding communities. Average annual users of the 34-mile-long trail connecting the towns Abingdon and Whitetop Station were estimated to be roughly 130,172, of which 68,669 were visitors to the area. Using a combination of both surveys and trail counts data from November 1, 2002 to October 31, 2003, the group conducting the research was able to ascertain where people were staying and how much they were likely to spend. Total dollars spent in direct correlation with the recreational opportunities afforded by the VCT were estimated conservatively at \$3,923,843. Much of this money was spent on lodging, food, shopping, and other recreational activities (Bowker et al.).

Trail Use Trends

Sturbridge's most recent history has been characterized by growth. Trail usership also appears to be growing. "TRAFX" infrared counters were installed at five trailhead parking lots. While it is too early to infer major trends, the data collected between 2020 and 2021 may imply that growth of trail usership is on the horizon for Sturbridge, following patterns of growth that can be observed throughout the community.

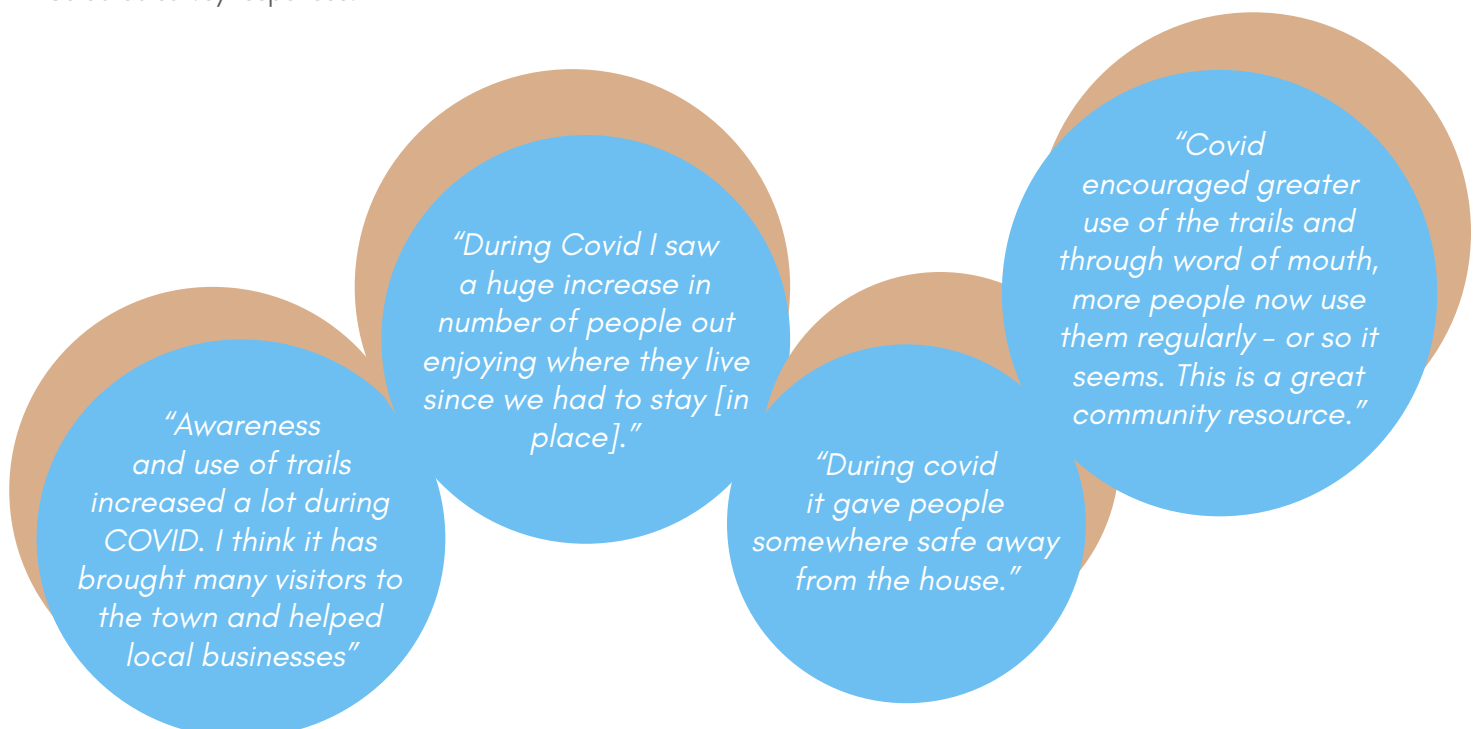
2020: 71,328 users
2021: 77,767 users

COVID and observed impacts on outdoor recreation

Changes in trail usership associated with the COVID-19 pandemic can be felt throughout the community, which is consistent with trends observed throughout the country. Trail use has increased as people are seeking safer alternatives to their typical recreational activities. It is unclear whether this data represents a surge that will fall after pandemic conditions have further subsided, but it may be prudent to anticipate that trail use will remain higher than it was prior to 2020 and make decisions accordingly (Brown et al.).

The community and trail users were also asked for their observations on how the trail system has impacted their community and the environment in the form of an online survey (see page 26-29 for more information about this survey). A significant portion of respondents talked about changes they have seen during the pandemic.

Selected survey responses:



*"There was nowhere to go but everywhere."
- Jack Kerouac*



Part

Where We're Going

*Mountain laurel in bloom at
Leadmine Mountain. Photo
by Nick Sokol*

Vision

The 2022 Trail Sustainability Plan also incorporates the “Community Vision Statement” that was adopted in the 2011 Town Master Plan as a more foundational vision, ensuring that this plan remains consistent with Sturbridge’s vision for their community.

Community Vision Statement

“Sturbridge is a community that cherishes its small-town character, its vast open spaces, and the natural resources that provide numerous cultural and recreational opportunities. This rural character is the Town’s core value as expressed by the many scenic vistas, the places where people gather, the open spaces, and the historical and cultural assets that residents and visitors hold dear. The Town is further defined by the design of its development and transportation system. Sturbridge believes that its identity and sense of place is what attracts people who would like to live, work, shop, and play in the community.”

- Sturbridge Massachusetts 2011 Master Plan



Concept of a multi-use greenway in the Commercial Tourism District, featuring kiosks and rest areas.



Goals

The 2022 Trail Sustainability Plan maintains values expressed in the 2012 RTMP, but restructures them to allow the goals to grow with the town. These updated goals were developed based on feedback gathered through community engagement, discussions with the Town and stakeholders, and independent research.

To continue developing a trail system connecting residential, recreational, educational, commercial, social, and civic areas in Sturbridge, and with neighboring towns, allowing people to traverse the town without the use of a vehicle.

The ability to travel from destination to destination without the use of a vehicle strengthens communities. There is a strong desire within the community to be able to move between their homes, open spaces, and daily destinations safely without using a vehicle. A robust, connected trail system between open spaces also offers an enhanced experience for people visiting Sturbridge with the intent of recreating on the trails.

To design and build trails using an efficient, transparent, and collaborative process.

The process of building a trail in Sturbridge involves managing many details and relationships. When proposing a new trail, the Town will strive to make sure that each involved party has proper understanding, opportunity for input, and clarity to maintain an open and collaborative process. Open and clear communication early in the planning process helps ensure efficient implementation and a result that best suits the needs of every stakeholder.

For Sturbridge trails to be equitable, just, and sustainable.

Every person who wants to use trails in Sturbridge should have access to them; all people should be able to benefit from the enhanced quality of life that using trails can offer. Achieving harmony between human trail use and environmental sustainability is possible through sound building practices, careful monitoring of changing conditions, and prudent management decisions. The town should strive to take every measure within reach to mitigate harm to the region's ecology, and when that harm cannot be mitigated through sound trail design and use guidelines, limiting human access should be considered. This will help to ensure that the trails and open spaces can be enjoyed by all species for many years to come.

To draw residents and tourists to in-town opportunities and boost economic development by utilizing the trails to facilitate connections to shops, dining, and other attractions.

In addition to the social and ecological benefit potential of trails, Sturbridge's trail system can serve as an economic asset to the community. If the Town aims to develop better connectivity to the town's businesses and Commercial Tourism District, the trails could better support a local and tourism economy. The trails can also support economic growth through events and programming, which may involve collaboration between the Town, local businesses, and other entities.

Community Engagement

The consultant team provided two major opportunities for Sturbridge community members and trail users to engage with the development of the plan: a community meeting held via Zoom on February 16, 2022 and an online survey that accepted responses from March 5 to March 14. Meeting and survey participants were asked for their input on aspects of the 2012 RTMP, feedback on how they currently use the trails, values surrounding trails and conservation, and considerations they would like to see incorporated into the plan.

Community Meeting

Many Sturbridge residents believe their trails are an asset to the community and are invested in the future of the town's trail development. A community meeting held via Zoom on February 16, 2022 drew participation from just under 30 community members. Meeting participants were asked to reflect on the vision and goals that were outlined in the 2012 RTMP. The view of both the general members of Sturbridge and stakeholders that were present at the meeting is that the 2012 vision was still applicable, and still reflected the values of the Sturbridge community ten years later. Overall, participants at the meeting conveyed that they love their trails; they feel that the 2012 RTMP did a good job reflecting most of their community's values, and they hope that an updated trails plan will better reflect the changes in conditions Sturbridge has undergone in the last decade, while also anticipating projected trends and setting Sturbridge up for success when change arises.

February 16, 2022 Community Meeting discussion points:

Ecological Sustainability

Community members shared that they see and appreciate the commitment to sustainability and conservation that the Town has made in building and maintaining the trail system over the last decade, despite feeling like that commitment was not clearly outlined in the 2012 RTMP. Ecological conservation was a strong, underlying theme throughout all discussions at the meeting. Participants agreed that they all want to take measures to protect their landscape, and they acknowledged a need for trail maintenance and development to take into consideration variables like trail usership numbers, weather patterns, and Sturbridge population change into the future.

Connectivity

Meeting participants talked about how much they appreciate the opportunities where they can walk from their backyard to a destination safely without the use of a car, and they would love to see this element expanded. Community members agree

that connectivity should be a goal to aim for, but there are some different opinions on what should be connected. Some community members feel it is most important to connect open space parcels, while others feel that it is more important to focus on connecting neighborhoods to desired destinations.

Awareness

Another theme throughout the discussion was a perceived need to increase awareness of the trails, and participants identified potential avenues for doing so. The community sees their trails as a great asset and they feel that activities such as hosting sporting events on the trails do a lot to make both Sturbridge residents and visitors more aware of them.

Walk and Bike Sturbridge Trails Questionnaire

Community members, tourists, and stakeholders were also offered the opportunity to provide their input through participation in a 28-question, online survey. The survey and results are included in Appendix B. Many of the sentiments that came up in the community meeting were also reflected in this data, but some additional perspectives and concerns arose.

Who responded?

Of 199 individual responses collected,

- ...70% consider themselves long-time Sturbridge residents
- ...the average household size is just under 3 people
- ...the largest age group represented was 45-64
- ...most respondents did not have school-aged children

Trail Use and Activities

Ninety percent (90%) of respondents said that they use the trails, generally distributed between users who visit the trails daily to users who visit them four times a year.

Hiking and walking were the activities they engaged in most frequently on the trails, and the top five properties most often visited were Leadmine Mountain, Heins Farm, Westville Lake, Wells State Park, and the Grand Trunk Trail. Most respondents reported using the trails for recreation and exercise, and three percent (3%) of people said they use the trails for getting around Sturbridge.

Connectivity and Navigation

Nearly 100% of respondents indicated that they either owned or had regular access to a vehicle, and 90% of respondents reported that they typically drive to the trailheads and park. 65% of respondents do not feel that they could safely and conveniently get to the trails without driving. In fact, a desire for more safe pedestrian infrastructure was a resounding theme throughout the results.

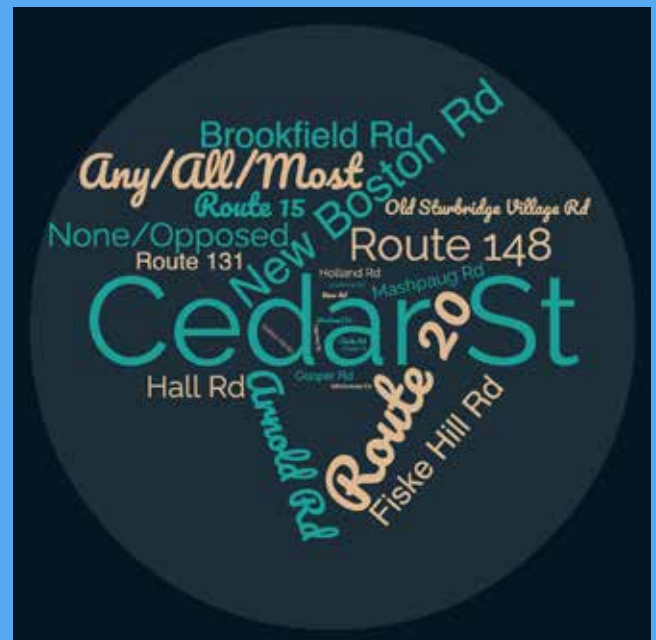
"The town is not conducive to walking or cycling, except on the trails, and the trail system as it currently exists does not allow getting from place to place, only recreation within the trail system."

Which roads in town, if any, do you think need sidewalks that currently don't have them?

Top three answers:

- Cedar Street
- Route 20
- New Boston Road

"It is insane that kids who live in the shadow of their school have to take a bus."

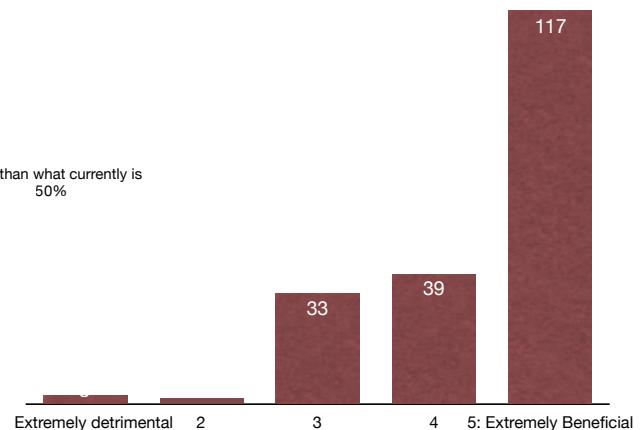
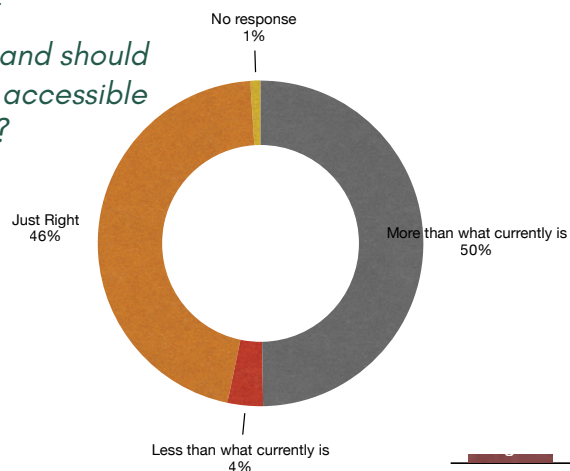


This word cloud depicts the roads that respondents feel are most in need of sidewalks. The bigger the word, the more frequently it was mentioned in responses.

Relationship with the Landscape

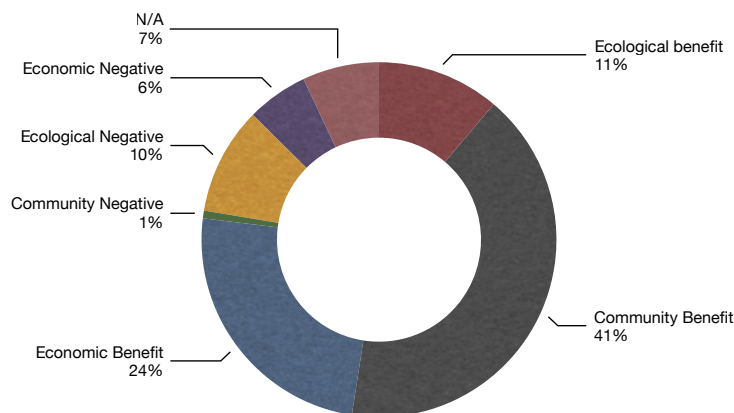
Overall, survey respondents lean towards the sentiment that trails are more beneficial to a landscape than detrimental. In the survey, “Sturbridge’s landscape” was defined as the ecological and community components of the town. When asked to rate whether they thought trails were more detrimental or beneficial to landscape, responses skewed towards beneficial. When asked how much of Sturbridge’s land should be open and accessible to the public, 4% of respondents thought that less land should be accessible than what currently is; 96% thought the amount of publicly accessible land should stay the same or increase.

How much of Sturbridge’s land should be open and accessible to the public?



Rate your stance on whether trails are detrimental or beneficial to a landscape.

In what ways have you seen Sturbridge’s trails have ecological, community, and/or economic impacts?



Respondents were asked to give examples of ways that they have seen trails impact the landscape. The chart to the left is a representation of the distribution of responses. The most visible impacts, according to community members, were beneficial to the community and to the economy.

“I feel the trails bring awareness to nature and encourage people to take care of their surroundings.”

“Connecting to nature is important to foster a sense of appreciation, value and respect. There needs to be a balance with nature though. Too many trails isn’t good.”

“I have found that the trails offered an important incentive to having a sense of ‘a good place to live’ when I moved here.”

Community Concerns & Desires

All survey responses were analyzed to gather perspective on the aspects of the town's trail system that respondents are concerned about or wish to see improved. Some constraints to addressing these community concerns are discussed below, and continuing to address community feedback and use it as a gauge for driving decision making and information distribution will be critical to creating a trail system that is socially sustainable.

Amenities

The top three amenities that people would most like to see added or improved on the trails were wayfinding/directional signage, trash receptacles, and benches. These were closely followed by restrooms and an off-leash dog area. Most of the town's open space properties hold conservation restrictions which prohibit off-leash dog areas and restrooms. However, there may be other properties where these amenities are possible. The properties with conservation restrictions may be suitable for some of the other amenities, such as signs and benches.

Safety and Accessibility

Those who responded that they do not use Sturbridge trails provided a number of reasons; the two most frequent reasons were that the trails felt unsafe and that the trails are not physically accessible to them. The Town has incorporated trail segments that meet accessibility standards on all of the town-owned properties. Of these respondents, few elaborated on what exactly felt unsafe about the trails. Further investigation may be needed to better understand these perceptions.

"The trails are inaccessible to those of us with disabled children who use walkers or wheelchairs. We are desperate for a place to bring them to get fresh air while walking but there is no safe paved area in town."

Funding

Community members indicated concern for how they might bear the burden of maintaining trail and

pedestrian infrastructure. Some responses reflected concerns about using taxes to fund trail construction and maintenance, and some respondents wondered about how constructing bike lanes and sidewalks in the right-of-way might make their front yards feel smaller and possibly require more maintenance.

"Sturbridge needs to focus on recreation that brings in revenue to offset the tax rate that keeps climbing. So many ways to do this, even with trails..."

Pet Waste

Survey respondents also expressed concerns about the impact of pet owners who are not following posted guidelines. Dogs are not allowed off-leash on any trails in Sturbridge, but many respondents consider off-leash dogs as an issue on the trails. Many are also concerned about the potential ecological impact of pet waste that does not get picked up.

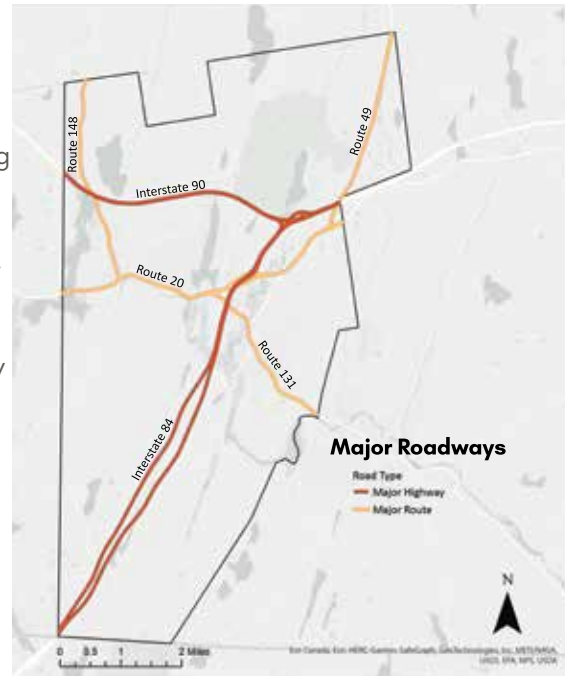
Wayfinding

Respondents were also concerned about a lack of wayfinding. Wayfinding signage was the top answer when respondents were asked what amenities they would most like to see improved on the trails. Comments reflected some confusion about which trails are official versus those that are spur trails. None of the official trail routes go through private property, and it appears that some hikers find themselves accidentally off-route on unofficial trails. The STC explains that they do provide signage marking unauthorized spur trails to private property when they are brought to their attention.

Analysis

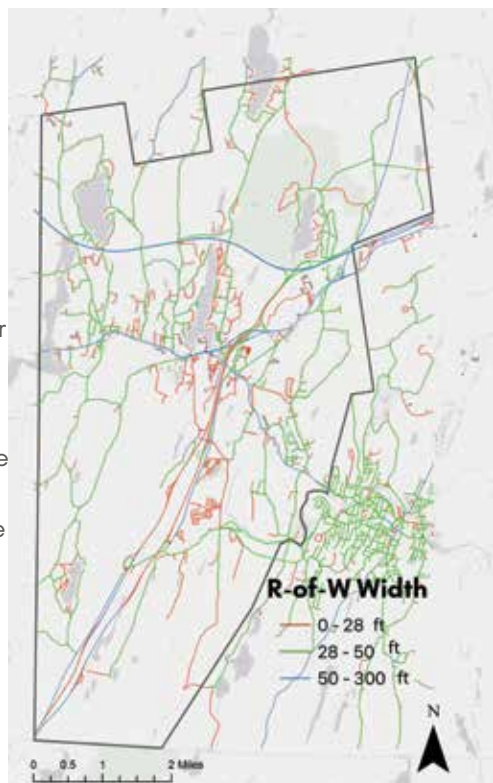
Roadways

Roads in Sturbridge can be dangerous to navigate outside of a car and negatively impact the desire of the public to travel using alternative modes of transportation. Located at the intersection of several important Massachusetts roadways, the town's automobile-centric infrastructure is not currently accommodating alternative modes of transportation. The major highways, Interstate 90 (east-west) and Interstate 84 (north-south), restrict pedestrian movement and divide the town into northern, eastern, and western blocks. Other roads, such as Route 20 and Route 131, impede pedestrian and bike travel due to the amount of vehicular traffic (over 16,000 and 12,000 average vehicles a day respectively (2020 MassDOT)) and the speed at which it moves. Neither of these roads have marked bike lanes, and both lack frequent crosswalks. Local roads in Sturbridge do not have sidewalks or shoulders and tend to be very narrow, forcing pedestrians, cyclists, and vehicles to share the limited space, creating a hazardous environment for all users.

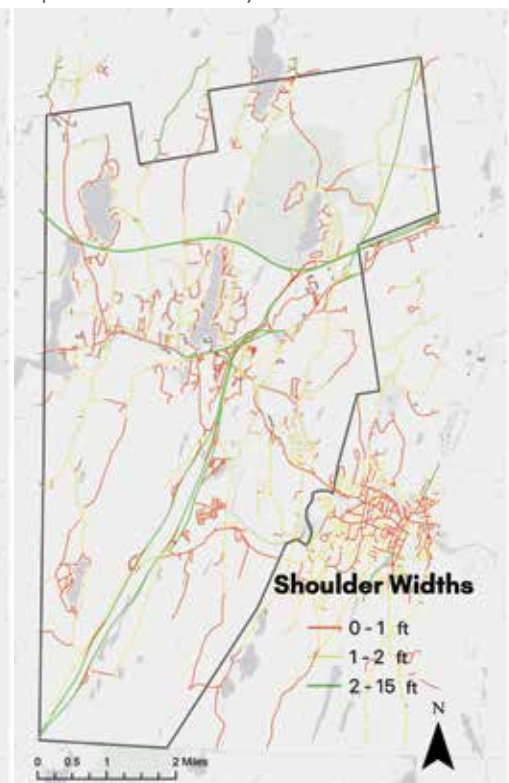


Currently, roads that are meant to provide connectivity actually act as barriers instead of opportunities for pedestrian movement. Trail development could help to fill this void, allowing people to move through town without using roads. However, the current trail system does not facilitate movement between neighborhoods, and trail networks are more like “islands of recreation,” as one survey respondent shared. Multi-use roads could offer a critical means for connection between these parcels and to various areas in town. As such, the Town has recognized the need for accessible, safe infrastructure for pedestrians and cyclists.

Left: This map shows the width of road rights-of-way. When the right-of-way extends beyond the driving lanes, there may be opportunity for the construction of bike lanes, sidewalks, off-street bike paths, or other forms of pedestrian/bicyclist infrastructure.



Right: This map shows the width of road shoulders. Roads that currently have little to no shoulder currently pose the most danger to pedestrians and cyclists attempting to share the road with traffic.

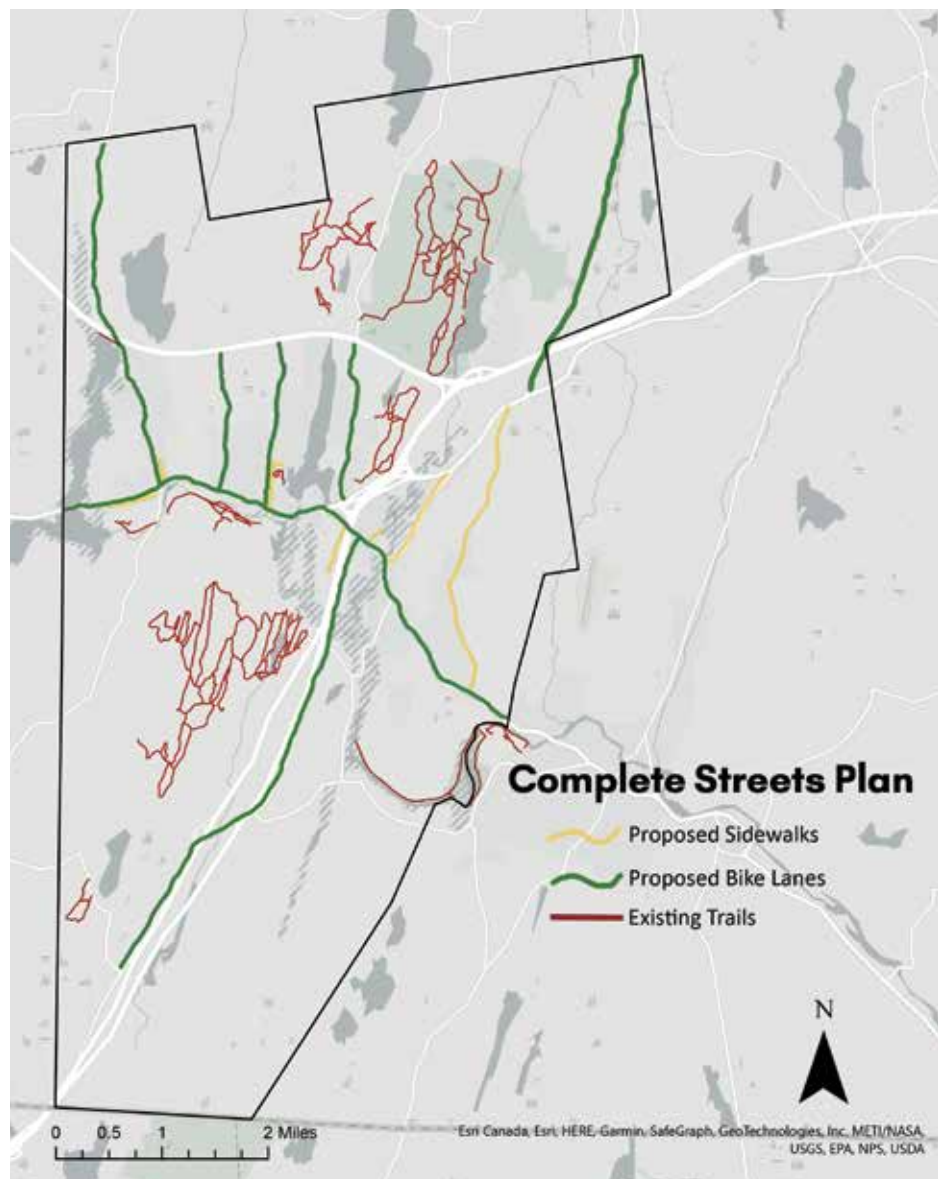


Complete Streets and Safe Routes to School Initiatives

The Town of Sturbridge has been active in adopting forward-looking policies to advance the community's vision for improved pedestrian and bicycle connectivity. In particular, plans for Complete Streets and Safe Routes to School initiatives have been approved by the Town, which aim to improve walkability and create safer neighborhoods. Complete Streets and Bike to School policies are of major importance to the community as they seek to retrofit roads to make them pedestrian- and bicycle-friendly. With the help of the Central Massachusetts Regional Planning Committee (CMRPC), priority corridors for the construction of sidewalks and bicycle lanes have been identified.

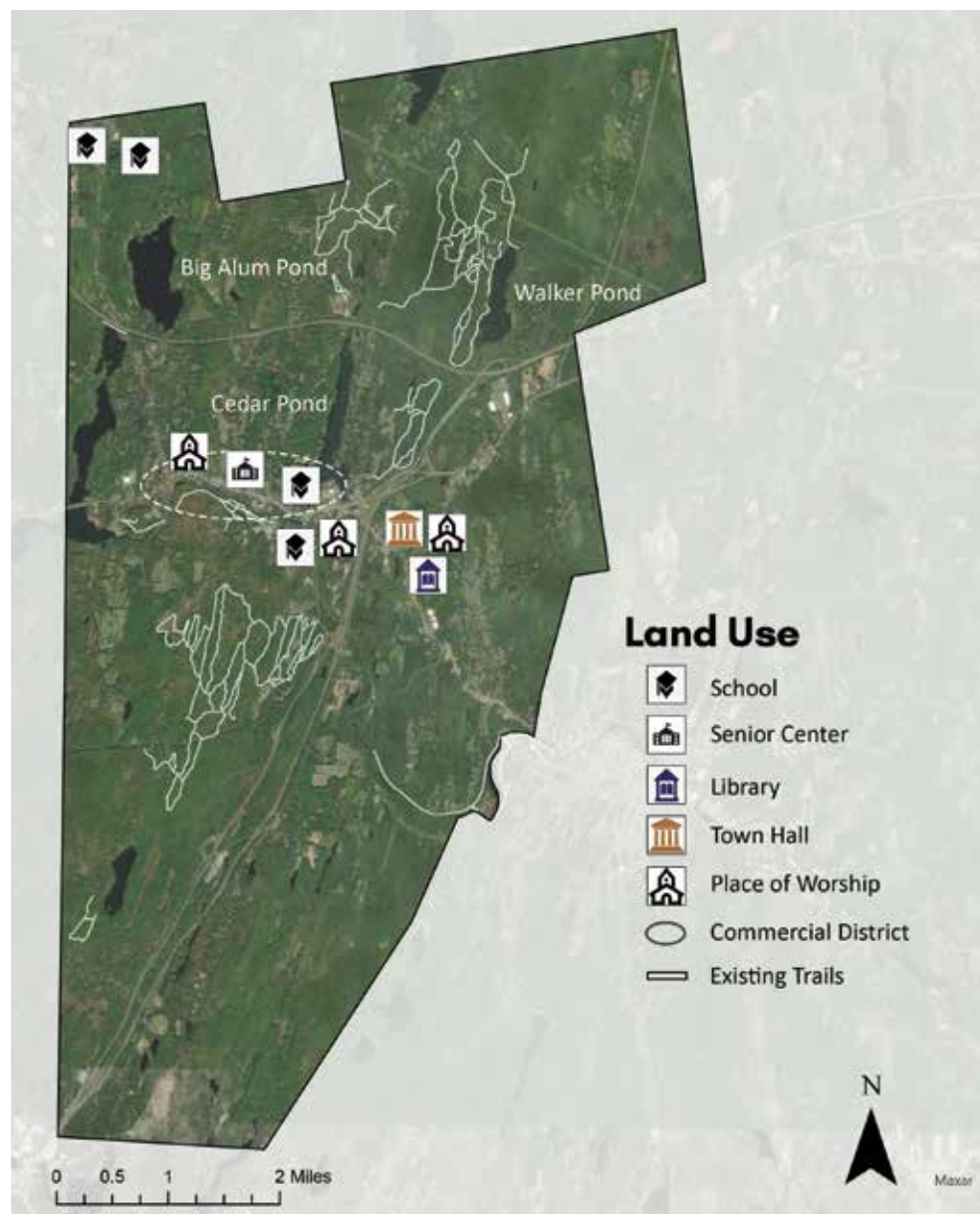
Sturbridge initiated its Massachusetts Complete Streets policy in 2018. The program, funded by the Massachusetts Department of Transportation (MassDOT), provides funds to make streetscapes more amenable to non-vehicular travel. The grant provides money for construction projects such as road diets (narrowing and/or reducing traffic lane widths), lighting, and expanded sidewalks. Currently the town, with the help of the CMRPC, has secured funding for new crosswalks and wayfinding signage, and future projects include five-foot-wide bike lanes along Routes 20 and 131, new sidewalks, and street crossing improvements. As these projects are implemented, it will be important to tie them into the existing trail network, and for new trails to take advantage of these newly improved, safe routes.

Currently, students are prohibited from walking and biking to school due to unsafe or incomplete routes for non-vehicular travel to school. However, the town has secured funding from the Safe Routes to School program for a new sidewalk from Cedar Street to Burgess Elementary School, which will add crosswalks and other pavement markings, and two pedestrian HAWK signals. At the Tantasqua Regional High School, new sidewalks have been added close to the school with more planned along Route 148.



Land Use

Concentrated areas of population and development have created large areas of unfragmented land for trails and wildlife habitat.



Development in much of Sturbridge is centered around Routes 20 and 131. Along these corridors, commercial development is abundant, with a variety of restaurants, shops, and other businesses lining the road. Along these routes there is also multi-family housing, with single family homes appearing more commonly on side roads away from these main arteries. The shores along Big Alum Pond, Cedar Pond, and Walker Pond contain a number of single-family houses as families move to be near the recreation and beauty they provide.

Much of the civic infrastructure is located along these same corridors with the town hall, library, and public offices sited directly off of Route 131, and the town senior center off of Route 20. The places of worship in Sturbridge, as well as its schools, are either directly along

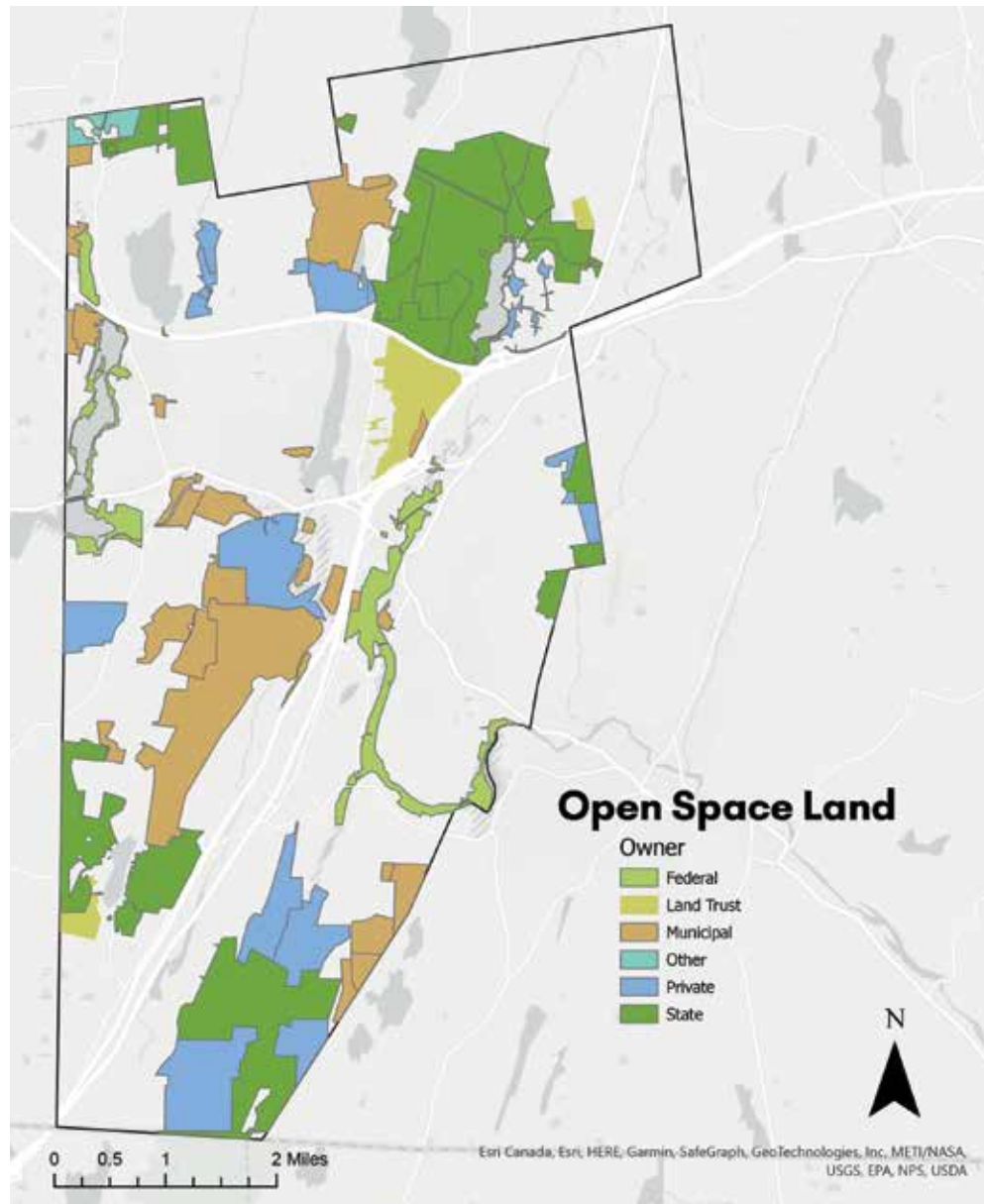
these routes or less than a quarter mile away. The only exception to this is Tantasqua Regional Middle and High Schools, which are located off of Route 148 in the northwestern corner of the town. The location of these two schools is most likely due to their proximity to Brimfield, Brookfield, Holland, Sturbridge, and Wales, the five towns which they serve.

Although the Town of Sturbridge has a population of almost 10,000 people, its constrained development has created contiguous areas of intact forest cover. Much of this land has been set aside as open space for the community's enjoyment and is where much of the current trail system is located.

Open Space Land Ownership

The variety of open space land owners in Sturbridge present opportunities and barriers to trail construction.

Although the public has access to a variety of open space lands, the town does not retain jurisdiction over all of them. Much of the land is owned by a mix of private, state, and federal entities, including Tantiusques owned by the Trustees of Reservations, Opacum Woods by Opacum Land Trust, Wells State Park under the Department of Conservation and Recreation (DCR), Breakneck Brook by Massachusetts Department of Fish and Wildlife (MFW), and Westville Lake by the U. S. Army Corps of Engineers (ACOE). Additionally, many of the properties have different conservation restrictions (CRs). These restrictions list the stipulations of how the land is to be managed and often differ between owners and properties. Restrictions largely prohibit development in these areas, though trails may be allowed.



This complex arrangement of land owners can present opportunities to work together and share ideas, but can also make comprehensive trail construction difficult. As opposed to the STC making all of the decisions on how trails are designed and built, it is necessary for the Town of Sturbridge to work in conjunction with these various organizations to create a thorough, cohesive, and well planned trail system. For example, Sturbridge's Conservation Commission works with MFW to ensure that the CRs are upheld, limiting development of recreational trails to help protect fish and wildlife habitat.



Habitat

Protected open space in Sturbridge provides important space for humans and wildlife.

Sturbridge contains substantial amounts of important wildlife habitat, with much of it concentrated in existing open space lands protected from development. While trails in these areas help connect the community and visitors to nature, trails should be carefully sited to mitigate negative impacts on the environment. Community members have expressed concerns over erosion, pet waste, habitat fragmentation, and wildlife disruption. However, trail recreation can also act as an incentive to protect these same spaces from development so they can continue to be enjoyed for generations and provide habitat for plants and animals.

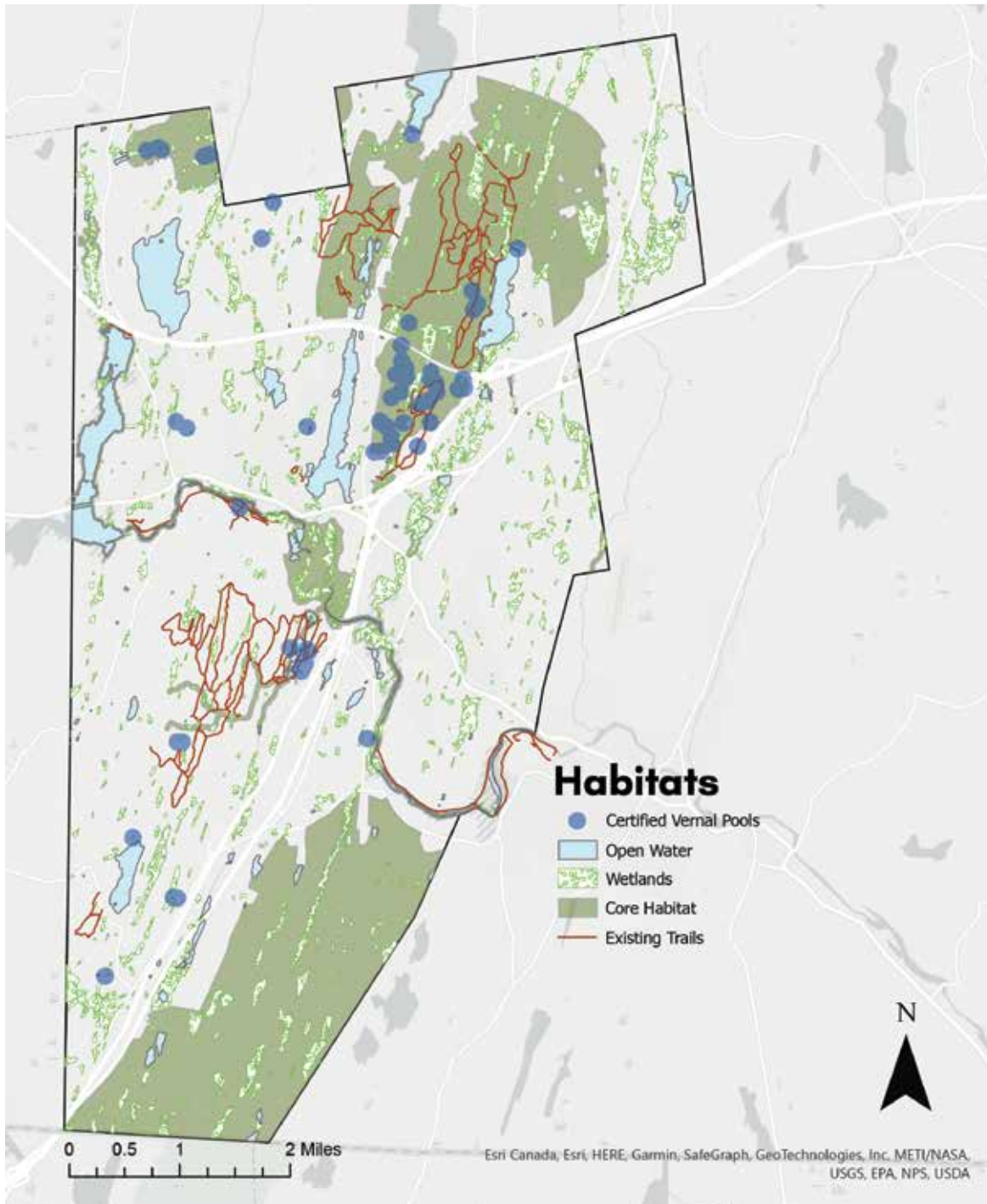
Sensitive habitats where trail impacts might be highest:

Vernal Pools: Vernal pools are areas that typically collect water in the winter and spring, but may dry out during the summer. These areas are important habitats for amphibians and many rare plant species, and act as a source of food and water for many animals including ducks and egrets (EPA). Runoff carrying sediment from erosion and pet waste can alter the composition and chemistry of these sensitive areas (Allen et al.).

Wetlands: These increasingly threatened habitats are home to a variety of sensitive species. In these land types, water is present during most of the year either visibly on the surface or just below the soil line. These are vitally important areas for breeding, nesting, and foraging for many animals and are critical for many species of plants. In addition, they also slow and absorb flood water and act as sinks for nutrient, sediment, and pollutant runoff (NOAA). However, human development can overwhelm and damage these ecosystems. Sedimentation and pet waste runoff into wetlands affect water quality and can lead to algae blooms. Invasive species like duckweed have increasingly found their way into ponds. Duckweed in particular thrives in dissolved nitrogen levels, something that excessive pet waste can contribute to (Eutrophication and Aquatic Plant Management in Massachusetts, p 1-35).

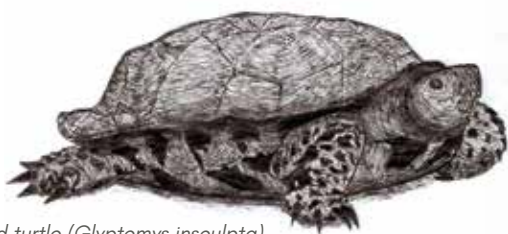
Grasslands: Another threatened natural habitat type, grasslands in Massachusetts have been slowly disappearing since the decline of agriculture in the mid-1800s. These ecosystems, which exist in Sturbridge in areas such as the Heins Farm property, are home to a variety of plants and animals that depend on these open lands for forage and shelter (Rothbart and Capel).

Some of the current trail system does traverse these sensitive areas, but The Sturbridge Trail Committee (STC) recognizes the importance of sustainable trail construction and works hard to follow best practices. The use of techniques like switchback paths and on-contour layout to avoid excessively steep slopes helps prevent erosion, and limiting tread and corridor width in the most sensitive of areas prevents the fragmentation of habitat. Habitat fragmentation and wildlife displacement can happen due to human development, but it is much more severe in the case of constructing a roadway for vehicle traffic.



Ecology

Within Sturbridge a number of rare and threatened species have been documented, including Wood Turtles in 2016 and Bristly Buttercup in 2008, which are considered of Special Concern, and the Marbled Salamander which was last seen in 2010 and is on the threatened species list (see appendix C for a full list of rare species sightings in Sturbridge). Plants and animals such as these need to be considered during the trail building process, as small changes to the environment can have negative impacts on these species. For this reason, the Commonwealth passed the Massachusetts Endangered Species Act (MESA) in 1990. This law lays out a number of requirements before approval of construction is allowed to begin, including full documentation of the proposed project, potential alternatives to the area under consideration, and impacts of the project on the species of concern.



Wood turtle (*Glyptemys insculpta*)



Marbled salamander (*Ambystoma opacum*)

Bristly buttercup (*Ranunculus hispidus*)

FROM THE NATIONAL PARKS SERVICE'S LEAVE NO TRACE PRINCIPLES

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

Some of Sturbridge's open space properties have signs posted reminding users of trail etiquette. Trail users should be encouraged in every way to understand their role in minimizing harm to the environment.





Birdhouses at Heins Farm Property, by Denise Lachapelle

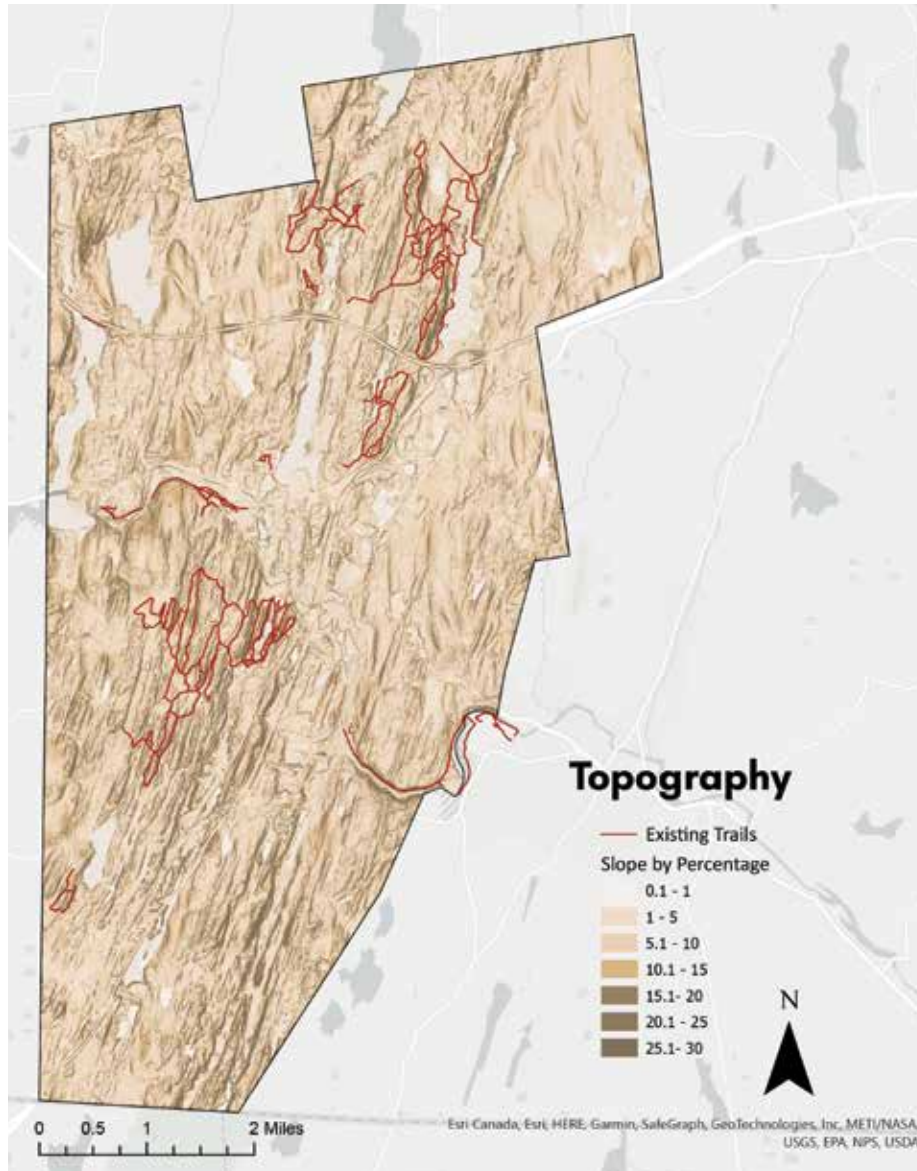
Aiming for harmony between humans and wildlife

Even projects that take these considerations into account can still have negative consequences on wildlife as humans increasingly interact with previously undisturbed landscapes. As humans move through natural areas, wildlife tends to be displaced as they seek to avoid perceived threats. People with dogs, on- and especially off-leash, tend to exacerbate these effects. While some wildlife can adapt to human presence, dogs are often perceived as predators and cause longer term displacement for wildlife. Lingering scents from dog waste can impact wildlife even days after the animal is no longer present (Hennings).

However, research on the environmental costs of trails is still relatively new, and leading conservation entities have in some cases chosen to scale back their investment in recreational trails; in 2016, the Department of Fish and Wildlife decided to phase out maintenance of hiking trails on all lands operated by the organization. In most cases, though, it is still the consensus that if people and their pets stay on the trails and follow “Leave No Trace” principles, the human health, stewardship opportunities, and education outweigh the potential risks. Special consideration should be taken in the most sensitive areas.

Topography

Landforms in Sturbridge shape trails and how people move.



Human development has historically been shaped by the land. Existing conditions, such as topography, play major roles in the formation of neighborhoods, town centers, and roads, with much of Sturbridge's population and routes found in the lowlands. Two major ridges, one located in Wells State Park to the north and the other in the Leadmine Conservation property to the south, funnel vehicular and pedestrian movement from east to west along the lowlands near the Quinebaug River. Development happened along the riverbanks mainly as a result of Sturbridge's industrial history, and transportation infrastructure (Route 20 and Route 131) also followed this pattern.

Sustainably constructed trails that take advantage of these difficult terrains can be rewarding, both from the physical exercise required to navigate them, as well as the promise of views from their summits. However, steep slopes can be an impediment to the construction of trails

that serve people of all accessibility levels. Trails that are accessible to all groups that scale these slopes require a 5% grade to be navigated comfortably, should be a minimum of 36 inches wide, and have a rigid, stable surface, according to the U.S Forestry Service trail specifications. Trails that run east to west in Sturbridge will likely need to incorporate more tight switchbacks into their design in order to be sustainable.

Parking

Lack of parking potentially restricts trail use by residents and can hamper efforts to attract trail-based tourism.

At the twelve trailheads listed within the Sturbridge Trails Guide, parking is available to the public. Some of these lots have enough parking to accommodate up to 140 vehicles (Westville Lake Recreation Area, 125 Wallace Road), but others have space for as little as six (Tantiusques at 500 Leadmine Road). This limited space was commented on by several members of the community, with 17% of survey respondents listing the lack of parking as one of their top three concerns. Not only does this limit parking for the community, it also restricts possibilities for trail tourism and public events such as 5K races and community walks. While the STC has expressed an interest in potentially increasing the amount of parking on lands it owns, some existing conservation restrictions make this difficult.

However, the construction of a better interconnected trail network and multi-use roadways can alleviate the need for parking as people would be able to commute directly from their homes, hotels, or campsites. Additionally, the acquisition of properties (such as that at 501 Main Street) allows for the development of new projects which can create centralized parking areas that serve as nodes within Sturbridge's trail system.



Connectivity

The geography, pattern of development, and protected open space lands in Sturbridge are integral in understanding how the community moves from place to place within town.

Respondents were asked to estimate where they lived on the map below, and where they spent most of their time (anything outside of Sturbridge was a write-in “other” option) as a way of capturing a picture of the typical movement of people within Sturbridge, especially across the dividing highway lines.

In which section on this map do you reside? In which section, on average, do you spend most of your time?

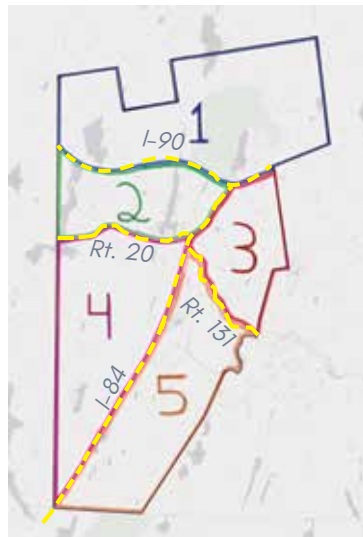
1: North of Mass Pike

2: South of Mass Pike and north of Rt 20

3: Between Rt 20 and Rt 131

4: South of Rt 20 and west of I 84

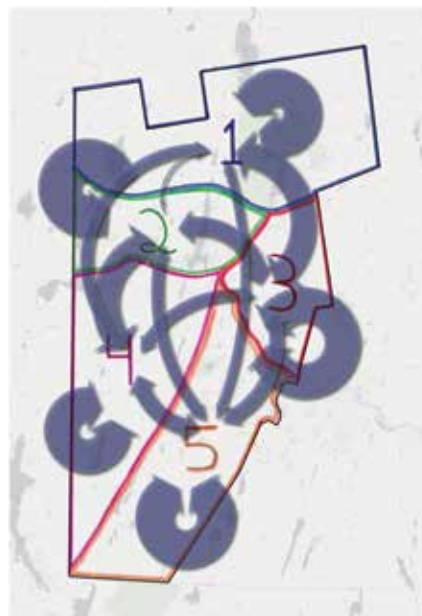
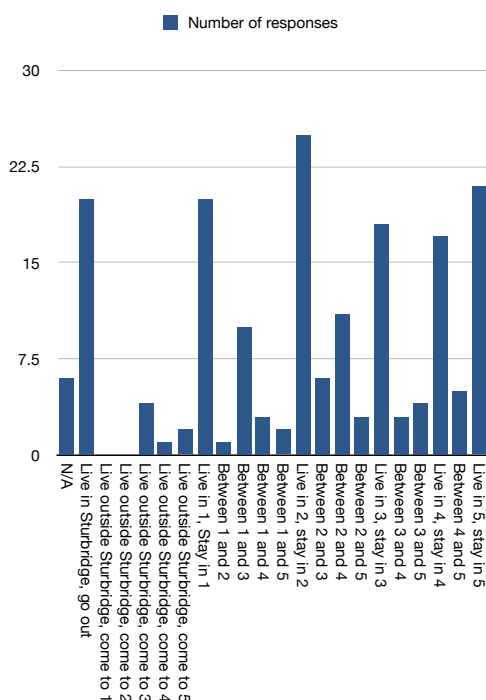
5: South of Rt 131 and east of I 84



On average, it appears that more respondents tend to stay within the section that they live. This tendency may suggest that people either have little reason to or interest in traveling to other areas of town, or that there are connectivity barriers that limit their ability to do so.

When people do report moving from section to section in Sturbridge, it appears that most of the movement happens between sections 2 and 4, 2 and 3, and between 1 and 3. This analysis is limited in that it uses self-reported data, does not account for roads that take people across other sections before they reach their destination, and did not specifically ask people about their

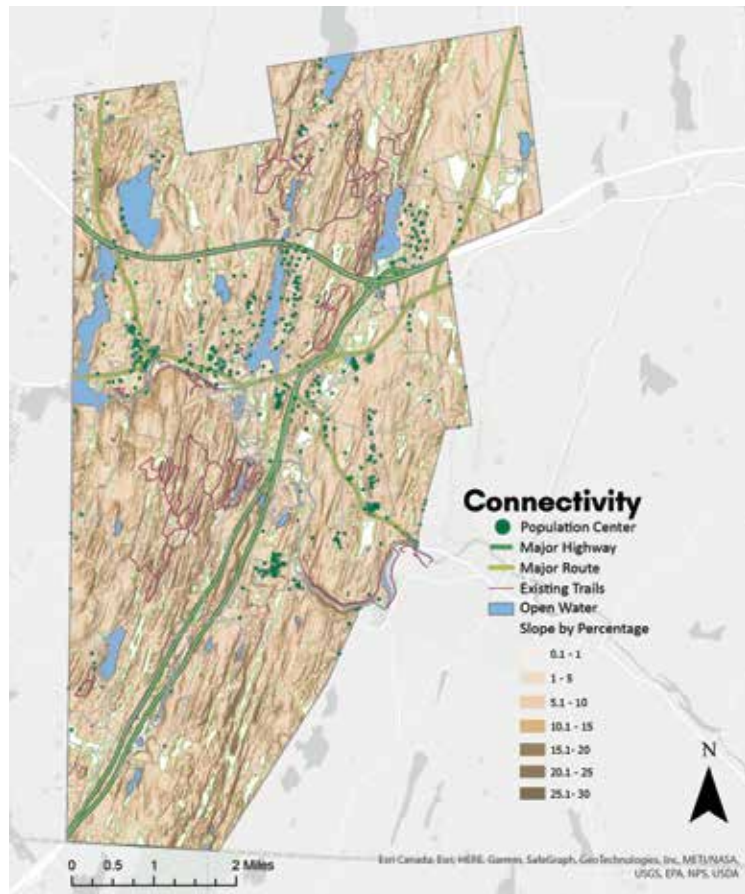
pedestrian movement--however, this data does seem to suggest that the highways and major roads may isolate neighborhoods from one another.



In the map at left, circular arrows indicate respondents who reported spending most of their time within their own section, and arrows that span sections indicate responses where people reported moving between sections. Weight of the arrows corresponds to the number of responses received (see bar chart at far left).

Traveling throughout Sturbridge is often difficult to do without the use of a vehicle. Busy roadways, steep terrain, many large ponds, and the Quinebaug River can act as barriers to alternative modes of travel. The roads that are available for pedestrian use primarily travel north to south, with very few corridors crossing east to west in town. To make the east-west movement even more challenging, Sturbridge's topography forms steep north-south ridges and traversing the hilly terrain can be cumbersome. North of Route 20, the East Brimfield Reservoir, Cedar Pond, Big Alum Pond, and Walker Pond force residents to circumvent these water bodies, which increases travel times and merges all forms of traffic onto already heavily trafficked roads. Meanwhile, the Quinebaug River that runs along Routes 20 and 131 prohibits movement except where bridges exist.

However, these same obstacles also present unique opportunities. Roads in town have the potential to act as corridors for pedestrians as well as vehicles. With the Town's population clustered along the major routes, the addition of sidewalks and bike lanes along the most frequently used roads opens up the ability for many of Sturbridge's residents to travel easily without vehicles. The topography in Sturbridge creates an opportunity for rewarding trails that offer numerous scenic opportunities and connect people from east to west where few roads travel. Additionally, the Town's various water bodies are attractive features that can entice people to leave the car behind and immerse themselves in nature.



Case Study: Island Line Rail Trail Bike Ferry, Burlington, VT

In 1899, the Rutland-Canadian Railroad constructed the Island Line to connect southern New England to Lake Ontario. The railway passed through Vermont, crossing Lake Champlain and connecting the city of Burlington to the Grand Isle islands by means of a land bridge. After 150 years of service, the railroad was shuttered, leaving the old rail bed to decay. By 1980, local residents began to realize the potential the former railroad held and organized to redevelop it into a multi-use trail. The only hurdle: a 200 foot gap in the Colchester-South Hero Causeway where a former turnstile bridge allowed for the passage of boats. In order to overcome this gap, the Vermont-based nonprofit group Local Motion initiated its Bike Ferry program in 2021. The bike ferry, capable of carrying 50 passengers per a trip, is a pay-what-you-can taxiing service that carries cyclists and hikers across the gap and creates a continuous trail from north to south across Lake Champlain. Since its inception, the bike ferry has become a popular service for locals and tourists alike with over 16,000 users in its first season of operation. (Local Motion)

*"Adopt the pace of nature: her secret is patience."
– Ralph Waldo Emerson*



Part 3

How to Get There

*Trails at Westville Lake
Recreation Area. Photo by
Maria Dubois, Sturbridge
Media*

Goal 1

To continue developing a trail system connecting residential, recreational, educational, commercial, social, and civic areas in Sturbridge and with neighboring towns, allowing people to traverse the town without the use of a vehicle.



Image courtesy of the STC

The ability to travel from destination to destination without the use of a vehicle strengthens communities. There is a strong desire within the community for people to be able to move between their homes, open spaces, and daily destinations safely without using a vehicle. A robust, connected trail system between open spaces also offers an enhanced experience for people visiting Sturbridge with the intent of recreating on the trails.

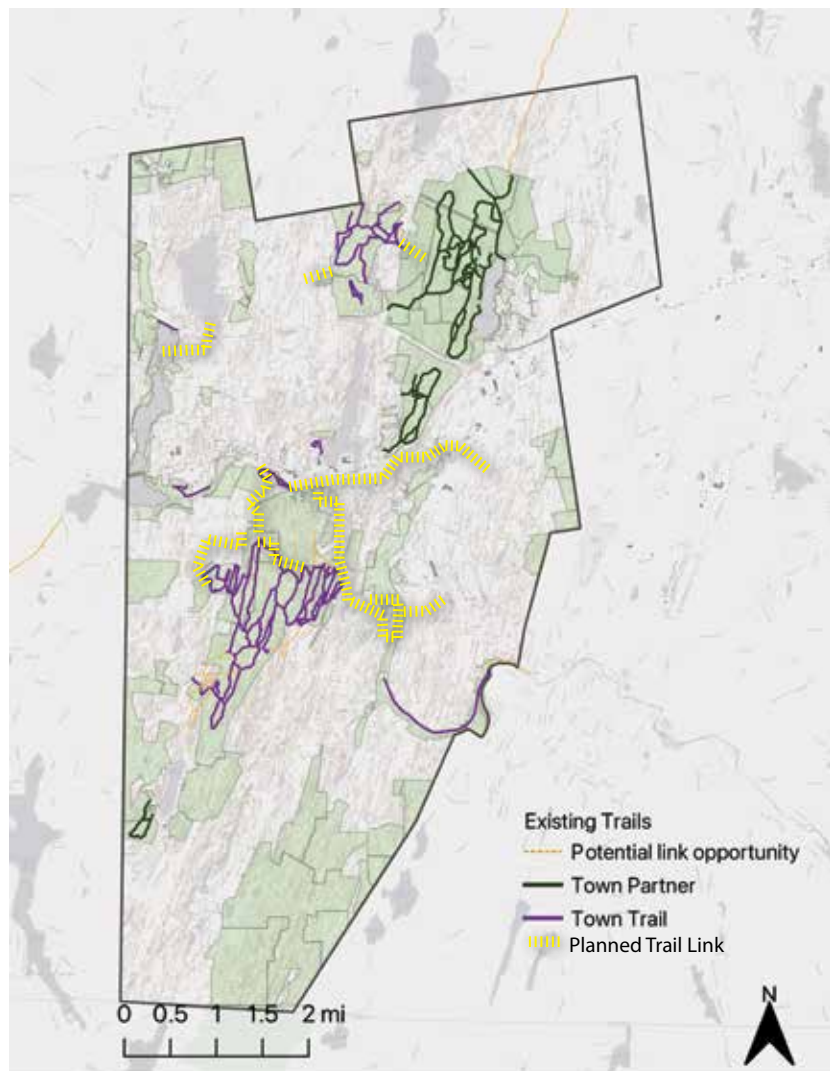
Goal 1: To continue developing a trail system that connects people

1.1 Implement connections that are currently in various stages of development.

This plan was written while the work of the Trails Committee was actively in progress. This plan supports completing the following trail sections that the committee has identified, filed for approval, or started construction on. The sections currently in development will provide connectivity between open space parcels north of Interstate 90, in the southwest section between Route 20 and Interstate 84, and across Interstate 84 into the southeast section of Sturbridge. “Potential Link Opportunities” are existing trails or corridors that appear on Open Street Map and are not town-authorized, but have potential to provide valuable connectivity between trails and around open spaces. It is recommended to ground-truth these potential trail connections and investigate their provenance to see if they could be adopted into the official town trail system.

Trail connections currently in development as identified by Sturbridge Trails Committee:

1. Plimpton Forest – 277 New Boston Road east (across the street) to Wells State Park
2. Plimpton Forest – 277 New Boston Road west to 246 Cedar Street
3. Riverlands – Leadmine Trail continues to Leadmine Mountain Property
4. Riverlands – Belanger Property (53 Holland Road) for Grand Trunk Trail (GTT)
5. Riverlands – Old Sturbridge Village (OSV) property for GTT at 52 Stallion Hill Road
6. Grand Trunk Trail – 9 River Road
7. 133 Fiske Hill Road – connecting trail down to Hall Road through Optical Fiber Solutions property (30 or 50 Hall Road)
8. Grand Trunk Trail – Central section through OSV & Army Corps of Engineers (ACOE) property, along Old Sturbridge Village Road
9. Grand Trunk Trail, Central section, Trail route on Interstate 84 Flyover at River Road
10. IN PROGRESS: Route 20 to Riverlands: 501 Main Street through 469A Main Street across Quinebaug River to Riverlands property (52 Stallion Hill Road)



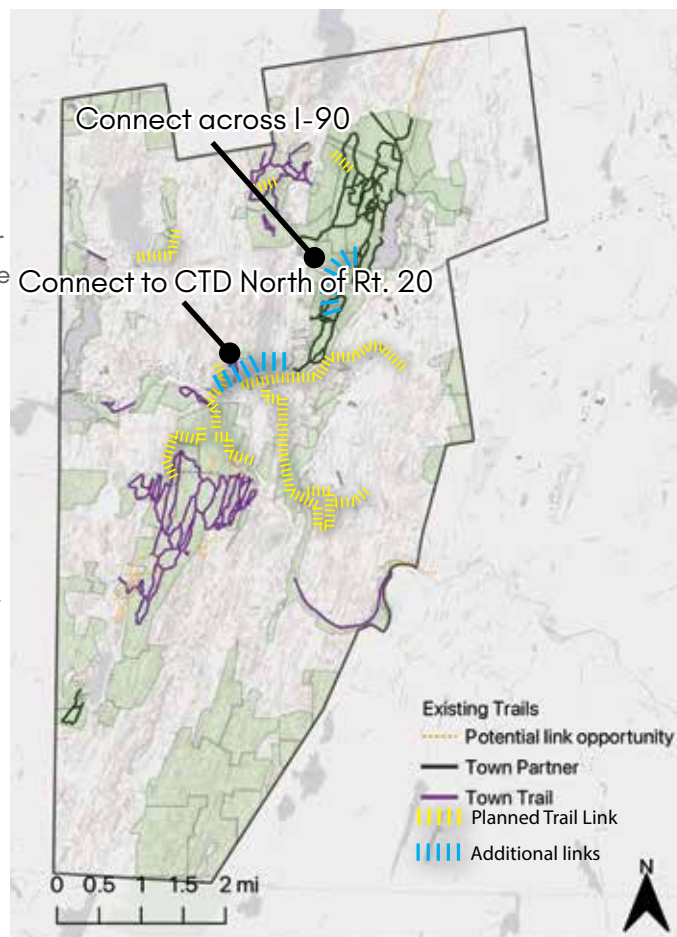
Goal 1: To continue developing a trail system that connects people

1.2 Build new connections between open spaces and neighborhoods.

When planning additional connections, the Town should prioritize connectivity between open space parcels through populated neighborhoods with narrow, potentially dangerous streets (see analysis of shoulder widths in “Roadways” section), and consider creative alternatives to crossing restrictive barriers like water and highways.

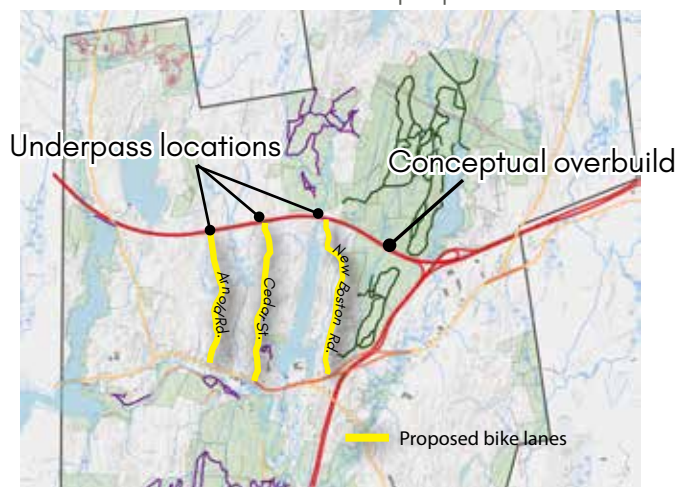
Remaining needs for connection:

- Across I-90 from Wells-Plimpton to Opacum
- From Opacum to Route 20, Commercial Tourism District (CTD), North of Route 20
- Across Route 20 and to the planned footbridge at 501 Main Street
- Across the Quinebaug into the Riverlands property



1.2.1. Consider options for connecting parcels across I-90:

I-90 presents a challenging barrier to connectivity between open space parcels. The town should consider using existing infrastructure to make these connections, or potentially explore higher-reaching options like a highway overbuild that would benefit both people and wildlife.



Pedestrian-friendly underpass and bike lanes/sidewalk at New Boston Rd., Cedar St., and Arnold Rd.



Overbuilds like the one shown above are gaining popularity to connect wildlife corridors, and new legislation may make them more feasible in the future. (Bliss, 2021)

Goal 1: To continue developing a trail system that connects people

1.2.2. Consider options to connect trails north of Rt. 20 to Commercial Tourist District

Cedar Pond acts as a barrier to connectivity between Opacum Woods and the CTD. The 2012 RTMP proposes circumnavigating Cedar Pond by constructing bike lanes and sidewalks on Arnold Road and Cedar Street, but there may also be options to cross Cedar Pond via a combination of new trail and a bicycle ferry if there is enough demand to support it.

Option 1: Circumvent Cedar Pond to the north via on-street infrastructure and/or forest trail connections east of Cedar Street.

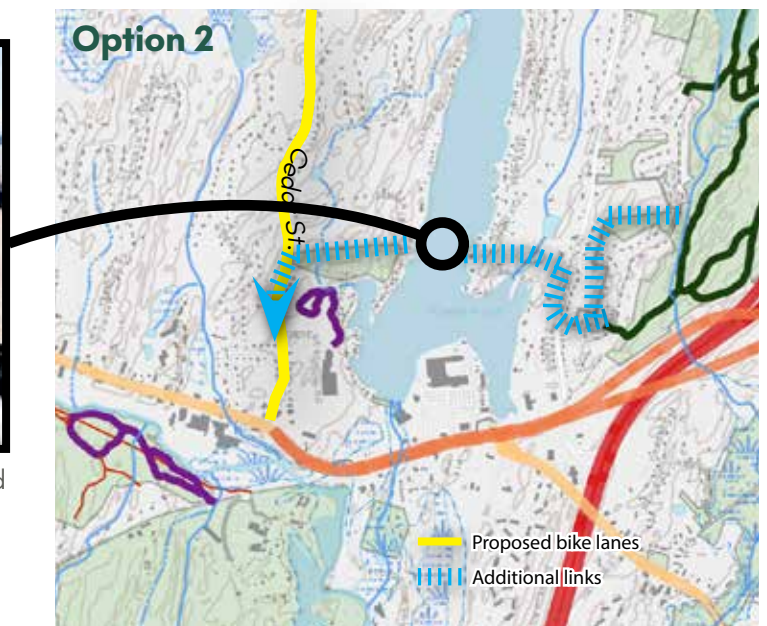
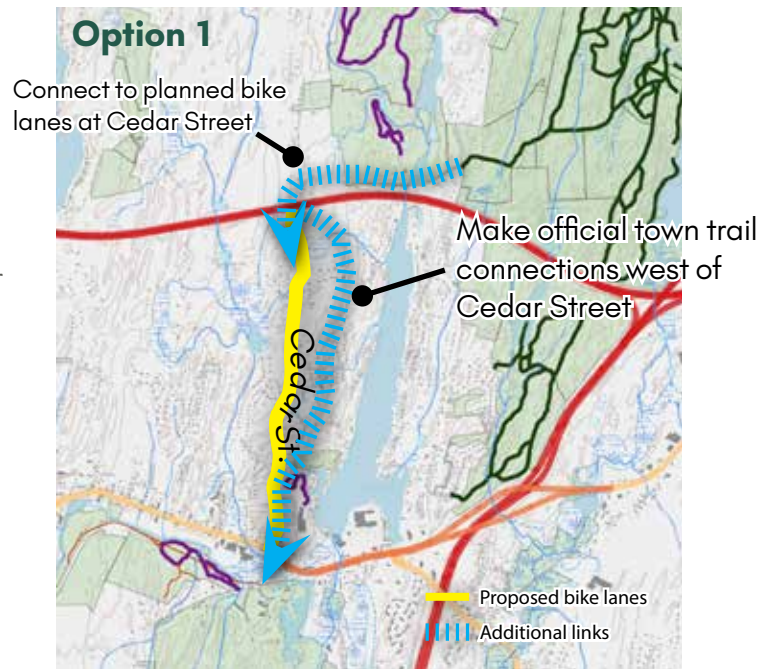
The 2012 RTMP proposed connecting the parcels north of Interstate 90 to the south via bike lanes and sidewalks on Cedar Street. Cedar Street is suitable for constructing bike lanes, as it has shoulders, as well as a right-of-way (ROW) between 28' and 50'. Construction of bike lanes and sidewalks are planned on Cedar Street via the Complete Streets Initiative.

Option 2: Construct new trail and employ a bike ferry to cross Cedar Pond.

New trail connections from Opacum Woods through neighborhoods around New Boston Rd. (such as The Preserve) could provide better pedestrian access to Cedar Pond. If there is enough demand, it may be possible for bicyclists to cross Cedar Pond via a bike ferry to provide access to the Cedar Pond Recreation Area on the western shore. From there, connectivity with the CTD could be achieved via bike lanes and sidewalks on Cedar Street.



In Burlington, VT, a bicycle-focused nonprofit launched a free-to-use ferry that brings cyclists from the mainland rail trail over a gap in the railroad causeway to the network of mountain bike trails on Grand Isle (localmotion.org/bike_ferry)





Goal 1: To continue developing a trail system that connects people

1.3 Consider adopting updated Trail Design Standards.

As trail development work continues, it will be important for the STC to ensure that new and existing trails are designed in ways that promote accessibility, comfort, ease, enjoyment, and safety.

1.3.1 All trails should be designed and built according to the latest sustainable trail construction standards for native-surface and aggregate-surface trails.

Native-surface sustainable trail standards, according to the International Mountain Bike Association (IMBA), seek to maximize bicyclist comfort and safety and minimize environmental impacts. These include:

The Half Rule – Trail grade should not exceed half of the grade of the slope on which it is constructed. E.g. if a native slope is 30%, trail grade should not exceed 15%.

The Ten Percent Average Guideline – Trail grade should aim to achieve an average of 10%, with some sections steeper but not exceeding the half rule or maximum sustainable grade for soil type, and some sections gentler.

Maximum Sustainable Grade – A maximum sustainable grade should be determined on a site-specific basis. Factors that influence the maximum sustainable grade are native soil type, hydrology, and trail traffic. When considering hydrology, designers should anticipate projected increases in precipitation amounts and velocities, which may influence the chosen slope percentage.

Grade Reversals – These structures are gentle dips in grade that efficiently collect and divert water off the trail. It is recommended that grade reversals are incorporated every 20 to 50 feet. Grade reversals also enhance the experience of the trail user by offering a chance to catch one's breath or slow speed when on a bicycle.

Outslope – A 5% tread outslope is recommended on most trails* to encourage runoff to sheet off the trail rather than down it. Compaction and erosion from use can degrade outslope over time, so regular assessment and maintenance may be necessary to maintain this standard in some places.

*See considerations for accessible paths

Considerations for Accessible Paths:

Multiple sources provide guidance for accessibility, such as the Architectural Barriers Act (ABA) Standards for Outdoor Developed Areas, the U.S. Forest Service's "Accessibility Guidebook for Outdoor Recreation and Trails" (2012) and "Trail Accessible Guidelines" (FSTAG, 2015), and the Commonwealth of Massachusetts' MassTrails initiative. In Sturbridge, the use of asphalt paving should be minimized due to cost, potential damage to the surrounding environment during construction, and erosion caused by runoff. It is also prohibited under some of the conservation restrictions held on many of the town properties. However, other options such as porous paving or fine crushed stone can be better options. Trail surfaces should direct or absorb water, stay rigid and compact, and handle a variety of traffic from people walking to narrow-wheel bicycles. Even bark chips or mulch when combined with cellular or mesh support can be accessible when constructed properly (Thompson and Sorvig). An outslope greater than 2% does not meet accessibility standards; while some sustainable trail standard guides recommend a 5% outslope, 2% is usually sufficient for managing runoff while adhering to accessibility standards.

Goal 1: To continue developing a trail system that connects people

1.3.2 As new trails are constructed and old ones are repaired, the STC should consider the possibilities for increased accessibility to host a wider variety of user types.

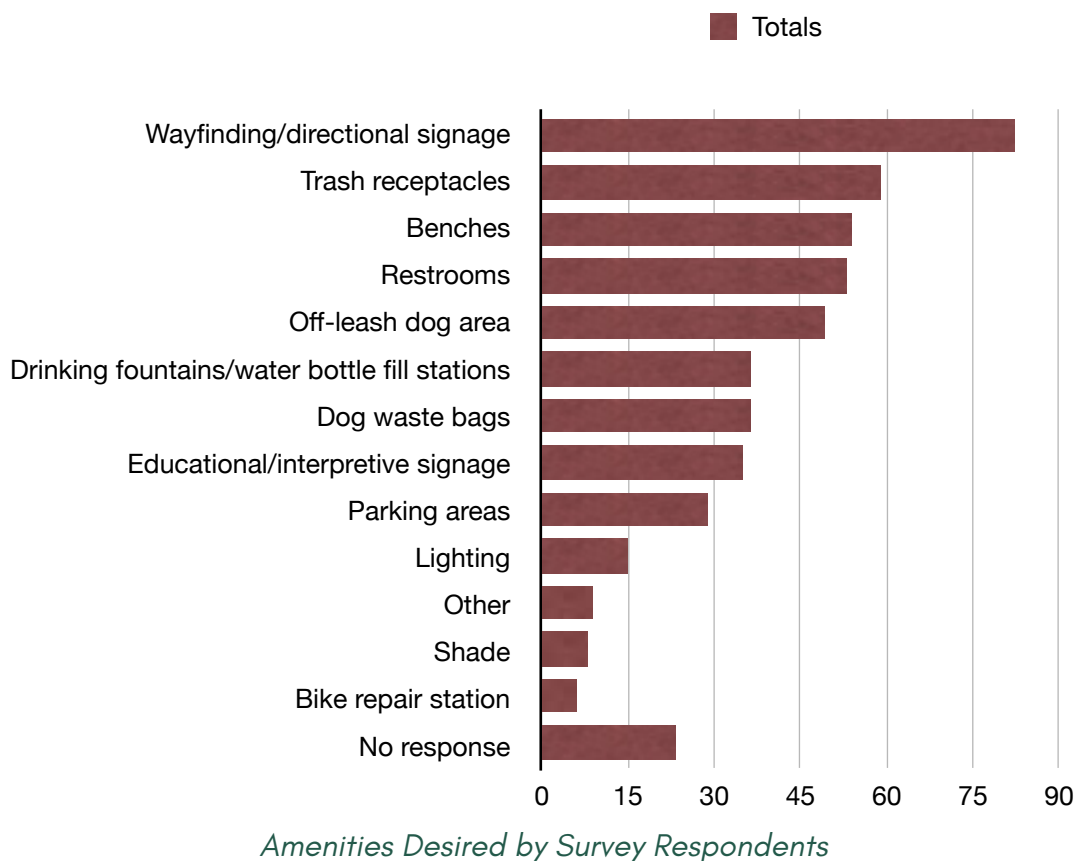
Thus far, the committee has made the construction of diverse trails a major focus and should continue to do so. The STC has tried to make sure that the first 500 feet of trail leading off of trail heads meet the standards of the Architectural Barriers Act (ABA). Trails such as the GTT and Pond Loop Trail in the Heins Farm property offer users a wide, gentle, and stone-dust-surfaced path which can attract people of all abilities. The opportunity to construct similar trail types should be explored, as well as identifying any obstacles and barriers, such as conservation restrictions, which may prevent similar construction on trails.

1.3.3 Existing trails should be assessed for accessibility and long-term maintenance considerations.

It is important to make sure that accessible trails meet accessibility standards just after construction, as well as periodically thereafter to account for disturbance, compaction, erosion, or other factors that may displace tread materials and change the condition of the trail.

1.4 Prioritize the improvement of trail amenities based on community feedback where possible and appropriate.

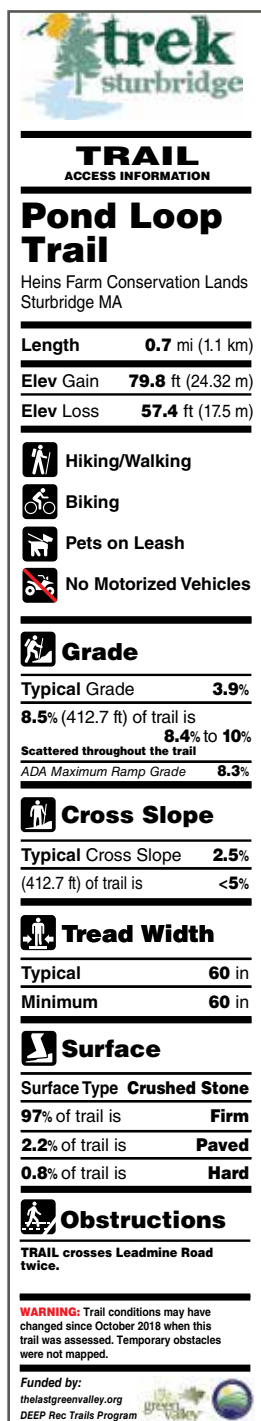
Visitors who use Sturbridge's trails come for the beauty, history, and tranquility that they offer. Making sure that visitors' needs are met improves the quality of the experience, which in turn makes the user more likely to return or recommend the experience to others. Amenities like trash/recycling receptacles, pet waste stations, and restrooms can also help protect the environment from pollution.



Goal 1: To continue developing a trail system that connects people

1.4.1 Improve clarity of wayfinding/directional signage

The ability for people to understand where they are, where they are going, and what to expect along the way are of major importance in making trail users feel safe and at ease during their experience, which leads to greater enjoyment and appreciation. Consistent, easy to understand, and informative signage is central to giving new and seasoned trail users alike confidence and safety when using Sturbridge's trail network.



The image shows a vertical trail information sign prototype. At the top is the 'trek | sturbridge' logo. Below it is a black header with 'TRAIL' in white, followed by 'ACCESS INFORMATION' in smaller white text. The trail name 'Pond Loop Trail' is in large, bold black letters. Below the name is the location: 'Heins Farm Conservation Lands, Sturbridge MA'. The sign lists trail statistics: Length (0.7 mi / 1.1 km), Elev Gain (79.8 ft / 24.32 m), and Elev Loss (57.4 ft / 17.5 m). It includes icons and text for permitted activities: Hiking/Walking, Biking, Pets on Leash, and No Motorized Vehicles. A 'Grade' section shows a typical grade of 3.9%, with a range of 8.5% to 10.4% scattered throughout, and an ADA maximum ramp grade of 8.3%. The 'Cross Slope' section shows a typical cross slope of 2.5% and a maximum of less than 5%. The 'Tread Width' section shows a typical width of 60 inches and a minimum of 60 inches. The 'Surface' section shows a surface type of Crushed Stone, with 97% of the trail being firm, 2.2% paved, and 0.8% hard. The 'Obstructions' section notes that the trail crosses Leadmine Road twice. A warning at the bottom states that trail conditions may have changed since October 2018 and that temporary obstacles were not mapped. At the very bottom, it says 'Funded by: thelastgreenvalley.org DEEP Rec Trails Program' with logos for thelastgreenvalley.org and DEEP Rec Trails Program.

TRAIL ACCESS INFORMATION	
Pond Loop Trail	
Heins Farm Conservation Lands Sturbridge MA	
Length	0.7 mi (1.1 km)
Elev Gain	79.8 ft (24.32 m)
Elev Loss	57.4 ft (17.5 m)
Hiking/Walking	
Biking	
Pets on Leash	
No Motorized Vehicles	
Grade	
Typical Grade	3.9%
8.5% (412.7 ft) of trail is 8.4% to 10.4%	
Scattered throughout the trail	
ADA Maximum Ramp Grade	8.3%
Cross Slope	
Typical Cross Slope	2.5%
(412.7 ft) of trail is <5%	
Tread Width	
Typical	60 in
Minimum	60 in
Surface	
Surface Type	Crushed Stone
97% of trail is Firm	
2.2% of trail is Paved	
0.8% of trail is Hard	
Obstructions	
TRAIL crosses Leadmine Road twice.	
WARNING: Trail conditions may have changed since October 2018 when this trail was assessed. Temporary obstacles were not mapped.	
Funded by: thelastgreenvalley.org DEEP Rec Trails Program	

1.4.1.1 Display the following information on all trailhead signs:

- Destination and length of the trail or trail segment
- Surface type
- Typical and minimum tread width
- Typical and maximum running slope
- Typical and maximum cross slope
- A statement that the posted information reflects the condition of the trail when it was constructed or assessed, including the date of the construction or assessment

According to the USDA Forest Service's "Accessibility Guidebook for Outdoor Recreation and Trails," thorough information about trail standards should be available for all people to decide whether they should attempt it.

"Parks need to help people with disabilities have access to the information they need to decide if they want to experience a particular trail or not, for example."

— Mathew McCollough, Director of the Washington, DC Office of Disability Rights

1.4.1.2 Consider reassessing the current trail guide and maps for usability.

Conducting a usability study of the current trail guide and maps may suggest opportunities to improve the language, symbology, and graphics to improve comprehension.

1.4.2 Waste receptacles should be logically placed, convenient to access, and regularly maintained on all properties.

As visitors finish a bottle of water or enjoy a snack, they are confronted with what to do with waste. Signs that inform trail users of "pack it in, pack it out" policies are a good first step, but providing people with a means of proper disposal can help guarantee that waste doesn't end up as litter. Trash receptacles at trail heads can provide a convenient method of disposal for visitors, as well as easier removal for the Town's DPW. Mapped locations of trash receptacles would be useful to both trail users and the individuals responsible for emptying them.

Trail info sign prototype developed by the STC

Goal 1: To continue developing a trail system that connects people

1.4.3 Pet waste stations should be prioritized at areas most susceptible to damage from pet waste, such as those with the highest traffic or ecological sensitivity.

Pet waste that does not get carried out by owners was among the top concerns from survey respondents, and there is substantial evidence that pet waste can be harmful to ecosystems. Pet waste disposal systems paired with informative signage creates a condition where the pet owner is both motivated to act responsibly and is given a chance to do so. There are many ecologically sound and even creative solutions for managing pet waste—for example, a town in England has installed a streetlamp that is powered by the biogas generated from pet waste (BBC).



Left: An example of an informative and graphically attention-grabbing campaign about dog waste launched in the city of Austin, TX. Right: A streetlamp powered by biogas from dog waste in Malvern Hills, Worcester, UK.

1.4.4 Consider adding more places to rest, especially benches.

Benches were among the top requested amenities in the survey. Places for rest and reflection enhance the experience of all users, and a bench sponsorship/donation program can offer community members an avenue for contribution and legacy.



A bench overlooking the pond at Heins Farm Property

Goal 1: To continue developing a trail system that connects people

1.4.5 Identify locations for and implement strategic bike parking

For cyclists using town trails, bike parking, especially in areas where they are likely to dismount for activities such as shopping, eating, or visiting local attractions, should be widely available. When parking infrastructure is not at hand, cyclists will lock their bikes to whatever is close by, creating obstacles for pedestrian movement and potential damage to existing structures such as railings and posts. Locking their bikes to structures that may not be secure could result in theft. Parking structures should be highly visible, close to attractions, and in the public view for a sense of security. With a grant provided by the CRMPC, the Town of Sturbridge has so far installed bike parking and a repair station at Fiskdale Mill Park, and additional bike parking at the town library, public safety complex, and at the town's municipal office building. In many cases, bike parking amenities can serve the dual-purpose of practicality and art, such as in Ithaca, NY, pictured at right.



Image: downtownithaca.com/artbikeracks

1.4.6 Continue to prioritize safety of trail users.

1.4.6.1 Continue to actively provide information to trail users about what to do in an emergency.

Trail users should feel safe and secure throughout their time on Sturbridge trails. The STC should continue installing mile markers with information on who to call and where they are in case of an emergency.

1.4.6.2 Consider adding dark sky friendly lighting in high-traffic areas.

Additional features, such as dark sky friendly lighting in areas that may be used during night hours (the proposed northern Quinebaug River Trail, for instance) can markedly impact people's perceptions of safety and comfort. Dark sky friendly lighting incorporates bulbs and fixture designs that use wavelengths that are less impactful to nocturnal wildlife and minimize light pollution (Sorvig et al.).

1.4.6.3 Work with local emergency services to streamline the emergency response plan for all properties.

The committee has indicated that the Town's police and fire departments do not use mile marker information located along the trails when responding to emergencies. Better coordination and consistent communication between the STC and first responders may be necessary to provide faster and more efficient response times.

Goal 2

To continue designing and building trails using an efficient, transparent, and collaborative process.

Witch Hazel in bloom. Image courtesy of the STC

The process of building a trail in Sturbridge involves managing many details and relationships. When proposing a new trail, the Town will strive to make sure that each involved party is informed and understands the project, is given opportunity for input, and is part of an open and collaborative process. Open and clear communication early in the planning process helps ensure efficient implementation and a result that best suits the needs of every stakeholder.



Goal 2: To continue designing and building trails efficiently and thoroughly

2.1 Define procedures around proposing new trails.

Develop a formal approval process that the Town will follow when designing and building trails. By requiring review and/or approval by appropriate parties, staff of all experience levels will engage in a clear and organized process when creating trails.

Suggested process:

- Develop a concept plan for the property based on the needs and goals identified in the Trails Master Plan, showing the trail section(s) and, where applicable, overall trail buildout.
- Present the concept plan for feedback and/or approval from the entity having care and custody of the property (e.g. Board of Selectmen, Conservation Commission, landowners, Conservation Restriction (CR) holders, etc.) and stakeholders.
- Incorporate this feedback into the design.
- Hire a firm with trail design experience or use in-house designers to design the alignment of the identified segment(s) to be constructed at that time.
- Provide final design to entities for approval.
- Submit plan to planning board for review and approval, if work involves coordination with Complete Streets or other adopted planning policies.
- Apply for permits required through the Conservation Commission when needed (include final design sign-offs from the property owner and CR holder).
- Town planner to submit bid specifications and contracts to Board of Selectmen, if required. (Small projects constructed by volunteers require submission only in the case of a grant contract.)

2.2 Consider restructuring roles on the Sturbridge Trails Committee

Right now, The Trails Committee is structured as having five (5) voting members and five (5) associate members (one of the associate member seats is currently empty). Some members hold different official and “unofficial” roles:

- Chair (official)
- Treasurer (unofficial)
- Secretary (unofficial)

The STC should consider restructuring the roles of its members to better delegate the many moving parts that are involved in the process of planning and building a trail from start to finish. These roles would have sets of responsibilities and take on a new title, and some roles would remain the same. Suggestions are provided on the following page.

Goal 2: To continue designing and building trails efficiently and thoroughly

Potential roles of a restructured STC

Role: Chair

Responsibilities: Setting meeting dates, tracking construction progress, compiling reports, gauging whether work is on track, making sure the work of the committee is fulfilling its duties and keeping course (Trails Sustainability Plan, Master Plan, OSRP), managing relationships with stakeholders and advocacy leaders.

Role: Marketing and Communications Lead

Responsibilities: Preparing and distributing public-facing materials and making sure it stays up-to-date (Trail Guides, website), promoting trail events, managing social media.

Role: Construction and Maintenance Lead

Responsibilities: Leading trail crews/communicating with Crew Leaders when working with contractors, communication with DPW when there is maintenance overlap

Role: Grants and Funding Lead

Responsibilities: Managing project budgets, identifying grant opportunities and appointing/hiring a writer if necessary.

Role: Community and Volunteer Outreach Coordinator

Responsibilities: Recruiting volunteer assistance when needed, organizing/facilitating community input meetings and public hearings.

2.3 Create a Staff position for a Public Lands Coordinator

Responsibilities: Supporting the Conservation Commission and Trails Committee with public lands under the care, custody, and control of the Conservation Commission and the Trails. The Public Lands Coordinator oversees permitting, grants, staff support to the Trails Committee, managing stakeholder relationships (reporting to stakeholders), compiling maps (experience using mapping technology ideal), representing/acting as liaison with/speaking for property owners and CR Holders, making sure trails are legal/ethical, and translating community input into action.



Goal 2: To continue designing and building trails efficiently and thoroughly

2.4 Explore additional grants and funding mechanisms and programs for project implementation.

The Sturbridge Trails Committee depends on grant funding and volunteer contributions for most of its work on trails design, construction, and maintenance. These grants are typically matched by special tax funding such as the Community Preservation Act and Betterment funds. While certain grants can be directly applied to these initiatives, other sources of money can be used creatively in conjunction with other town organizations to enhance trails and the connectivity between them. In addition to Complete Streets, Safe Routes to School, and the Community Preservation Act, below is a recommendation of other potential sources of funding and grants that the town can use to construct, maintain, enhance, and build better connectivity between trails.

2.3.1 Friends of Sturbridge Trails (FrOST) should continue to pursue 501(c)(3) status

Encourage Friends of Sturbridge Trails (FRoST) to become a 501(c)(3), to better enable them to directly fundraise for the Sturbridge trails.

2.3.2 Continue to pursue funding through the Shared Streets and Spaces Program

Launched by MassDOT in 2020 in response to the Covid-19 pandemic, the Shared Streets and Spaces Program seeks to quickly disperse funds for implementation of public projects including sidewalks, plazas, bike amenities (such as parking and repair stations), and other projects “in support of public health, safe mobility, and strengthened commerce.” The program aims to deliver expedited funding for projects that will be quick to implement and complete. (Shared Streets and Spaces Grant Program | Mass.gov)

2.3.3 Continue to participate in Complete Streets by organizing across town boards and committees, and advocating at a state level

Sturbridge’s application for Complete Streets Policy was approved by MassDOT in March of 2018, and in coordination with Central Massachusetts Regional Planning Committee, has already designated areas of need for new sidewalks and bike lanes along Routes 131, 20, 15, and 49. The general goal of the program is to create streetscapes that “provide(s) safe and accessible options for all travel modes – walking, biking, transit, and vehicles – for people of all ages and abilities.” Other projects that are eligible for funding include shared-use paths, wayfinding signs, and on-street bike parking infrastructure. (Complete Streets Funding Program | Mass.gov.) The Town should consider identifying an advocate to engage with the state to pursue funding opportunities for trails within the Complete Streets program. The trails committee should also continue to work with the Town Planner to coordinate trail connections that complement the Town’s Complete Streets policy.

Goal 2: To continue designing and building trails efficiently and thoroughly

2.3.4 Continue to pursue grants from MassTrails

MassTrails is a Commonwealth organization that offers matching grants ranging from \$50,000 for local projects to \$300,000 dollars for projects of regional significance for connectivity. "Eligible grant activities include project development, design, engineering, permitting, construction, and maintenance of recreational trails, shared use pathways, and amenities to support trails." MassTrails Grants | Mass.gov

2021: \$300,000 for construction of the Westville Section of the Grand Trunk Trail

2020: \$150,000 for construction of the completion of the Westville Section of the Grand Trunk Trail
\$50,000 for Riverlands Mountain Bike Trails

2019: \$12,865 for a feasibility study for the Central Section of the Grand Trunk Trail
\$44,390 for Riverlands Phase 1 of the Grand Trunk Trail, including parking lot

2.3.5 Continue to pursue funding from the Chapter 90 program

Chapter 90 funding was passed under Massachusetts's General Laws and allocates an allotment of tax dollars depending on local road mileage, population, and employment rates. Municipalities can use the funding for a host of public roadway projects which include rail trails, shared-use/multi-use paths, foot and pedestrian bridges, and ROW acquisition. Chapter 90 project eligibility | Mass.gov

2.3.6 Continue to pursue grants through Massachusetts Safe Routes to School (SRTS)

The Safe Routes to School program offers federal grant money to municipalities that seek improvements and construction of safe walking and biking routes within a two-mile radius to elementary and middle schools. The program currently serves over 240 communities and 950 schools across Massachusetts, with grants ranging from 300,000 to approximately 1.5 million dollars. Safe Routes To School | Mass.gov

2021-2022: Sturbridge was awarded a grant from the Safe Routes to School (SRTS) program for proposed improvements include installing a pedestrian multi-use sidewalk from Cedar Street to Burgess Elementary School and other improvements on Burgess School Road including installing two pedestrian warning flashers, adding pavement markings, resetting current guardrails, and upgrading signs to meet MassDOT and MUTCD standards.

Case Study: Easthampton, MA acquires funding through SRTS

In 2020, the City of Easthampton, MA applied for funding through MassDOT's Safe Routes to School 2021-2022 Infrastructure Funding program to help construct a corridor connecting Park Street and Manhan Rail Trail to the City's schools. In February of 2022, the City received almost \$1.9 million through the grant.

The grant provides funds for a 400-foot long multi-use path connecting the rail trail to Park Street, along which a 3600-foot long 8-foot wide path will be constructed to create a safe and accessible route to the planned, new Mountain View School. Additionally, traffic calming measures such as the narrowing of Park Street, four new crosswalks, and nineteen new ADA accessible ramps are planned. The funding also provides \$75,000 for the acquisition of easements along the proposed route.



Goal 2: To continue designing and building trails efficiently and thoroughly

2.3.7 Continue to pursue opportunities to utilize CPA funding

Sturbridge adopted the Community Preservation Act (CPA) in April of 2001, which levies a 3% tax on real estate to fund a local Community Preservation Fund. The CPA is a “smart growth tool that helps communities preserve open space and historic sites, create affordable housing, and develop outdoor recreational facilities.” CPA: An Overview | Community Preservation Coalition

In 2020, the Town used CPA funds towards \$25,000 for construction of the River Lands recreational trails, \$8,000 dollars towards Leadmine property trails, and \$4,500 for signage and trail construction on parcels purchased with CPA money.

Goal 3

For Sturbridge trails to be equitable, just, and sustainable.

Image courtesy of the STC

Every person who wants to use trails in Sturbridge should have access to them; all people should be able to benefit from the enhanced quality of life that using trails can offer. Achieving harmony between human trail use and environmental sustainability is possible through sound building practices, careful monitoring of changing conditions, and prudent management decisions. The town should strive to take every measure within reach to mitigate harm to the region's ecology, and when that harm cannot be mitigated through sound trail design and use guidelines, limiting human access should be considered. This will help to ensure that the trails and open spaces can be enjoyed by all species for many years to come.

Goal 3: For Sturbridge trails to be equitable, just, and sustainable

3.1 Explore methods to harden trail systems so that they are more resilient to the effects of increasingly severe and unpredictable weather.

Sturbridge has experienced extreme weather events; ice storms, droughts, floods, hurricanes, and the 2011 tornado are just several major events that have occurred within the last fifteen years. The following strategies seek to increase the sustainability of the trail surfaces while also minimizing environmental impacts.

3.1.1 Design trails to anticipate greater flooding and erosion

Massachusetts has seen an increase in precipitation, with 2005-2014 being the wettest decade recorded in the state, averaging 51" per year. Significant storms have been a major driver, with 2" rainstorms occurring 30% above average during the same time period (Massachusetts - State Climate Summaries 2022 (ncics.org)). High precipitation events have the potential to cause major flooding and tree damage, devastating trails and their infrastructure. Erosion on trails during these storms can be significant, with large costs for the environment and repairs. Trails near water bodies can experience wash-outs and bridges can be swept away, much like what occurred to the covered bridge in Old Sturbridge Village that was knocked off its abutments in 1955 by Hurricane Diane (Vermont Covered Bridge - Old Sturbridge Village, osv.org). In order to mitigate the potential for damage, trails need to be designed to shed water efficiently and effectively. Bridges should be designed to withstand heavy water surges, and trails that are within one-percent annual chance floodplains should be moved or hardened to resist damage.

3.1.2 Be aware of potential tree damage before and after storms

The tornado of 2011 left a scar over much of south-central Massachusetts, and caused extensive damage to the center of town, the Commercial Tourism District (CTD), and much of the Riverlands property (an aerial image of the tornado scar is pictured at right). Less than two months later, Hurricane Irene struck and caused massive flooding and destruction across much of central Massachusetts, with Superstorm Sandy occurring just one year later.

Inspection of trees and limbs

should occur regularly to identify those that may become hazardous in storms, and should be proactively pruned and thinned. After storms, the Town should continue to be active in clearing potentially dangerous debris on trails that people actively use.





Goal 3: For Sturbridge trails to be equitable, just, and sustainable

3.2 Highlight land of significant ecological importance to be set aside strictly for preservation

As Sturbridge continues to acquire land for open space, the Town should monitor for any properties that become available for purchase that may warrant more stringent protections. Parcels containing sensitive habitats and/or species, or are considered invaluable to town identity, may benefit from being protected against trail system construction.

3.2.1 Designate existing properties with trails and sensitive habitat as educational properties.

Some of the properties within town with sensitive habitat already have trails in place, and serve the important function of allowing people to interact with them and learn about these unique environments. A potential model to consider would be the one used by Kestrel Land Trust; the consultant team met with Bridget Likely, Conservation Manager, via Zoom for an informational interview. Kestrel Land Trust acknowledges that there is a balance of value between allowing human access to an ecosystem for the purpose of education, stewardship, and cultivating appreciation for a landscape, while recognizing that the most sensitive of ecosystems may benefit from restricted access. Therefore, they will sometimes designate a small portion of a sensitive site that is least likely to be harmed by human presence for recreation. The remainder of the site is kept free of trail development. They call these parcels “Ambassador Lands,” and these lands function to reduce the burden of human interaction on the most sensitive of ecosystems.

3.2.2 Explore opportunities to acquire parcels of land without conservation restrictions to provide places for a broader range of recreational activities, alleviating human impact on protected lands.

In order to address the community’s desire for more space for alternative recreational activities and alleviate any pressure on lands set aside for stringent protection, the Town may want to consider investing in a property without sensitive habitat to accommodate a wider range of activities that the residents desire. Investing in a property without sensitive habitat could provide an opportunity for outdoor recreation amenities that the community desires but are more ecologically taxing, like a dog park. Providing the community with an attractive outlet for this desire may also help reduce pressure and mitigate conflicts in other areas.

Goal 4

Draw residents and tourists to in-town opportunities and boost economic development by utilizing the trails to facilitate connections to shops, dining, and other attractions.

Jack-in-the-pulpit at Wells State Park, by Nick Sokol

In addition to the social and ecological benefit potential of trails, Sturbridge's trail system can serve as an economic asset to the community. If the Town aims to develop better connectivity to the town's businesses and Commercial Tourism District (CTD), the trails could better support tourism and the local economy. The trails can also support economic growth through events and programming, which may involve collaboration between the Town, local businesses, and other entities.

Goal 4: Use the trail system to boost economic development

4.1 Prioritize a trail connection through the Commercial Tourism District.

The 2012 RTMP called for the construction of a River Trail along the northern banks of the Quinebaug River in the CTD. Sturbridge should engage with the community through town meetings and surveys to gauge the popularity of such a trail and any hopes and concerns the public may hold.

4.1.1 Hire an outside consultant to conduct a feasibility study to determine the viability of the project.

A feasibility study should include information on the ability to secure easements from private landowners, an environmental impact assessment, potential access points from 501 Main Street and possibly Turner's Field, and total cost to the town.

4.1.2 Assess the ability for the River Trail to link Sturbridge's CTD to other areas of recreation and other trail systems, such as Cedar Lake Recreational Area, Old Sturbridge Village, Leadmine Conservation Lands, and the Heins Farm property.

4.1.3 Work with local businesses to assess the potential of a River Trail as a place for recreational and commercial ventures such as outdoor markets, guided walks, and more.



The West Orange Trail in Central Florida is a 22-mile long trail that attracts over 50,000 visitors per year. Sections of the trail are smoothly integrated into the landscape of business fronts, creating a nearly seamless transition from the trail to businesses (Erica Diaz Team). A trail connection with this type of design may be useful in generating more economic opportunity directly from Sturbridge's trails, and the trails committee may be able to consider opportunities to use this model for the CTD River Trail.



Goal 4: Use the trail system to boost economic development

4.2 Create opportunities for co-promotion of the trails and local businesses.

The STC and Sturbridge's business community should actively work together to promote one another, such as hosting events at trailhead parking lots. Public events such as footraces and scavenger hunts can generate public awareness of both the town's trails as well as the businesses involved. The STC might also consider business sponsorship of trail sections and/or provide space for advertising in the Sturbridge Trail Guide. This can help fund the committee's work while providing local businesses with an opportunity to boast their sponsorships and suggest businesses of interest in town.

Works Cited

Allen, John A., et al. "Dog Urine Has Acute Impacts on Soil Chemistry in Urban Greenspaces." *Frontiers*, Frontiers, Dec. 2020, <https://www.frontiersin.org/articles/10.3389/fenv.2020.615979/full>.

American Trails. *Why Trails?* 2020 Edition. 2020, https://cdn2.assets-servd.host/material-civet/production/images/documents/Copy-of-Why-Trails_-1.pdf.

Bliss, L. (2021, June 9). *A Covid-Era Lesson on Making Roads Safer For Wildlife*. Bloomberg.com. Retrieved March 23, 2022, from <https://www.bloomberg.com/news/articles/2021-06-09/the-pandemic-saved-wildlife-can-road-crossings>

Bowker, J. M., Bergstrom, J. C., & Gill, J. (2007). *Estimating the economic value and impacts of recreational trails: a case study of the Virginia Creeper Rail Trail*. <https://www.fs.usda.gov/treesearch/pubs/27561>. Retrieved March 25, 2022, from https://www.srs.fs.usda.gov/pubs/ja/ja_bowker008.pdf

Brown, Laura E., et al. "Exploring the Implications of Increased Rural Trail Use During the COVID-19 Pandemic on Health, Planning, Equity and Inclusivity." *Choices*, 2021, <https://www.choicesmagazine.org/choices-magazine/theme-articles/rural-development-implications-one-year-after-covid-19/exploring-the-implications-of-increased-rural-trail-use-during-the-covid-19-pandemic-on-health-planning-equity-and-inclusivity>.

"Chapter 90 Project Eligibility." Mass.gov, <https://www.mass.gov/info-details/chapter-90-project-eligibility>.

"Complete Streets." *Massachusetts Complete Streets Funding Program Portal*, MassDOT, <https://gis.massdot.state.ma.us/completestreets>.

Conservancy, Rails-to-Trails. "Equitable and Inclusive Trails: Rails-to-Trails Conservancy." *Rails*, <https://www.railstotrails.org/build-trails/trail-building-toolbox/basics/equitable-and-inclusive-trails/>.

"CPA: An Overview." *Community Preservation Coalition*, <https://www.communitypreservation.org/about>.

Crompton, John L. "The Impact of Trails and Greenways on Property Values: Finance for the Field: Parks & Recreation Magazine." *NRPA*, 32 Apr. 2020, <https://www.nrpa.org/parks-recreation-magazine/2020/may/the-impact-of-trails-and-greenways-on-property-values/>.

"Dog Poo Powers Malvern Hills Street Lamp." *BBC News*, BBC, 4 Jan. 2018, <https://www.bbc.com/news/uk-england-hereford-worcester-42565633>.

Erica Diaz Social Team. "Explore the Popular West Orange Trail." Erica Diaz Team, 1 July 2021, <https://ericadiazteam.com/things-to-do/explore-the-popular-west-orange-trail/>.

"Forest Service Trail Accessibility Guidelines." *U.S. Forest Service*, Department of the Interior, 2013, <https://www.fs.usda.gov/sites/default/files/FSTAG-2013-Update.pdf>.

Havel, Richard. *Sustainable Trail Development Guidelines*. International Mountain Bicycling Association, May 2009, <https://cdn2.assets-servd.host/material-civet/production/images/documents/Sustainable-Trail-Development-Guidelines.PDF>.

Hennings, Lori. "The Impacts of Dogs on Wildlife and Water Quality: A ..." *ResearchGate*, Apr. 2016, https://www.researchgate.net/profile/Lori-Hennings/publication/301800852_Impacts_of_dogs_on_wildlife_and_water_quality/links/5728cbdd08ae057b0a0336f6/Impacts-of-dogs-on-wildlife-and-water-quality.pdf.



...Works Cited

Hubbart, Sarah. "Increasing Accessibility Makes the Outdoors Open for All." *NEEF*, 6 July 2021, <https://www.neefusa.org/health/outdoor-activity/increasing-accessibility-makes-outdoors-open-all>.

"Introduction to OpenStreetMap." *OpenStreetMap*, <https://www.openstreetmap.org/about>.

"Leave No Trace Seven Principles (U.S. National Park Service)." *National Parks Service*, U.S. Department of the Interior, 1999, <https://www.nps.gov/articles/leave-no-trace-seven-principles.htm>.

Kay-Linn Enterprises LLC. *Town of Sturbridge Recreation Trails Master Plan*. 2012

"Massachusetts Average Annual Daily Traffic." *Transportation Data Management System*, MassDOT, <https://mhd.public.ms2soft.com/tcds/tsearch.asp?loc=Mhd&mod=>.

"MassTrails Grants." *Mass.gov*, <https://www.mass.gov/guides/masstrails-grants#-masstrails-grant-program-overview->.

Mattson, Mark D., et al. *Guidance for Aquatic Plant Management in Lakes ...* - *Mass.gov*. Water Resources Research Center, June 2004, <https://www.mass.gov/files/documents/2016/08/qm/alkguide.pdf>.

Medeiros, Dan. "Fall River's Bioreserve to Expand Hiking Trails, and Add Access for Wheelchairs and Kids." *Fall River Herald News*, The Herald News, 31 Aug. 2021, <https://www.heraldnews.com/story/sports/outdoors/2021/08/31/fall-river-bioreserve-trail-hiking-handicapped-access-grant/5643450001/>.

"Mesa Conservation & Management Permit Overview." *Mass.gov*, <https://www.mass.gov/service-details/ mesa-conservation-management-permit-overview>.

"Program Overview - Shared Streets and Spaces Grant Program." *Mass.gov*, <https://www.mass.gov/info-details/program-overview-shared-streets-and-spaces-grant-program#overview->.

Rothbart, Paul, and Steve Capel. "Maintaining and Restoring Grasslands - Connecticut." *Grassland and Shrubland Management*, https://portal.ct.gov/-/media/DEEP/wildlife/pdf_files/habitat/grassland_shrubland_management/Ch03MaintainingGrasslandspdf.pdf?la=en.

Runkle, Jennifer, and Kenneth E. Kunkel. "Massachusetts State Climate Summary 2022." *Massachusetts - State Climate Summaries 2022*, 2022, <https://statesummaries.ncics.org/chapter/ma/>.

"Safe Routes to School." *Mass.gov*, <https://www.mass.gov/safe-routes-to-school>.

Sorvig, Kim, and J. William Thompson. *Sustainable Landscape Construction: A Guide to Green Building Outdoors*, 2nd ed., Island Press/Center for Resource Economics, Washington, DC, 2008.

"Tantiusques." *The Trustees of Reservations*, 14 Feb. 2022, <https://thetrustees.org/place/tantiusques/>.

The local Motion Bike Ferry. Local Motion. (n.d.). Retrieved March 25, 2022, from https://www.localmotion.org/bike_ferry

Thurlow, Emily. "Easthampton Wins State Grant to Build Safer Route from Rail Trail to School." *Daily Hampshire Gazette*, Concord Monitor, 25 Feb. 2022, <https://www.gazettenet.com/Easthampton-secures-funding-through-Safe-Routes-to-School-Infrastructure-2021-2022-Funding-Program-45249489>.

Town of Sturbridge Open Space Committee. *Town of Sturbridge Open Space and Recreation Plan 2018*. 2018



...Works Cited

USDA Forest Service, Missoula Technology and Development Center. (n.d.). *Accessibility Guidebook for Outdoor Recreation and Trails*. Retrieved March 25, 2022, from <https://www.fs.usda.gov/sites/default/files/USFS-Holderness-School.pdf>

US Department of Commerce, National Oceanic and Atmospheric Administration. "What Is a Wetland?" *NOAA's National Ocean Service*, 2 Apr. 2019, <https://oceanservice.noaa.gov/facts/wetland.html>.

"Vermont Covered Bridge." *Old Sturbridge Village*, <https://www.osv.org/building/vermont-covered-bridge/>.

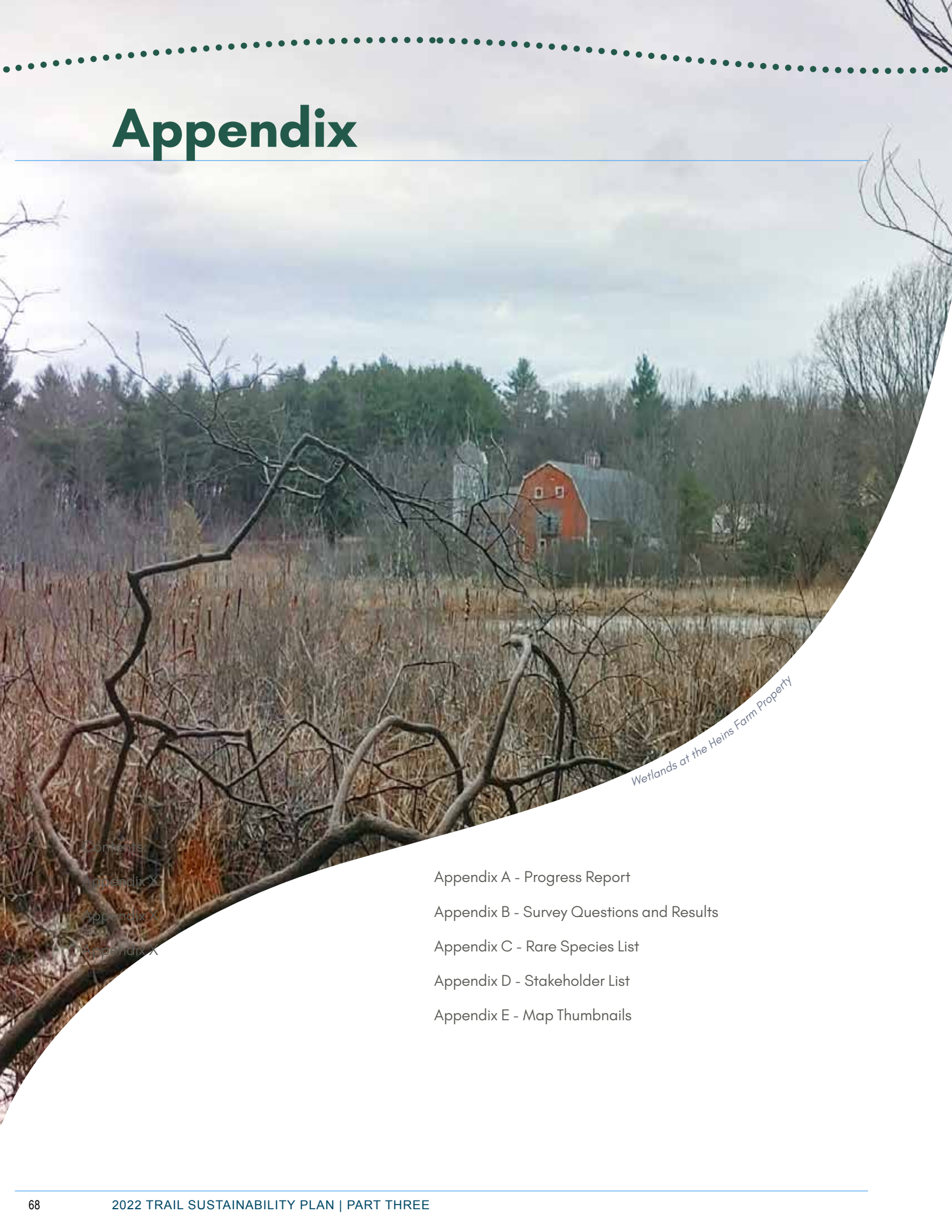
"Vernal Pool Threats." *Ecological Communities*, Pennsylvania Natural Heritage Program, 2019, https://www.naturalheritage.state.pa.us/VernalPools_Threats.aspx.

"Vernal Pools." *EPA*, Environmental Protection Agency, <https://www.epa.gov/wetlands/vernal-pools>.

Vanasse Hangen Brustlin Inc., RKG Associates, Inc. *Sturbridge Massachusetts 2011 Master Plan*. June 2011

"Welcome to Nipmuc Nation." *Home - Tribal Government of the Nipmuc Nation*, 14 Feb. 2020, <https://www.nipmucnation.org/>.

Appendix



Wetlands at the Heins Farm Property

Contents

Appendix X

Appendix X

Appendix X

Appendix A - Progress Report

Appendix B - Survey Questions and Results

Appendix C - Rare Species List

Appendix D - Stakeholder List

Appendix E - Map Thumbnails

Appendix A: Progress Report

Introduction

In December 2021, the status of the trails was reported by the Sturbridge Trails Committee. This update was based on the implementation status of the goals, objectives, and strategies identified in the 2012 Recreation Trails Master Plan. The Goals and Objectives below are excerpted from the 2012 Recreation Trails Master Plan, while the tables are an amalgamation of the tables in the 2012 plan and information from the December 2021 status update. To simplify the information, the following tables are color coded as in the table below, to give readers a quick glance at which strategies are Done, Ongoing, or Incomplete. Further clarification of status is written in the text following each table.

Color Key	
Status	Reason
Done	Designates a Completed strategy
Ongoing	Designates a strategy In Progress
Incomplete	Designates a strategy that is Deficient; Not Started; Delinquent

Goal 1: Develop a diverse system of forest-based; environmentally sustainable trails that highlight the ecology, topography, vistas, rural character, and historical/cultural significance of protected lands within Sturbridge.

Objective 1.1: Establish a model trail system on the Leadmine Mountain & Heins Farm open space property that includes approximately six miles of wider aggregate surfaced trail that connects to each of the properties trailheads and fifteen to twenty miles of narrow, natural surface single track.

Strategy	Description	Timeline	Status
1.1.1	Allocate funding for the professional planning, design, and construction cost estimation of the Leadmine Mountain property	Short-term	Done
1.1.2	Develop implementation plan for trail system development, including permitting, funding, coordination with forest improvement activities, and ongoing trail system management	Short-term	Ongoing
1.1.3	Implement trail system development	Intermediate	Ongoing

Currently, Strategy 1.1.1 was completed. Strategies 1.1.2 and 1.1.3 are currently ongoing. Since the inception of the 2012 Plan, there are additional open space properties, now totaling six (Leadmine Mountain, Heins Farm, Riverlands, Plimpton, Long Pond, and Fiske Hill) with 31 trails developed for a total of 19.6 miles completed and another 7.5 miles proposed.

--

Objective 1.2: Develop a network of narrow, aggregate surfaced single-track loops approximately two to three miles and connect to the Grand Trunk Trail on the Riverlands Property.

Strategy	Description	Timeline	Status
1.2.1	Allocate funding for the professional planning, design, and construction cost estimation of the Riverlands property	Short-term	Done
1.2.2	Develop implementation plan for trail system development, including permitting, funding, coordination with remediation activities, bridge development, and Commercial Tourism District parking/access improvements	Short-term	Ongoing
1.2.3	Implement trail system development	Intermediate	Ongoing

Phased funding and approved plans are in place and the implementation of this connection to the Grand Trunk Trail on the Riverlands property is In Progress.

--

Appendix A: Progress Report

Objective 1.3: Enhance the environmental sustainability and interpretive opportunities of the Opacum Woods trail system by creating better trail alignments away from sensitive habitat, surface trail where appropriate and improving trail connectivity and access.

Strategy	Description	Timeline	Status
1.3.1	Facilitate discussion with Opacum Land Trust regarding trail system sustainability, interpretation, connectivity, and access	Intermediate	Ongoing
1.3.2	Develop implementation plan for trail system development, including permitting, funding, coordination with conservation easement/wildlife planning, and surrounding neighborhoods	Intermediate	Ongoing
1.3.3	Implement trail system improvements	Intermediate	Ongoing

Initial meetings were held with Opacum Woods and they are working on trails development. This Objective was started and is In Progress.

--

Objective 1.4: Retrofit the Wells State Park trail system for improved environmental sustainability to better meet trail users desires, as defined by the Massachusetts Statewide Comprehensive Outdoor Recreation Plan (MA SCORP).

Strategy	Description	Timeline	Status
1.4.1	Facilitate discussion with Wells State Park regarding trail system sustainability, recreation quality, and access improvements	Intermediate	Incomplete
1.4.2	Develop implementation plan for trail system development, including permitting, funding, coordination with park master plan, SCORP findings, and surrounding neighborhoods	Intermediate	Incomplete
1.4.3	Implement trail system improvements	Long-term	Incomplete

The retrofit of the Wells State Park trail system is not started and awaits completion of 75% of the Leadmine Mountain Trail prior to commencement.

--

Objective 1.5: Provide improved fishing access and wildlife interpretation trails on Massachusetts Department of Fish and Game-managed (MADF&W) properties within Town Boundaries.

Strategy	Description	Timeline	Status
1.5.1	Facilitate discussion with MADF&W local/regional managers regarding trail system development, enhanced interpretation, and access improvements	Intermediate	Ongoing
1.5.2	Develop implementation plan for trail system development, including permitting, funding, coordination with wildlife management area plan, SCORP findings, and surrounding neighborhoods	Intermediate	Incomplete
1.5.3	Implement trail system improvements	Long-term	Incomplete

Discussions with the MADF&W were started. Plan development and implementation of the trail improvements have not been started as the Town of Sturbridge awaits MADF&W to set up a trail license program, as per the 2016 MADF&W Walking Trails Policy.

--

Appendix A: Progress Report

Objective 1.6: Optimize trail connectivity between parcels under diverse ownership (i.e. Riverlands to Leadmine MT, Opacum Woods to Wells state park, connections across town boundaries)

Strategy	Description	Timeline	Status
1.6.1	Facilitate connectivity/access discussion with land managing entities	Continuous	Ongoing

The Leadmine Mountain-Riverlands route was determined and submitted to Town Administrator (TA) in the Spring of 2019. A connector route between Wells State Park and Plimpton was identified. Discussions with land managers are ongoing.

--

Goal 2: 2: Provide an uninterrupted riverside greenway (Grand Trunk Trail - GTT) from Brimfield to Westville with direct connectivity to the Commercial Tourism District (CTD)

Objective 2.1: Complete development of the Grand Trunk Trail

Strategy	Description	Timeline	Status
2.1.1	Complete currently funded portion of the trail	Continuous	Ongoing
2.1.2	Develop implementation plan for Riverlands section, including permitting, funding, coordination with remediation	Short-term	Ongoing
2.1.3	Finalize trail development	Intermediate	Ongoing
2.1.4	Provide outreach, support, and assistance to extend the trail through other Grand Trunk Trail communities	Continuous	Ongoing

The Transportation Equity Act (TEA) grant process has been a challenge in completion of the funded portion of the trail. Construction is anticipated to begin in 2022. The Riverlands section was started, but has not been completed. The Central Section feasibility study was completed. Annual meetings have been held with the Grand Trunk Trail communities and is a perpetual strategy.

--

Objective 2.2: Create Bridge access to Riverlands/GTT to the CTD

Strategy	Description	Timeline	Status
2.2.1	Finalize preferred bridge crossing locations	Short-term	Done
2.2.2	Develop site and engineering plans, easements, permitting, and funding	Intermediate	Ongoing
2.2.3	Construct bridges	Long-term	Incomplete

Planning has been started to create access between the Commercial Tourism District (CTD) and Riverlands. A bridge location has been identified and plans by Worcester Polytechnic Institute (WPI) have been developed.

--

Appendix A: Progress Report

Objective 2.3: Create an 8' – 10' wide paved greenway trail on the north bank of the Quinebaug River throughout the CTD

Strategy	Description	Timeline	Status
2.3.1	Develop CTD "River Trail" stakeholder group to facilitate discussion and planning	Short-term	Incomplete
2.3.2	Develop site and engineering plans, easements, permitting, and funding	Intermediate	Ongoing
2.3.3	Construct greenway	Long-term	Incomplete

Planning has begun for a greenway trail running through the Commercial Tourism District along the north bank of the Quinebaug River. A stakeholder group has not yet been identified. While the planning and permitting has been started, construction has not started. Property at 501 Main Street was acquired by the Town to use for proposed parking and access to the greenway trail.

--

Goal 3: Create a safer and more efficient bicycling/pedestrian infrastructure, including connections too historical, business, and commercial areas and scenic touring routes.

Objective 3.1 Develop system of signed touring routes within Sturbridge connecting important Town features, public trail heads, and natural historic/highlights.

Strategy	Description	Timeline	Status
3.1.1	Erect "bike route" safety and routing signs along routes	Short-term	Ongoing
3.1.2	Develop branded map of routes and complementary roadside signage and mobile device application to add depth to touring experience	Intermediate	Incomplete
3.1.3	Conduct feasibility/cost study on the addition of paved, striped bike lanes along the touring routes	Long-term	Incomplete
3.1.4	Add design elements to roadway improvement plans and implement on existing transportation improvement schedule or as funding is developed	Intermediate to Long-term	Incomplete

Sturbridge has adopted a Complete Streets policy and has successfully begun acquiring funding through grants to begin its efforts towards creating a system of complete streets. While Sturbridge has also received a grant as a Safe Routes to School community and has started erecting "bike route" safety signs, other design elements have not been added to create a continuous, safe bike route throughout the town.

--

Objective 3.2: Improve pedestrian/bicycle accessibility and safety throughout CTD

Strategy	Description	Timeline	Status
3.2.1	Trails Committee to provide support to Planner in implementing bicycle/pedestrian facets of the Commercial Tourist District Revitalization Plan. Initial study funded for 2012.	Short-term	Ongoing

This strategy is an ongoing process. The Route 20 Commercial Tourism District (CTD) concept plan includes bikeways to support this objective.

--

Appendix A: Progress Report

Objective 3.3: Extend the signed, mapped touring concept throughout the region

Strategy	Description	Timeline	Status
3.3.1	Following initial implementation of signage and mapping, develop a comprehensive sign plan, maps and brochures for all open space lands, create a booklet that combines all maps and brochures for town wide delivery, and create a mobile device application.	Continuous	Ongoing
3.3.2	Create stakeholder group to facilitate discussion and provide support and best practices to regional communities and add routes to the Last Green Valley regional bike touring opportunities	Short-term	Ongoing

This strategy to develop a comprehensive wayfinding/sign plan, trail guide, and maps/brochures for open space lands has been implemented. The development of a mobile application for the open space and trails system has not been started. Progress has stalled with identifying a stakeholder group and linking to communities via the Last Green Valley and Central Mass Regional Planning Commission.

--

Goal 4: Establish effective and readily available education, outreach, and marketing materials that direct residents and visitors to trails, provide information on volunteer opportunities, and highlight events related to the Sturbridge trails and protected lands.

Objective 4.1: Create standardized Sturbridge wide trail map template based on cartographic best practices, including space to display partner/landowner information as well as discreet advertising space that can be cost efficiently updated on an annual basis.

Strategy	Description	Timeline	Status
4.1.1	Develop accurate map of current signed, marked trails and trail area "cut-out" maps suitable for posting on Sturbridge Townships website	Continuous	Ongoing
4.1.2	Create standardized trailhead kiosk plans that include a single area trail map, trail use preparation information, emergency management address, and a space for positively stated regulatory information	Short-term	Ongoing
4.1.3	Enhance web exposure by providing current trail information for use on Last Green Valley site	Short-term	Ongoing

Trails for Heins Farm and Leadmine Mountain were completed for the website and Facebook page, while Riverlands and Plimpton are in progress. A Guide to the Trails and Open Spaces of Sturbridge was published and reprinted in 2020. The STC is continuously working with the Sturbridge Tourism Association and Economic Development's "Experience Sturbridge" marketing.

--

Appendix A: Progress Report

Objective 4.2: Develop program of regularly scheduled guided/interpreted hikes and rides on the Sturbridge Area trails.

Strategy	Description	Timeline	Status
4.2.1	Immediately employ Trek Sturbridge as the branded outreach vehicle for leading and marketing docent-led guided/interpreted hikes and rides with, docent training, and providing a presence at events and at trailheads during high visitation periods	Short-term	Ongoing

Trek Sturbridge branding was developed and is continually used for outreach and marketing. Trek Sturbridge logo is inserted on all signs and flyers. Friends of the Sturbridge Trails (FrOST) hold approximately five guided programs per year.

--

Goal 5: Improve and highlight public access to the Quinebaug River

Objective 5.1: Provide improved boating/fishing access to the Quinebaug River adjacent to the Grand Trunk Trail.

Strategy	Description	Timeline	Status
5.1.1	Develop access easement agreements with property owners for new river access points at Millyard Market Place, OSV Access rd., RT 15 access and ACOE	Short-term	Incomplete
5.1.2	Develop implementation plans for access improvements, including site planning, permitting, funding, and river, trail, and road signage	Short-term	Incomplete
5.1.3	Implement access improvements	Intermediate	Incomplete

Improved boating and fishing access to the Quinebaug River adjacent to the Grand Trunk Trail has not been started. The objective needs support and coordination to create public water access to this area.

--

Goal 6: Implement the Plan in an efficient manner to provide maximum benefits to residents and visitors, identifying and employing a variety of funding sources, volunteer assistance, and Town resources to optimize the inputs of all stake holding parties.

Objective 6.1: Develop a volunteer program and standard schedule of volunteer events that provides more than 2000/year (at \$ 26.84/hr. a total input more than \$53, 680.00) of volunteer assistance and in-kind product/service donations greater than \$20,000.00 toward the development and ongoing maintenance of the Sturbridge area trails.

Strategy	Description	Timeline	Status
6.1.1	Appoint a volunteer coordinator to develop the schedule and coordination of volunteer events, including liaison duties with area service organizations, schools, and businesses to attain the levels of volunteer/donation need	Intermediate	Done
6.1.2	Develop a 50-person cache of new tools and branded utility trailer (with space for local advertisers) to be employed at all events and parked in a visible location in the Town	Short-term	Done
6.1.3	Obtain crew leader, first aid/cpr, and chainsaw certification training for established and new crew leaders	Continuous	Ongoing

Appendix A: Progress Report

A coordinator was identified to liaise with various organizations for fundraising. Monthly volunteer days were planned, a weekday volunteer crew established, and tools acquired. Crew lead positions are filled on an ongoing basis and required training and certifications are funded by grants.

--

Objective 6.2: Establish a partnership with a youth outreach/training program that builds land management technical skills including carpentry, outdoor facilities maintenance

Strategy	Description	Timeline	Status
6.2.1	Trails Committee (Lead), with support from the Town Administrator and Public Lands Advisory Committee, to outline program and develop a consistent presence of youth service projects in the short-term.	Short-term	Ongoing

An ongoing partnership was established between the STC and various organization, such as the Boy Scouts of America, and Vocational and Regional High Schools.

--

Objective 6.3: Organize and implement a targeted campaign to develop outside funding for trail development of at least \$100K/year over the next ten years via grants, gifts, and event related revenue.

Strategy	Description	Timeline	Status
6.3.1	Form a 501(c)3 not-for-profit organization to accept grants and gifts and more efficiently liaise with non-municipal land managing entities	Intermediate	Ongoing
6.3.2	Seek local funding for a part-time grant writer/development professional to organize, solicit, and administer grants and gifts	Short-term	Ongoing
6.3.3	Employ Community Preservation, Betterment, and tourism-related tax funds as leverage for outside funding	Continuous	Ongoing

Friends of the Sturbridge Trail (FrOST) formed in 2013 (501(c)(3) status is pending). A trail volunteer is still desired to act in a grant writer capacity and coordinate grant funding. Community Preservation Committee and Betterment Funding provide funding in addition to grant funding and is a continuous process.

--

Objective 6.4: Secure larger federal or state transportation-sponsored grants for pedestrian/bicycle facility improvements including green lanes, multi-modal road improvements, traffic calming, and safety enhancements.

Strategy	Description	Timeline	Status
6.4.1	Departments of Planning and Public Works liaison with various committees to establish project prioritization and establish an implementation plan with identified funding program targets	Continuous	Ongoing
6.4.2	Town creates a Recreation Trail Master Plan Review Committee that will meet yearly and monitor progress towards implementation of the trails master plan	Continuous	Ongoing

This objective is a perpetual process that has commenced and is ongoing. A town wide Recreation Trails Master Plan (RTMP) Review Committee was established and held meetings but needs to coordinate with the Town Administrator and Department Heads to reestablish a consistent meeting schedule.

Appendix B: Survey Questions and Results

Walk and Bike Sturbridge Trails Questionnaire

The purpose of this questionnaire is to collect information to update the Sturbridge Trails Recreation Master Plan. This survey is being conducted by students at The Conway School, and responses will remain anonymous. You do not need to live in Sturbridge to participate in this survey. It should take about 10 minutes to complete. Thank you for your participation!

marquis22@calid.edu (not shared) [Switch account](#)

Draft restored

* Required

Tell us about yourself!

The following section contains questions about who you are, where you reside, and where you spend your time. If any of the questions that are not required do not apply to you, please feel free to skip them.

I am... (Check all that apply) *

- ☐ A long-time Sturbridge resident
- ☐ A recent transplant
- ☐ A frequent visitor to Sturbridge
- ☐ A tourist visiting Sturbridge for the first time
- ☐ A parent of someone in a Sturbridge School
- ☐ A kid growing up in Sturbridge
- ☐ A Sturbridge business owner
- ☐ A seasoned trail user
- ☐ A member of a land trust or conservation organization
- ☐ Other: _____

How many people are in your household?

Your answer: _____

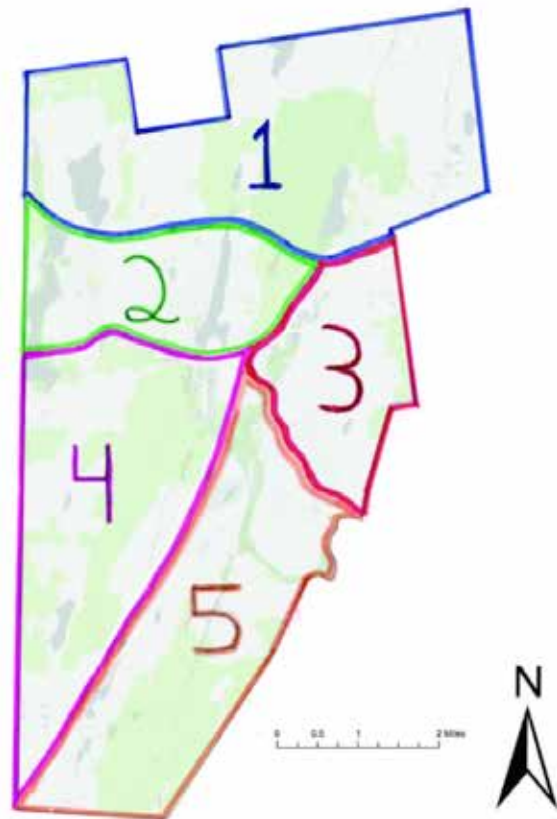
What age groups reside in your household? Select all that apply. *

- ☐ Under 5
- ☐ 6-12
- ☐ 13-17
- ☐ 18-24
- ☐ 25-44
- ☐ 45-64
- ☐ 65+

If you have school-aged children, what school do they attend?

- ☐ Burgess Elementary School
- ☐ Old Sturbridge Academy
- ☐ Tantasqua Regional High School/Junior High
- ☐ I do not have school-aged children
- ☐ Other: _____

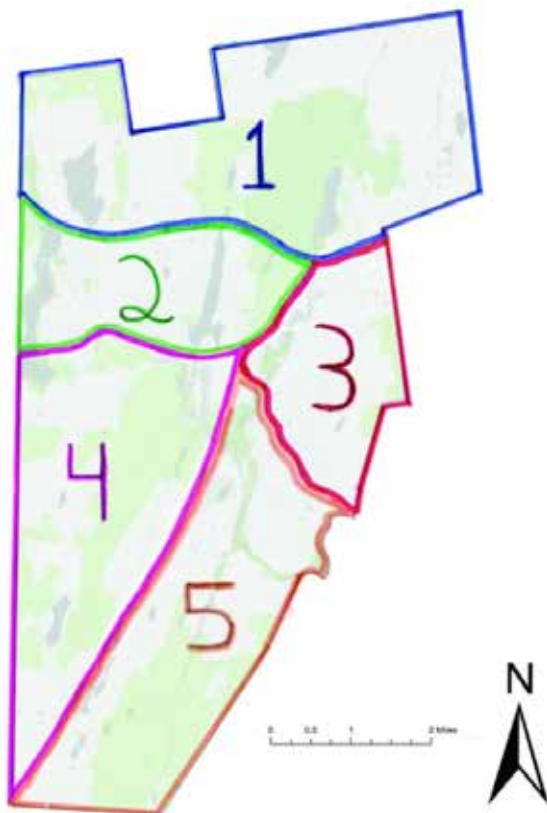
Roughly, in what section on this map do you reside? If you live on a line, pick the one that feels most right.



- ☐ 1: North of Mass Pike
- ☐ 2: South of Mass Pike and north of Rt 20
- ☐ 3: Between Rt 20 and Rt 131
- ☐ 4: South of Rt 20 and west of I 84
- ☐ 5: South of Rt 131 and east of I 84
- ☐ Other: _____

Appendix B: Survey Questions and Results

Roughly, in what section do you spend most of your time? (e.g. choose the section that includes your workplace, school, or where you find yourself most often when you're not at home)



- ☐ 1: North of Mass Pike
- ☐ 2: South of Mass Pike and north of Rt 20
- ☐ 3: Between Rt 20 and Rt 131
- ☐ 4: South of Rt 20 and west of I 84
- ☐ 5: South of Rt 131 and east of I 84
- ☐ Outside of Sturbridge
- ☐ Other: _____

Are you of Hispanic/Latino/Spanish origin?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

How would you best describe yourself?

- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White
- ☐ Prefer not to say

Do you own or have regular access to a vehicle?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

Recreation

Tell us how you like to spend your time. These questions are related mostly to trails-based activities. If a question does not apply to you, please feel free to skip it.

Do you use any of the trails in Sturbridge? *

- ☐ Yes
- ☐ No

If you do not, why not?

- ☐ I do not know where the trails are
- ☐ I'm looking for a different type of trails
- ☐ There are not enough miles of trails
- ☐ The trails are hard to navigate
- ☐ The trails are difficult to get to
- ☐ The trails feel unsafe
- ☐ The trails are not physically accessible to me
- ☐ I do use the trails in Sturbridge
- ☐ Other: _____

Appendix B: Survey Questions and Results

What types of activities do you and/or your family use the trails for?

- ☐ Hiking
- ☐ Horseback riding
- ☐ Trail running
- ☐ Backpacking
- ☐ Mountain biking
- ☐ Road biking
- ☐ Hunting
- ☐ Camping
- ☐ Wildlife/birdwatching
- ☐ Nordic skiing
- ☐ Snowshoeing
- ☐ Walking
- ☐ Other: _____

Which properties do you visit most often?

- ☐ Leadmine Mountain
- ☐ Heins Farm
- ☐ River Lands
- ☐ Plimpton Community Forest
- ☐ Opacum Woods
- ☐ Westville Lake
- ☐ Wells State Park
- ☐ Grand Trunk Trail
- ☐ Tantiusques
- ☐ Other: _____

I use the trails for... (select all that apply)

- ☐ Recreation/pleasure
- ☐ Exercise
- ☐ Exercising my pet
- ☐ Getting around Sturbridge

When you use the trails, who are you typically with? (select all that apply)

- ☐ By myself
- ☐ With my spouse/partner
- ☐ With my children
- ☐ With a friend
- ☐ With an organized group

What amenities would you MOST like to see added or improved? (Select the 3 most important to you)

- ☐ Benches
- ☐ Trash receptacles
- ☐ Drinking fountains/water bottle fill stations
- ☐ Lighting
- ☐ Bike repair station
- ☐ Wayfinding/directional signage
- ☐ Educational/interpretive signage
- ☐ Shade
- ☐ Parking areas
- ☐ Restrooms
- ☐ Dog waste bags
- ☐ Off-leash dog area
- ☐ Other

Relationship with the Landscape

The following section contains questions about our relationship with the landscape. If a question does not apply to you, please feel free to skip it. Please read the following paragraph for some background information that may help you answer these questions.

"Recreational trails can have positive and negative effects on communities. Ecological impacts such as nutrient overloads from pet waste, wildlife displacement, and potential for erosion and compaction of soils. However, sustainable trail building techniques and trail use guidelines may help mitigate these effects. They can also be beneficial to a landscape and community by promoting active stewardship and education opportunities, physical health and wellbeing, and connection with landscape. They can also provide economic benefits by bringing tourism, and in some cases can raise property values."

Rate your stance on whether trails are detrimental or beneficial to a landscape.

1 2 3 4 5
Extremely detrimental ○ ○ ○ ○ ○ Extremely beneficial

How much of Sturbridge's land should be open and accessible to the public?

- ☐ More than what currently is
- ☐ Less than what currently is
- ☐ Just right

In what ways have you seen Sturbridge's trails have ecological, community, and/or economic impacts? Please feel free to share positives, negatives, or both.

Your answer _____

Appendix B: Survey Questions and Results

Connectivity & Navigation

This section contains questions about using trails, bike lanes, and/or existing infrastructure for getting around in Sturbridge with or without a car. If a question does not apply to you, please feel free to skip it.

How do you typically get to the trails?

- ☐ Walk/bike to the trailheads
- ☐ Drive to the trailheads and park
- ☐ Get dropped off at the trailheads
- ☐ Carpool
- ☐ Take public transportation

If you wanted to get to the trails without driving a car, do you feel that you could safely and conveniently do so?

- ☐ Yes
- ☐ No
- ☐ Not sure

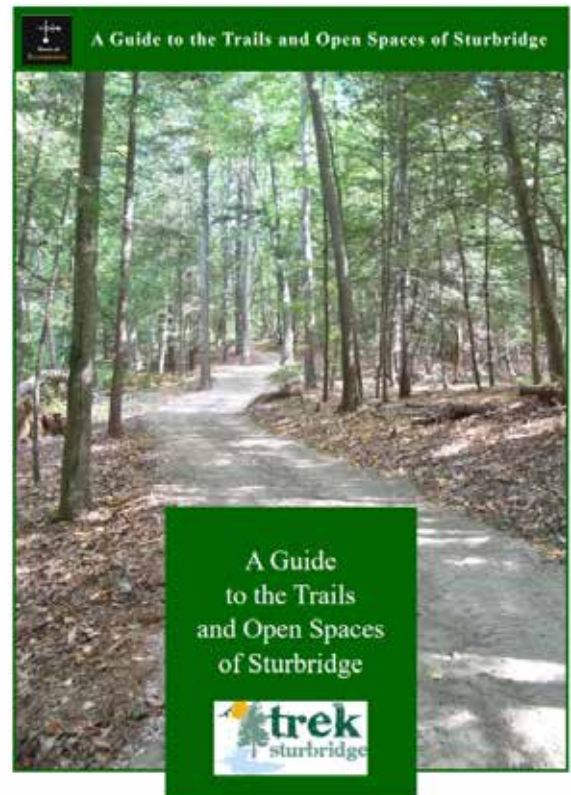
What destinations/areas in town do you wish you could walk or bike to that it's currently not convenient to do so?

Your answer:

What roads in town, if any, do you think need sidewalks that currently don't have them?

Your answer:

The Town of Sturbridge has an official trail guide that offers wayfinding, descriptions, and history about trail properties. Do you use and/or recommend the Trail Guide for navigating the trails?



- ☐ Yes, and I would recommend it to others who are unfamiliar with the trails
- ☐ No, and I would not recommend it to others who are unfamiliar with the trails
- ☐ I did not know a trail guide was available

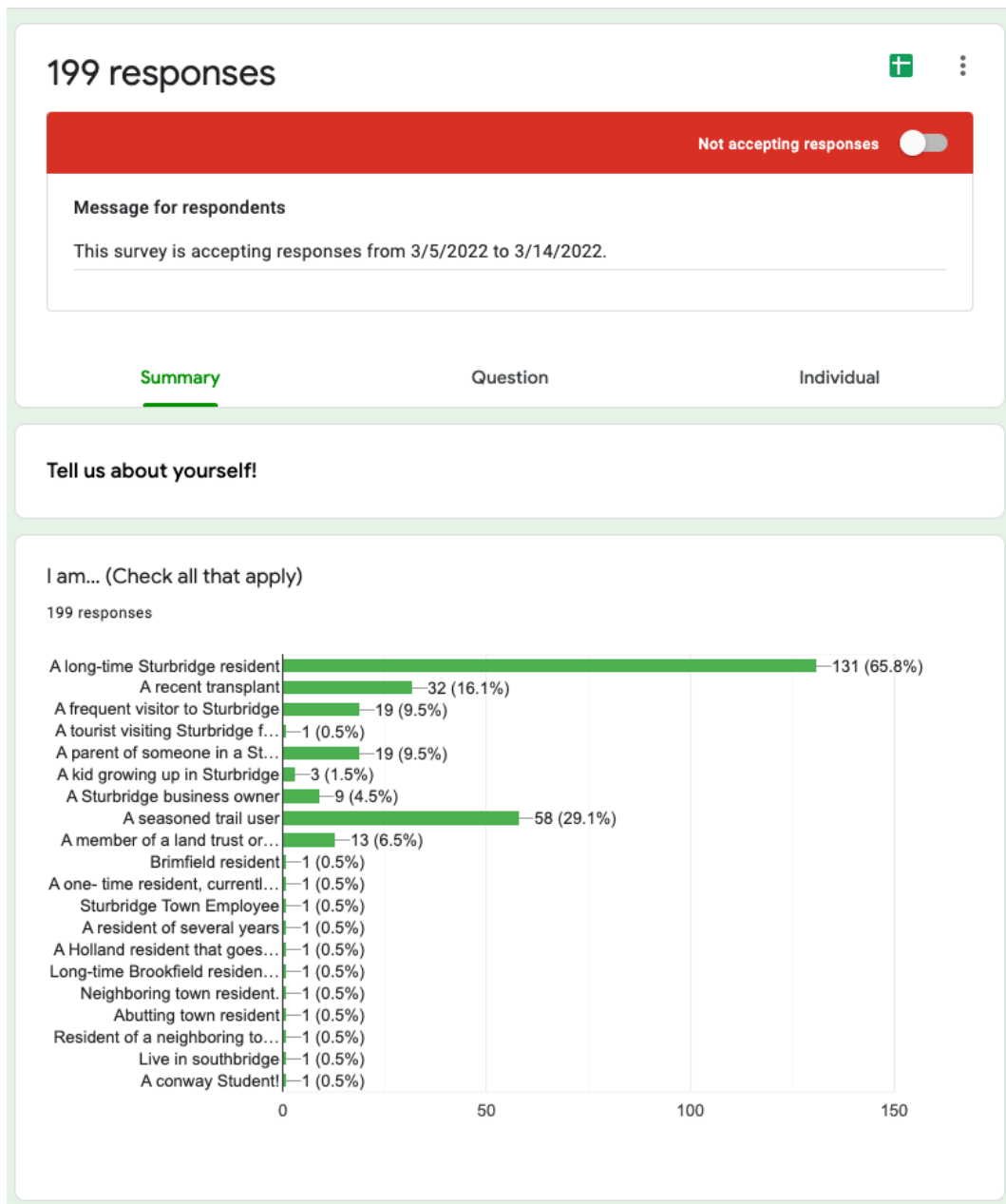
If you do not use or recommend the Trail Guide, why? (Select all that apply)

- ☐ I did not know a trail guide was available
- ☐ I do not know where to get it
- ☐ The Trail Guide is too difficult to use
- ☐ The Trail Guide is incomplete
- ☐ I prefer to use a navigation app (AllTrails, Gaia, Google, Etc)
- ☐ I don't need a trail guide to use the trails

Any additional comments:

Your answer:

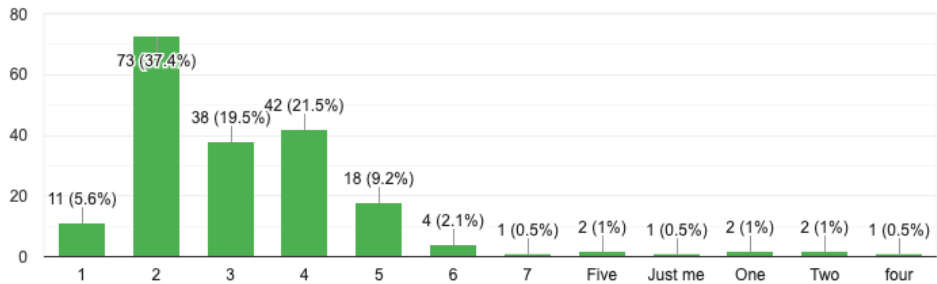
Appendix B: Survey Questions and Results



Appendix B: Survey Questions and Results

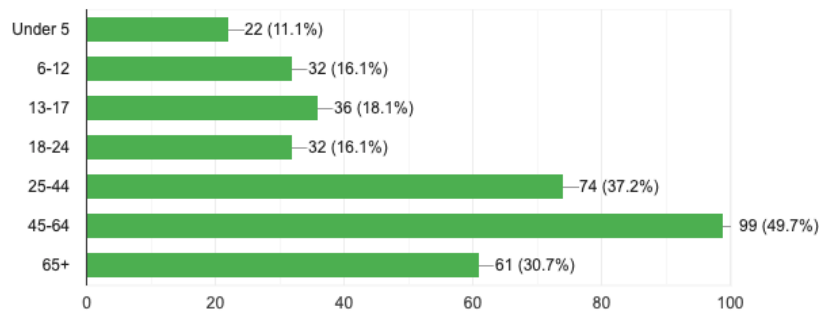
How many people are in your household?

195 responses



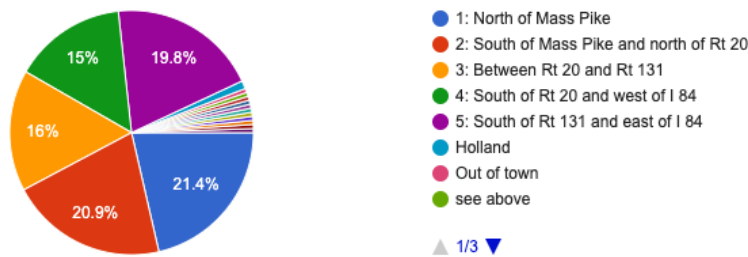
What age groups reside in your household? Select all that apply.

199 responses



Roughly, in what section on this map do you reside? If you live on a line, pick the one that feels most right.

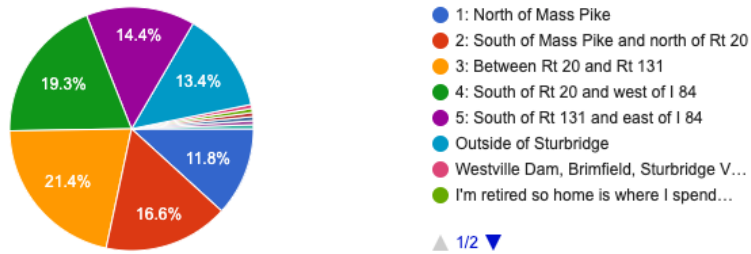
187 responses



Appendix B: Survey Questions and Results

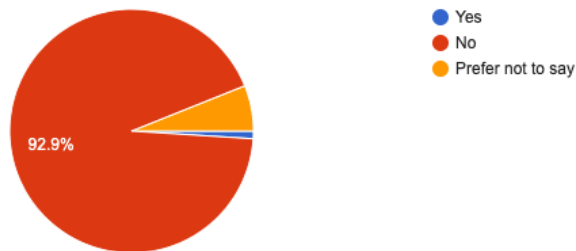
Roughly, in what section do you spend most of your time? (e.g. choose the section that includes your workplace, school, or where you find yourself most often when you're not at home)

187 responses



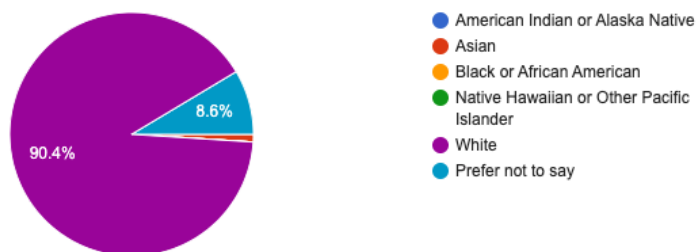
Are you of Hispanic/Latino/Spanish origin?

198 responses



How would you best describe yourself?

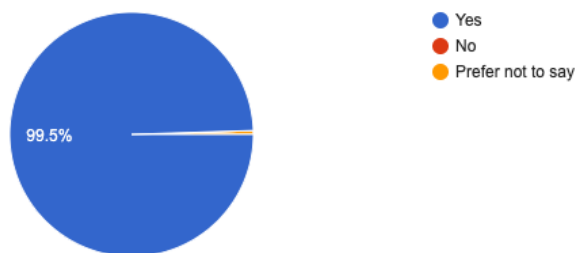
198 responses



Appendix B: Survey Questions and Results

Do you own or have regular access to a vehicle?

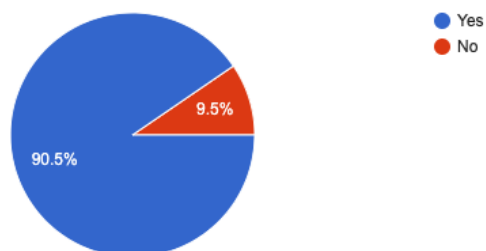
196 responses



Recreation

Do you use any of the trails in Sturbridge?

199 responses



If you do not, why not?

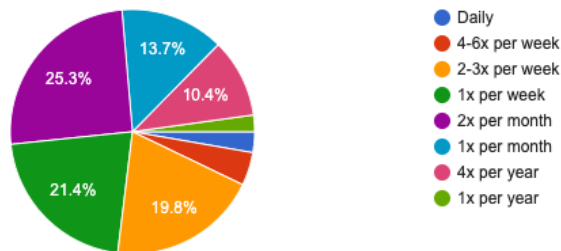
92 responses



Appendix B: Survey Questions and Results

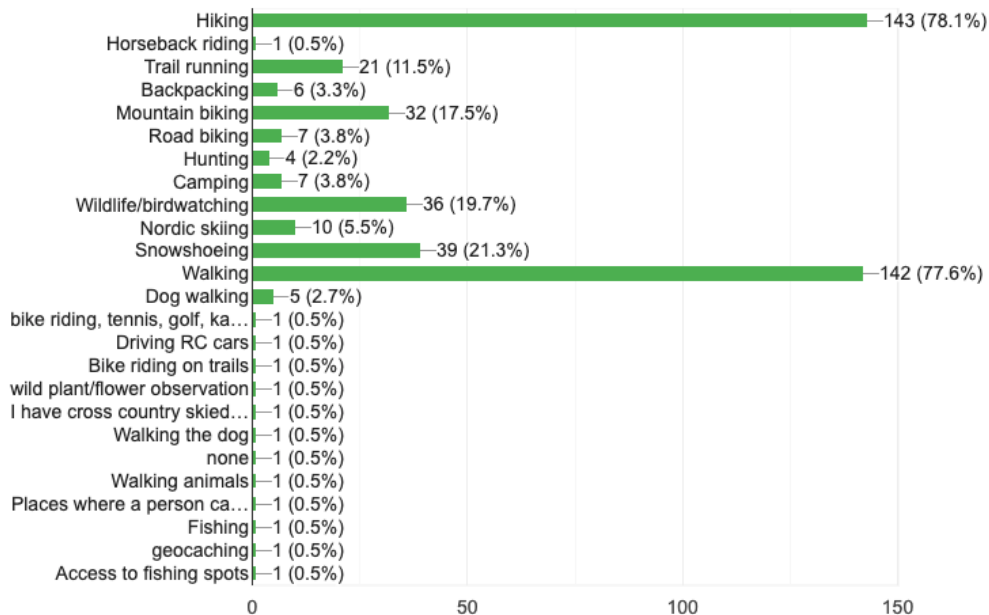
If you do use the trails in Sturbridge, how often?

182 responses



What types of activities do you and/or your family use the trails for?

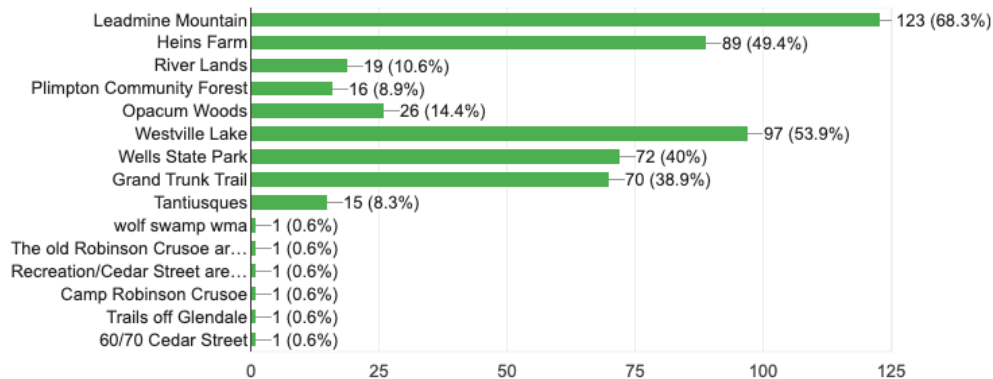
183 responses



Appendix B: Survey Questions and Results

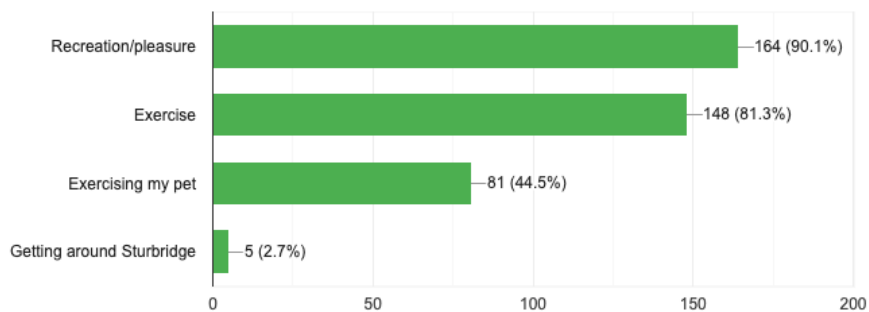
Which properties do you visit most often?

180 responses



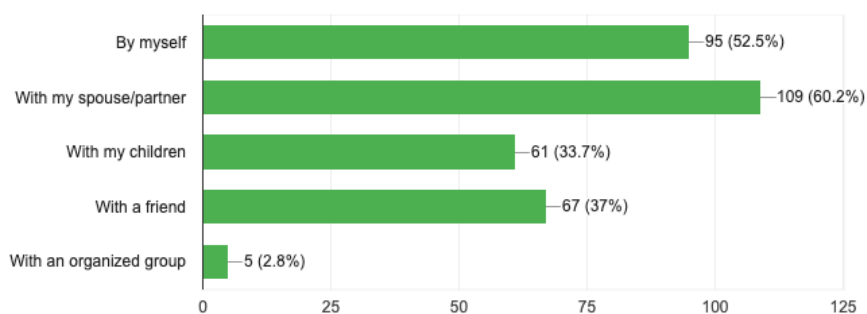
I use the trails for... (select all that apply)

182 responses



When you use the trails, who are you typically with? (select all that apply)

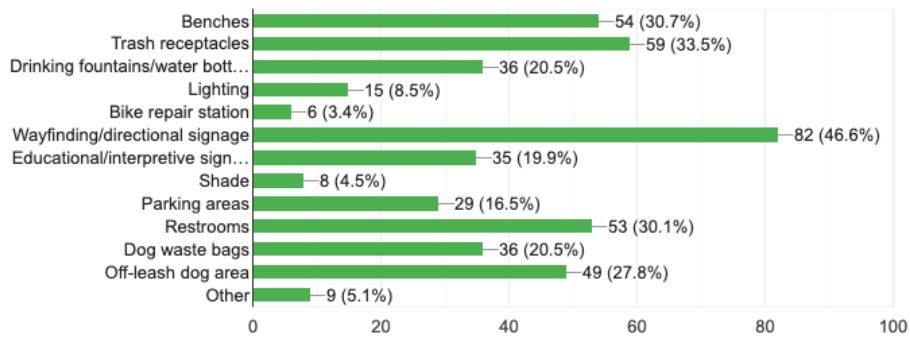
181 responses



Appendix B: Survey Questions and Results

What amenities would you MOST like to see added or improved? (Select the 3 most important to you)

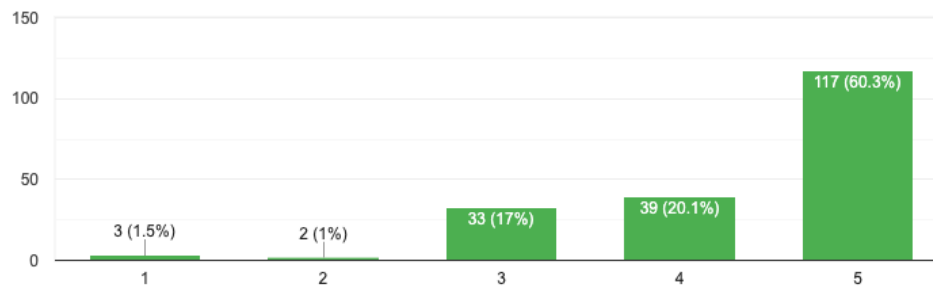
176 responses



Relationship with the Landscape

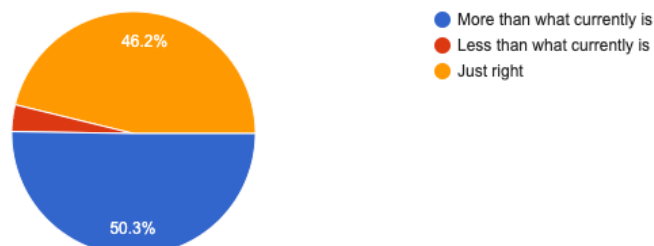
Rate your stance on whether trails are detrimental or beneficial to a landscape.

194 responses



How much of Sturbridge's land should be open and accessible to the public?

197 responses



Appendix B: Survey Questions and Results

In what ways have you seen Sturbridge's trails have ecological, community, and/or economic impacts? Please feel free to share positives, negatives, or both.

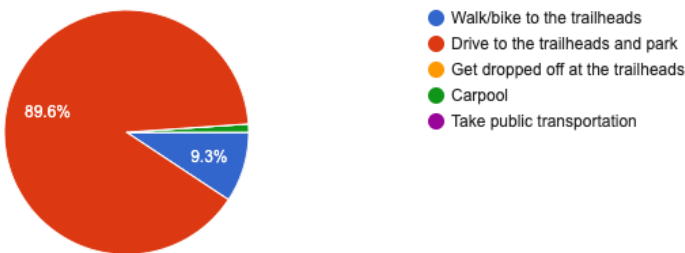
108 responses

Results of this question are not included due to the volume and nature of the responses.

Connectivity & Navigation

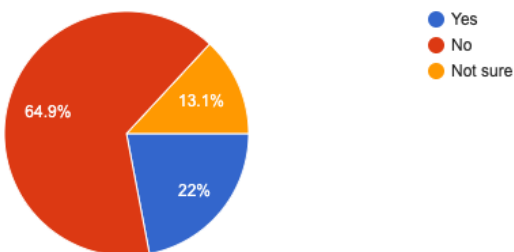
How do you typically get to the trails?

183 responses



If you wanted to get to the trails without driving a car, do you feel that you could safely and conveniently do so?

191 responses



What destinations/areas in town do you wish you could walk or bike to that it's currently not convenient to do so?

114 responses

Results of this question are not included due to the volume and nature of the responses.

Appendix B: Survey Questions and Results

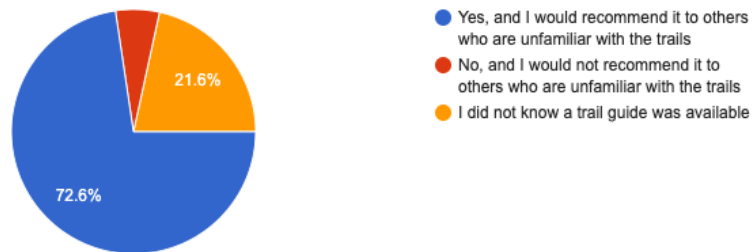
What roads in town, if any, do you think need sidewalks that currently don't have them?

114 responses

Results of this question are not included due to the volume and nature of the responses.

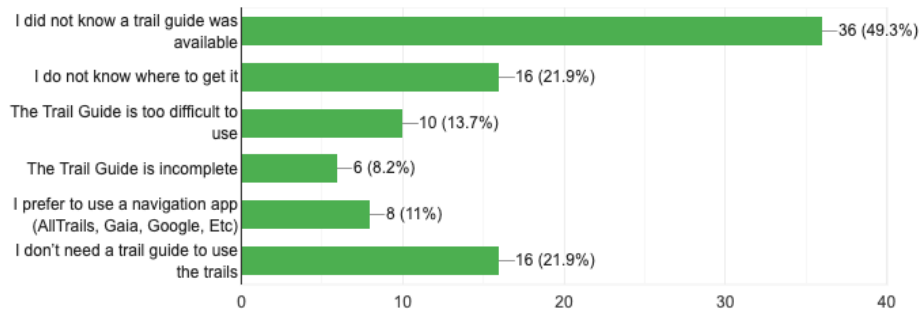
The Town of Sturbridge has an official trail guide that offers wayfinding, descriptions, and history about trail properties. Do you use and/or recommend the Trail Guide for navigating the trails?

190 responses



If you do not use or recommend the Trail Guide, why? (Select all that apply)

73 responses



Appendix C: Rare Species List

The table below shows a list of MESA-listed (Massachusetts Endangered Species Act) species that have been documented in Sturbridge, organized by their most recent observation. The table was obtained from MassWildlife's Natural Heritage & Endangered Species Program's **Rare Species Viewer**.

Rare Species in Sturbridge

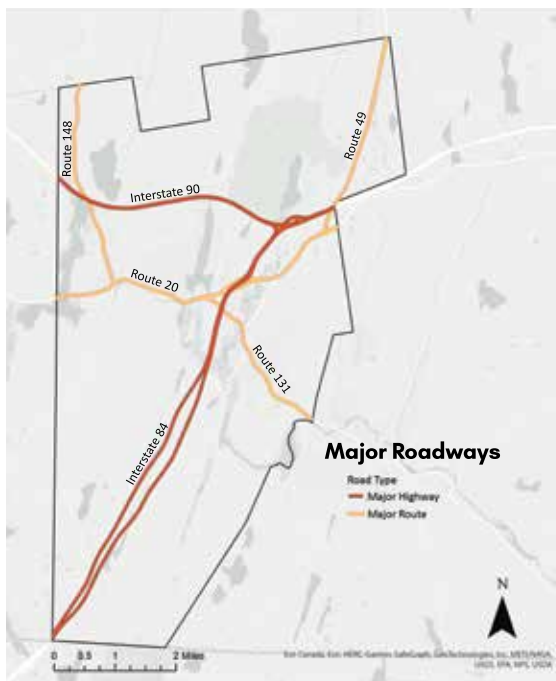
Common Name	Scientific Name	Taxonomic Group	MESA Status	Most Recent Observation
Climbing Fumitory	<i>Adlumia fungosa</i>	Vascular Plant	Special Concern	2019
Purple Clematis	<i>Clematis occidentalis</i>	Vascular Plant	Special Concern	2019
Spine-crowned Clubtail	<i>Hylogomphus abbreviatus</i>	Dragonfly/Damselfly	Special Concern	2016
Wood Turtle	<i>Glyptemys insculpta</i>	Reptile	Special Concern	2016
Bridle Shiner	<i>Notropis bifrenatus</i>	Fish	Special Concern	2015
Appalachian Bristle-fern	<i>Crepidomanes intricatum</i>	Vascular Plant	Endangered	2010
Creeping	<i>Strophitus undulatus</i>	Mussel	Special Concern	2010
Marbled Salamander	<i>Ambystoma opacum</i>	Amphibian	Threatened	2010
Orange Sallow Moth	<i>Pyrrhia aurantiago</i>	Butterfly/Moth	Special Concern	2010
American Bittersweet	<i>Celastrus scandens</i>	Vascular Plant	Threatened	2009
Dwarf Bulrush	<i>Lipocarpus micrantha</i>	Vascular Plant	Threatened	2009
Bristly Buttercup	<i>Ranunculus pennsylvanicus</i>	Vascular Plant	Special Concern	2008
Saltpond Grass	<i>Leptochloa fusca</i> ssp. <i>fascicularis</i>	Vascular Plant	Threatened	2008
Drooping Speargrass	<i>Poa saltuensis</i> ssp. <i>languida</i>	Vascular Plant	Endangered	2000
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Mammal	Endangered	2000
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird	Threatened	1999
Hessel's Hairstreak	<i>Callophrys hesseli</i>	Butterfly/Moth	Special Concern	1997
Slender Cottongrass	<i>Eriophorum gracile</i>	Vascular Plant	Threatened	1997
Water Shrew	<i>Sorex palustris</i>	Mammal	Special Concern	1996
Autumn Coral-root	<i>Corallorhiza odontorhiza</i>	Vascular Plant	Special Concern	1984
Little Brown Bat	<i>Myotis lucifugus</i>	Mammal	Endangered	1983
Mountain Spleenwort	<i>Asplenium montanum</i>	Vascular Plant	Endangered	1946
Indiana Myotis	<i>Myotis sodalis</i>	Mammal	Endangered	1938
Climbing Fern	<i>Lygodium palmatum</i>	Vascular Plant	Special Concern	1937
New England Blazing Star	<i>Liatris novae-angliae</i>	Vascular Plant	Special Concern	1934
Pale Green Orchid	<i>Platanthera flava</i> var. <i>herbiola</i>	Vascular Plant	Threatened	1933



Appendix D: Stakeholder List

- Trails Committee
- Town Administrator
- Board of Selectmen
- Conservation Commission
- Planning Board
- Zoning Board of Appeals
- Historical Committee
- Design Review Committee
- Housing Partnership
- Community Preservation Committee
- Sturbridge Tourist Association
- Economic Development and Tourism
- Department of Public Works
- Fire Department
- Police Department
- Recreation
- Old Sturbridge Village
- Opacum Land Trust
- Wells State Park (Department of Conservation and Recreation)
- Mass Dept. of Fish & Wildlife
- Friends of the Sturbridge Trails (FrOST)
- Mass Department Transportation
- Army Corp. of Engineers
- Regional Trail Committee
- Brimfield Trail Committee
- Holland Trail Committee
- Southbridge Trail Committee
- Open Space Committee
- Preservation Committee
- The Last Green Valley
- Central Mass Regional Planning Commission
- Betterment Committee
- Chamber of Commerce
- Cable Advisory Committee & Public Access TV
- Hamilton Rod & Gun Club
- Natural Resources Conservation Service
- Norcross Wildlife Foundation
- MassConn Sustainable Forest Partnership

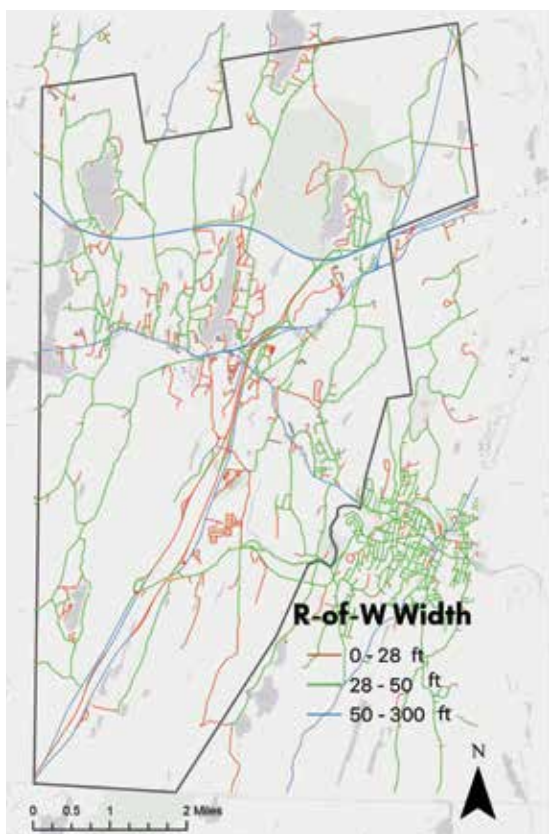
Appendix E: Map Thumbnails



Roadways

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- MassDOT Roads

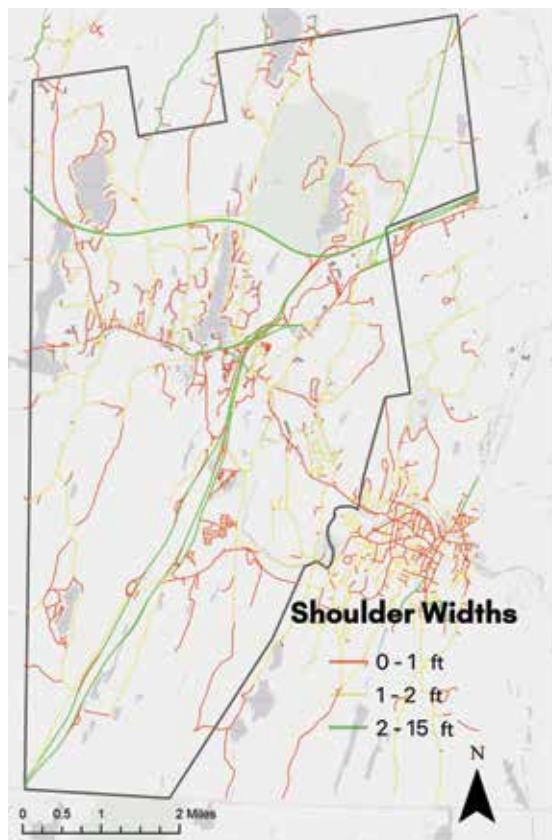


Right of Ways

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- MassDOT Roads

Appendix E: Map Thumbnails



Shoulder Widths

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- MassDOT Roads



Complete Streets

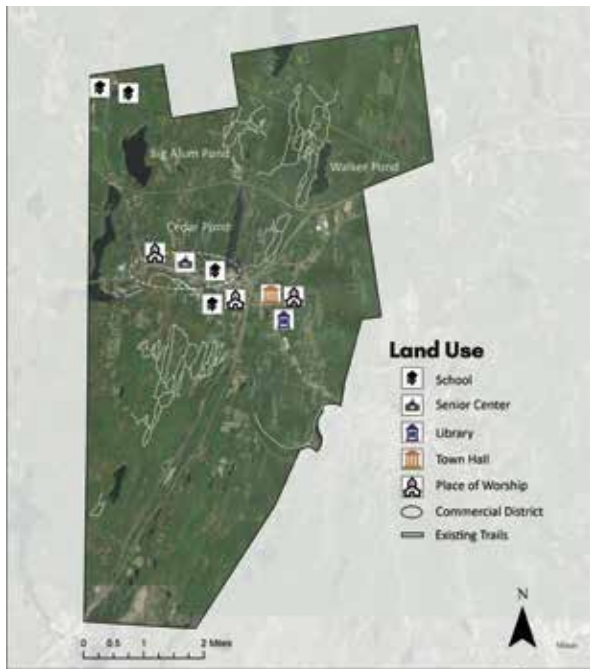
Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- MassDOT Roads

OpenStreetMap:

- OSM Data

Appendix E: Map Thumbnails



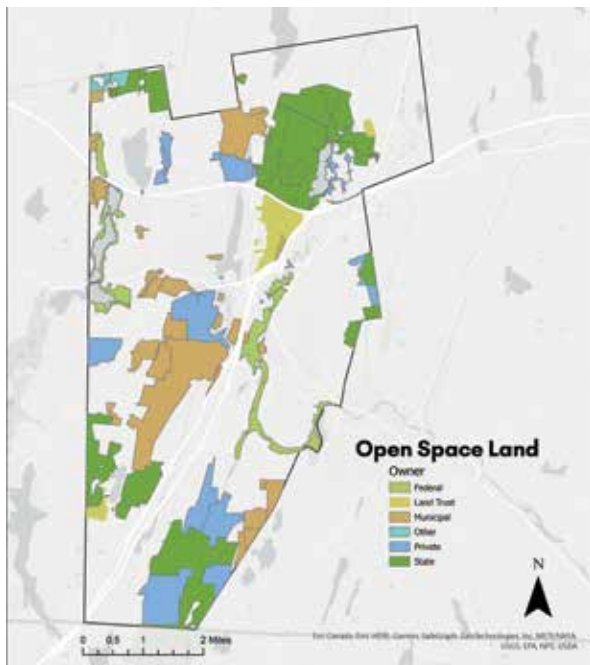
Land Use

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- Places of Worship
- Schools
- -own Halls
- Libraries

OpenStreetMap:

- OSM Data

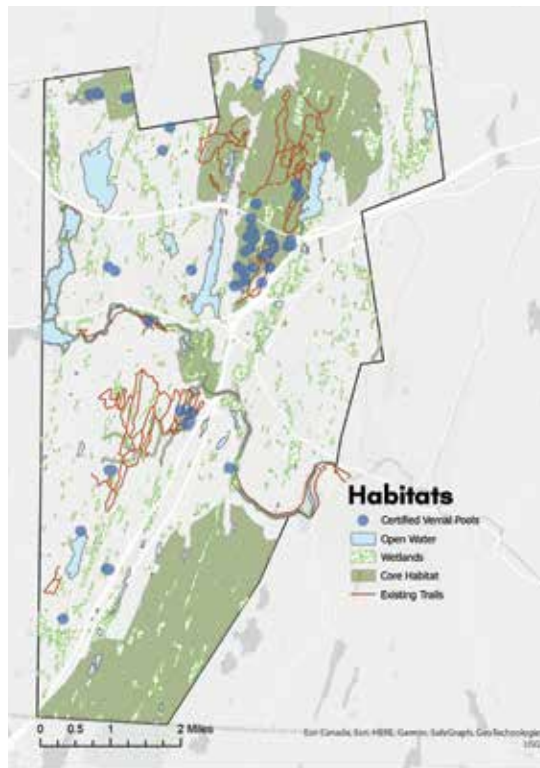


Open Space

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- Open Space by Ownership

Appendix E: Map Thumbnails



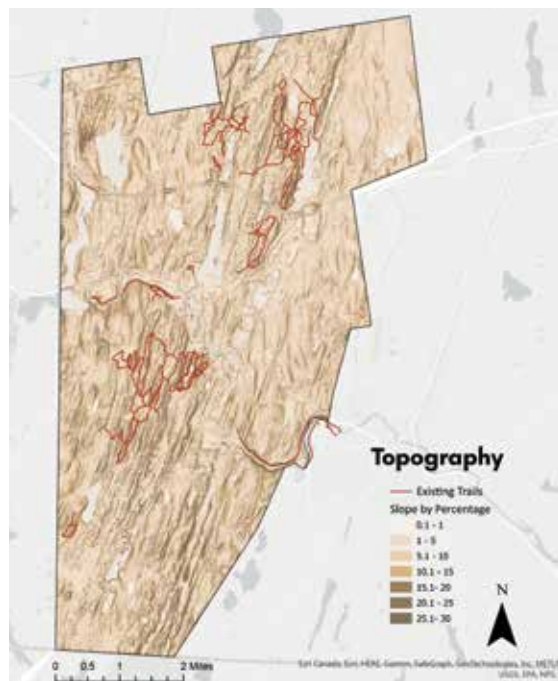
Habitat

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- BioMap2
- NHESP Certified Vernal Pools
- MassDEP Wetlands

OpenStreetMap:

- OSM Data



Topography

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)

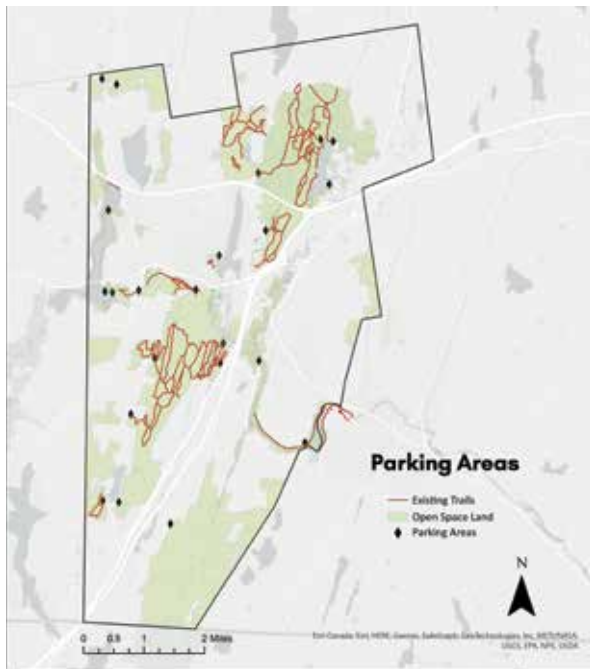
OpenStreetMap

- OSM Data

U.S Geological Survey:

- LiDAR Digital Elevation Model

Appendix E: Map Thumbnails



Parking

Massachusetts Office of Geographic Information (MassGIS):

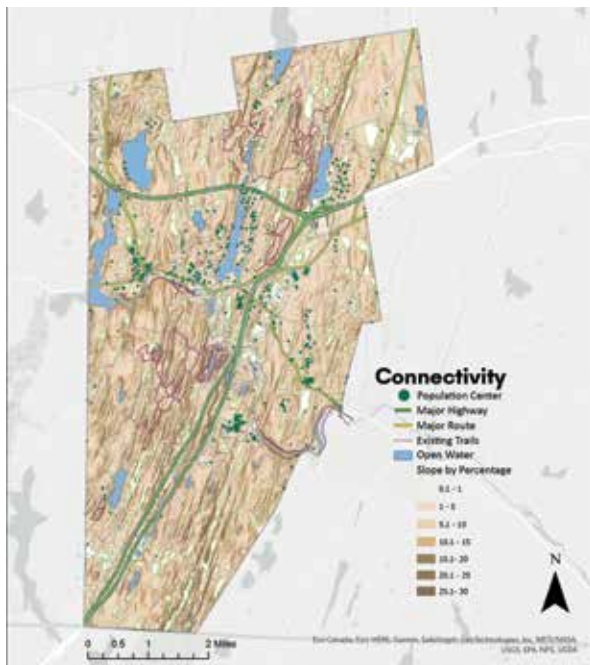
- Community Boundaries (Cities and Towns)
- MassDOT Roads
- Open Space by Ownership

OpenStreetMap:

- OSM Data

Town of Sturbridge:

- Access Points



Connectivity Summary

Massachusetts Office of Geographic Information (MassGIS):

- Community Boundaries (Cities and Towns)
- MassDOT Roads
- MassDEP Wetlands

OpenStreetMap:

- OSM Data

U.S Geological Survey:

- LiDAR Digital Elevation Model

U.S Census Bureau

- 2010 U.S Census

the Conway School

Graduate Program in Sustainable Landscape Planning + Design

Located in south central Massachusetts along the Connecticut border, the town of Sturbridge offers an abundance of destinations for users to immerse themselves in the town's history, ecology, and natural beauty. Sturbridge is a nature-lover's dream and boasts almost 30 miles of trails situated within 6,000 acres of public land for exploration. The 2022 Trail Sustainability Plan focuses on guiding Sturbridge in continuing to create, complete, and maintain sustainable trails that connect residents and visitors to open spaces and points of interest with minimal adverse ecological impact. The plan aspires to provide a safe network for a variety of users to traverse the town, whether to engage with Sturbridge's natural surroundings, reap the benefits of active transportation, access social infrastructure, or support the local economy. This document reflects the work accomplished over the past ten years of trail building and will help the Town and the community achieve their vision for the future of the Town's trail system.

Image: Heins Farm, by
Martin Drexhege