MAINE Appalachian Trail LAND TRUST

MAINE APPALACHIAN TRAIL 2020

A METHODOLOGY FOR ANALYSIS AND PRIORITIZATION FOR LAND CONSERVATION OF THE APPALACHIAN TRAIL REGION IN MAINE.

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Edited by the Maine Appalachian Trail Land Trust Conservation Committee

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Cover photo: Mount Abraham

PREFACE

The Maine Appalachian Trail Land Trust published Land Acquisition Priorities: Preliminary Analysis of the Trail in 2004. The document, which was largely derived from maps and reports, trail maintainer data, and available scientific sources on natural features and land cover in Maine, has been used for the past fifteen years as a guiding document for the A.T. by many conservation organizations, including the Maine Appalachian Trail Land Trust. By drawing attention to the A.T. region as a landscape of ecological significance—rather than just as a recreational trail—Land Acquisition Priorities was able to put conservation of the A.T. landscape squarely on the map. Since its publication, over 45,000 acres of land along the A.T. in Maine have been conserved.

Land Acquisition Priorities also highlighted three focal areas along Maine's A.T.: The High Peaks Region in western Maine, the Bald Mountain Pond region between the High Peaks and the Hundred Mile Wilderness, and the White Cap Mountain area in the Hundred-Mile Wilderness. In 2007 the Maine Appalachian Trail Land Trust produced An Ecological Study of the High Peaks Region of Maine's Western Mountains, which has guided state and national conservation priorities to and within this landscape, educating and motivating funders, the public, and conservation partners to take action. All of these locations along Maine's Appalachian Trail have seen increased conservation efforts since being noted as focal areas.

One of the reasons for the publication of the Maine A.T. 2020 report is the success of this movement and progress made to date. Despite this, conservation of the region needs to increase in pace and scale. While important parts of the A.T. landscape prioritized in 2004 have since been conserved or are in the process of being conserved, much of the landscape is still subject to land use conversion and permanent loss. Threats to the Appalachian Trail and this region have continued to arise: incompatible development is growing steadily closer to the A.T. corridor; the landscape is struggling to regenerate quickly enough to support the forest products industry in a time of changing investment models and accelerated harvest rates; land is being closed off from public access; energy infrastructure continues to proliferate in the Appalachian Trail region; climate change threatens to erode natural communities and forever alter the places that make Maine's Appalachian Trail so special. The trail experience and the many values found in the greater landscape depend upon the largest contiguous blocks of unfragmented forest east of the Rocky Mountains. Continental-scaled adaptation to climate change and the mitigation of habitat loss and fragmentation cannot occur without land protection as described in this report. These are the very elements of nature that create the experience of the trail.

List of Acronyms

AT	Appalachian Trail
AMC	Appalachian Mountain Club
ATC	Appalachian Trail Conservancy
ATLP	Appalachian Trail Landscape Partnership
APPA	Appalachian National Scenic Trail National Park Service Unit
BPL	Maine Bureau of Parks and Lands
BwH	Beginning with Habitat
LUPC	Land Use Planning Commission
LWCF	Land and Water Conservation Fund
MATC	Maine Appalachian Trail Club
MATLT	Maine Appalachian Trail Land Trust
MNAP	Maine Natural Areas Program
NPS	National Park Service
NRHP	National Register of Historic Places

Acknowledgments

This report and the Maine Appalachian Trail Geospatial Information for Conservation (MATGIC) decision support tool would not have been possible without the generous support, assistance, and science expertise of The Wilderness Society, a national organization dedicated to protecting America's wild places but whose commitment to collaboration and partnership made this project possible.

Maine A.T. 2020 would not have been possible without the assistance of the following partners: The Center for Community GIS and in particular, Nicole Grohoski; The Maine Mountain Collaborative and its members; the authors of Land Acquisition Priorities (Dean Bennett, Sheila Bennett, Richard Fecteau, Gabrielle Kissinger, Dain Trafton, Vera Trafton); Unity College; Colby College Environmental Studies Department and Philip Nyhus, Professor of Environmental Studies; Museums of the Bethel Historical Society; Madrid Historical Society; Sandy River & Rangeley Lakes Railroad; Kingfield Historical Society; Arnold Expedition Historical Society; Old Canada Road Historical Society; Monson Historical Society; the Maine Encyclopedia; the Maine Appalachian Trail Club; the National Park Service; Appalachian Trail Conservancy; Claire Polfus; David Field; and Mary Reed of Fatbird Design.

Lastly, support for this project was provided by the following foundations: The Volgenau Foundation, as administered by the Appalachian Trail Conservancy; the Onion Foundation; the Quimby Family Foundation; Horizon Foundation; The Betterment Fund; and the Maine Community Foundation.

LAND ACKNOWLEDGMENT

The Appalachian Trail in Maine and the lands described in this document are located on lands in the traditional territory of Wabanaki Confederacy, including the Penobscot (Eastern Abenaki, Penawahpskewi, Penobscot). The Wabanaki Confederacy is a coalition of five Algonquian tribes of the eastern seaboard, who banded together in response to Iroquois aggression in the mid 17th century. The Abenaki, the Penobscot, the Maliseet, the Passamaquoddy, and the Micmac all retain their own political leadership. These five Maine tribes are Aroostook Band of Micmacs, the Houlton Band of Maliseet Indians, the Penobscot Indian Nation, the Passamaquoddy Tribe at Indian Township, and the Passamaquoddy at Sipayik.

A description of the landscape in the context of Wabanaki history can be found in **Appendix 1**.

EXECUTIVE SUMMARY

In 2004, the Maine Appalachian Trail Land Trust released Land Acquisition Priorities: Preliminary Analysis of the Trail, which provided conservation guidance for protection of the A.T. region in Maine. By way of an update, the organization has created the Maine Appalachian Trail Geospatial Information for Conservation (**MATGIC**) tool. This is a spatially explicit decision support tool that assembles a variety of publicly-available and previously published datasets that reflect the range of social and ecological values provided by and relevant to the Appalachian Trail Landscape in Maine. MATGIC tool may be used to determine priority areas in advance of any particular conservation project and to assess individual conservation projects that might emerge among partner organizations by their own design or opportunistically. This report has been written to accompany MATGIC tool as a guide to the its conception, design, and implementation.

The Appalachian Trail crosses through fourteen states from Georgia to Maine and is 2,193 miles in length. The idea for the A.T. was conceived by Benton MacKaye in 1921 but his idea was for a "realm"—a trail through a large, "super reservation and primeval recreation ground ... its ultimate purpose being to extend acquaintance with the scenery and serve as a guide to the understanding of nature." Work on the trail itself began in the 1920's and continued through the 1930's, culminating in the completion of the final section of the entire Appalachian Trail between Spaulding Mountain and Sugarloaf in Maine's High Peaks in 1937. When completed, the A.T. in Maine lay mostly on logging roads via the permission of forest products industry landowners. It wasn't until the passage of the National Trails System Act in 1968 that provision was made to relocate the A.T. from roads and other areas of activity by acquiring land for the United States of America under the jurisdiction of the National Park Service. In Maine over 180 miles of trail was relocated to this new area of federal ownership and by 2002 the Appalachian Trail itself was fully protected.

In the years since, non-profit conservation organizations have picked up where the NPS acquisition phase of the A.T. corridor left off, as NPS ownership of the Appalachian Trail was never intended to be a solution for the large-scale landscape MacKaye envisioned. Thousands of acres of land in the greater A.T. region of Maine have been protected—including well-known areas like the Mahoosuc Public Reserve Lands, the Bigelow Public Reserve Lands and the Nahmakanta Public Reserved Lands—but the A.T. corridor is, for the overwhelming majority of its 282 miles in Maine, a thin line within a vast landscape of large, forested parcels of land.

Ecologically, the Appalachian Trail region in Maine is known for passing through large contiguous forest blocks which score low in models of human impact and in land use conversion in nationally scaled models. These large blocks of forest are at a continental-scaled ecoregional boundary from oak, hickory, and pine dominated forests of southern New England and the mid-Atlantic States and Ohio Valley to the forests of the Acadian ecoregion: northern transitional hardwood forests, northern mixed wood forests of beech, yellow birch, sugar maple, spruce and fir to spruce, fir and aspen. This continental- and latitudinally- scaled gradient is mirrored and pronounced along the elevational gradient of the Appalachian Mountains that the A.T. in Maine traverses. The elevational gradient and landform and soil diversity has produced this ecological gradient that includes arctic alpine plant and animal communities along the summits and ridges traversed by the A.T. in Maine. The lowlands include northern transitional hardwoods in the south and west of the state and spruce fir bottomlands in northern and eastern portions of the state. The primary threat to the A.T. region in Maine is the degradation of these unique ecological values; they are imperiled by the effects of climate change, forest and habitat fragmentation, land use conversion and more.

The Maine Appalachian Trail Geospatial Information for Conservation (MATGIC) portal was developed to serve as a decision support tool for initiating the next generation of land conservation projects in the A.T. region of Maine. As such, the primary basis for GIS categorization lies in the National Park Service Appalachian National Scenic Trail Foundation Documents. These specify fundamental resources values in need of protection:

- Views Beyond the Corridor
- Natural Resource Quality and Ecological Connectivity
- American Heritage
- Visitor Experience
- Scenery Along the Treadway

For each of the fundamental resources values, the Maine Appalachian Trail Land Trust followed a conservation planning process to ensure that "methods should include qualitative or ideally quantitative estimation and communication of sources of error, bias, and uncertainty" (Davis et al 13). Key factors in the planning process included:

- Flexibility
- Accessibility
- Explicitness
- Feasibility
- Accounting and communication of uncertainty
- Enhanceable over time
- Driven by theory, data and knowledge
- Encompassing of ecological and socioeconomic considerations
- Evaluated by effective performance monitoring

GIS datasets selected include well established topographic attributes (i.e., 2,700-foot contour for high-elevation lands), social and cultural features such as sites of historic interest or land tenure status, species and other natural resource compilations (e.g. Maine Natural Areas Program), or spatially explicit models developed by other conservation entities and typically in wide use (e.g. The Nature Conservancy's Ecological and Terrestrial Resilience data). The Maine A.T. Land Trust Conservation Committee and the two principal authors have attempted to present a range of objective measures and peer-reviewed objective spatial models developed by a range of researchers, institutions, and organizations whose aim is to provide access to spatial data to assist decision making.

We recognize that the simple assembly of any particular dataset is itself a process of prioritization based on the datasets selected versus those not included in the analyses. Indeed, this entire exercise has been undertaken to help the Maine A.T. Land Trust and conservation partners design conservation projects that enhance and maintain the multiple recreational, social, and ecological values of the Appalachian Trail corridor. The Conservation Committee and authors/developers of MATGIC spatial tool have, however, chosen not to develop any type of ranking or weighting of the various datasets, nor did we develop any synthetic variables based on co-occurrence of two or more attributes. We present the data in the decision support tool in a way that permits synthesis and weighting by the user of the decision tool in order to maintain transparency and avoid introduction of any more subjectivity or layers of discerning what a particular measure actually means.

The five fundamental resource values (Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity, American Heritage, Visitor Experience, Scenery Along the Treadway) of the Maine A.T. region include data in the form of counts and densities per unit area or scores that may be compiled for a given unit of area or specific point locations on the ground. We analyzed these various datasets in terms of counts, densities, and scores within the polygon of each of the 3,391 tax parcels within one mile of the A.T. in Maine, so that each parcel has a value for each dataset:

Parcel ID	Total Acres	Undeveloped Area Acres	Rank	Undeveloped Area %	Rank
3290	3,364	3,000	103 of 3,391	89.17%	284 of 3,391

We did not develop co-occurrence or other models based on any type of synthesis as our intention was to keep the original attribute of each dataset separate and in its original units. We did, however, decide to focus our comparative spatial analyses on rescaled subsets of the data distributions.

Our objective within this report is to identify regions along the trail where there might be overlapping clusters of values. An overriding principle for all our work on conservation of the Appalachian Trail in Maine (and beyond) is to maintain connectivity and contiguity of the many patterns and processes that help make the trail a functional corridor from social, recreational and ecological perspectives. We identified six Priority Focus areas distributed along the extent of the Appalachian Trail in Maine that each possess values at the upper end of the rescaled distribution for several datasets simultaneously. These six Priority Focus Areas emerged upon visual inspection of the spatial data first and through a more objective, replicable, and quantitative method taking advantage of a cluster analysis tool within ARCGIS using ESRI's Hot Spot Analysis Tool. The tool calculates the Getis-Ord Gi* statistic (a spatial autocorrelation statistic) for each feature in a dataset. The Hot Spot Analysis Tool was in general agreement with our a priori visual inspection that revealed novel spatial clustering of values (both raw scores of acres in a parcel and percentage of area of a parcel) among the datasets representing Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity and American Heritage .

These six Priority Focus Areas for conservation of the Appalachian Trail region in Maine MATGIC are:

- **The Hundred Mile Wilderness**
- **Monson Area**
- **Caratunk-Bald Mountain Pond**
- **Maine's High Peaks**
- **Bemis-Old Blue Mountain**
- **Mahoosucs**

The purpose of these priority focus areas is to assist in conservation efforts along the Appalachian Trail in Maine by broadly indicating areas which are most in need of protection in order to retain the values characteristic of the A.T. region in Maine. The goal of the inclusion of this section is to provide partners, agencies, foundations and conservation professionals with enough information to initiate conservation projects in each Priority Focus Area. As such, individual parcels are not specifically listed or highlighted in order to maintain discretion regarding ongoing conservation projects in any of the Priority Focus Areas. The Maine Appalachian Trail Land Trust has developed a formatted "scorecard" document which can provide data and analysis, upon request, for any of the 3,391 tax parcels within one mile of the Appalachian Trail in Maine.

INTRODUCTION

Moxie Bald Mountain

The next decade of Appalachian Trail conservation in Maine will require thoughtful prioritization of limited resources in order to conserve this threatened landscape and its many values. While it is helpful for any organization to have priorities to look to, it is even more important to have a tool or system that underpins them. This report is designed to demonstrate the decision support tool developed by the Maine Appalachian Trail Land Trust for the A.T. landscape: the Maine Appalachian Trail Geospatial Information for Conservation (MATGIC) tool. Based on a parcel-by-parcel analysis of 3,391 parcels in this region, MATGIC has been used to identify broad clusters of values and priority focus areas to serve as general recommendations for conservation practitioners. Partner organizations may look to this report to understand and incorporate values of the Appalachian Trail related to outdoor recreation, access, biodiversity, and community well-being into their conservation efforts. This report and the supporting data is also meant to complement, rather than replace, the conservation models, plans and priorities of other organizations. Here are the major findings and recommendations of the Maine Appalachian Trail Land Trust for 2020 and beyond in the context of the Appalachian Trail's rich history and the many values it conserves and provides.

AN APPALACHIAN TRAIL LANDSCAPE

As of this date, the Appalachian Trail (officially, the "Appalachian National Scenic Trail", and unofficially the "A.T.") is 2,193 miles in length and traverses fourteen states from Georgia to Maine. The A.T. has gained much renown through the practice of "thru-hiking" its entire length in under a year, a journey which was undertaken by just a handful of individuals until the early 1980's. By 2019, the Appalachian Trail Conservancy's hiker registration system counted over 5,000 hikers attempting a thru-hike; of these, approximately one-quarter will complete the journey. However, it is estimated that over 3 million people hike on some part of the A.T. every year (Bruffey). It is perhaps the most famous hiking trail in the world and the experience of walking on the A.T. is a recognized part of American culture. Now in its ninth decade of existence, the experience has not substantially changed over the years. Despite changes to the landscape, the natural scenery and sense of solitude that defines the A.T. has remained mostly intact.

The Appalachian Trail today is generally recognized as a hiking path through a mountainous landscape, but the man who promulgated the idea of it was actually proposing something much greater. In 1921, a Harvard-educated planner involved in the conservation movement named Benton MacKaye wrote an article called "The Appalachian Trail, An Experiment in Regional Planning." In it, MacKaye proposed that Americans in the Eastern United States were in need of "extensive national playgrounds" that mirrored those in the West: Yellowstone, Yosemite, the great National Forests (MacKaye 326). The natural location of this area—within a day's drive of half the population of the country—was the Appalachian Mountains. "The Appalachian Trail is conceived as the backbone of a super reservation and primeval recreation ground ... its ultimate purpose being to extend acquaintance with the scenery and serve as a guide to the understanding of nature." In other words, as MacKaye told the Appalachian Trail Conference: "a realm and not a trail marks the full aim of our efforts" (Anderson 226).

The Appalachian Trail was originally created by the Appalachian Trail Conference (ATC) in the 1920's and 1930's and, until 1933, Mount Washington in New Hampshire was envisioned as the end of the trail (Field 8). The Maine Appalachian Trail Club (MATC) was formed in 1935 to complete the section through Maine and in 1937, the section between Spaulding Mountain and Sugarloaf Mountain—the "golden spike" which linked the entire Appalachian Trail for the first time—was completed. The trail was created on private land with the cooperation of landowners who gave permission for the route to cross their property.

In 1968 the National Trails System Act was passed, marking the culmination of years of efforts by the Appalachian Trail Conference (now Conservancy) to protect the footway from incompatible development. Provision was made to relocate the A.T. from roads and other areas of activity by acquiring land—via purchase of fee or easement, or exchange or condemnation—for the United States of America under the administration of the National Park Service. Further legislation in 1978 designated $90 million in funding to pay for these acquisitions. In Maine, 170 miles of the Appalachian Trail—well over half the length of the A.T. in the state—was relocated by the MATC off roads and onto terrain more suitable for the hiking experience (Field 109). The working forests of Maine afforded the wild aspect that continues to be remarked on today by people hiking this, the most northerly stretch of the A.T.: the 282 miles from the New Hampshire border to Katahdin. Though timber companies were often obliging of a trail through their forests, the temporary trail easements and road walks provided neither permanent protection nor a natural experience. Furthermore, land could be sold—and was—and trail agreements could and did expire, leaving a gap in the A.T. that only National Park Service ownership could remedy. By 2002, the A.T.—the long ribbon connecting the great Appalachian "super reservation"—was 99.8% owned in fee by the Department of Interior and the Department of Agriculture. The risk of sections of the trail being developed, closed or severed from the whole was mostly removed. In theory, humans could now walk from beginning to end, until the end of time.

Fig. 01
The Appalachian Trail and the Eastern Seaboard.

Fig. 02
The Appalachian Trail (red) passing through individual tax parcels, each owned by the United States via the National Park Service.

CONSERVATION EFFORTS

In the years since, non-profit conservation organizations have picked up where the NPS acquisition phase of the A.T. corridor left off. NGOs started protecting the A.T. landscape because the scale of land acquisition deployed by the NPS to ensure protection via ownership of the Appalachian Trail was never intended to be a solution for the large-scale landscape MacKaye envisioned. “The backbone” itself—the Appalachian Trail—needed to be protected before any kind of landscape could be patched together. National Park Service A.T. corridor acquisition practices are not designed to capture large landscapes beyond the trail, nor would this be the best method to conserve areas that include people, rural economies, and towns. Moreover, The NPS in general and the Appalachian National Scenic Trail NPS unit (APPA) is facing a maintenance backlog on existing holdings, and the likelihood of acquisitions by NPS of land on the scale envisioned by MacKaye is extremely unlikely. Legislative efforts at the federal level have recently addressed NPS’ maintenance backlog and permanently secured funding through the Land and Water Conservation Fund (LWCF), which is widely recognized as America’s most valuable and successful conservation tool since it was created in 1964 (The Wilderness Society).

LWCF and other programs have been leveraged by NGOs to protect lands within the greater A.T. landscape in Maine since the 1990’s, initially through the guidance of collaboratives like the Northern Forest Alliance. The Appalachian Trail winds through the heart of many of Maine’s most beloved landscapes: Baxter State Park, Grafton Notch State Park, Bigelow Public Reserved Lands, Mount Abraham Public Reserved Lands, Nahmakanta Public Reserved Lands, the Debsconeag Lakes Wilderness Area. Many of these conservation projects were completed with the assistance of NGOs like The Wilderness Society, The Nature Conservancy, The Trust for Public Land and the Maine Appalachian Trail Land Trust. Some 2.2 million acres of Maine’s conserved lands are under fee ownership or conservation easement protection by private NGOs—land trusts. Maine has a relatively low percentage of public lands (6.5% of the land area of the state, ranking 37th nationally and last in New England) but has eighty land trusts. Unlike other sections of the Appalachian Trail, Maine’s A.T. lacks National Parks and National Forests that surround and complement the A.T. corridor, both on the ground for contiguity and protection, and on paper in terms of management by the federal government. Historically, the working forests which comprise the A.T. landscape in Maine have been open to public access, allowing the state to rely on these private lands to provide what is essentially a quasi-public benefit to its citizens, and all without having the accompanying acquisition and maintenance expense fall on the state government and taxpayers. There has also been resistance to federal ownership of land in Maine. As with many natural resource industries, the forest products industry in Maine generally advocates for less regulation, and land ownership/oversight by the National Park Service or any other federal agency is usually perceived as limiting their activities. For the public, especially in rural areas near the Appalachian Trail, federal ownership is perceived as limiting access for hunting, trapping, snowmobile and ATV use. Despite this, land in Maine continues to be acquired by the National Park Service (Katahdin Woods & Waters National Monument), the State of Maine (Gulf Hagas Whitecap) and by many conservation organizations working up and down the A.T. APPA continues to acquire land for the A.T. corridor, as evidenced by the Bald Mountain Pond project (2019).

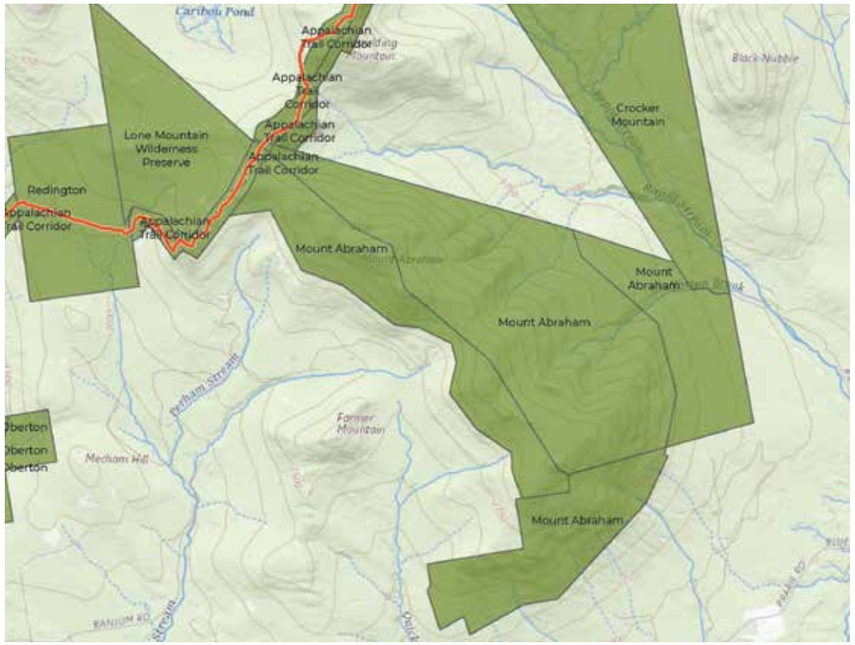


Fig. 03 (left)
The Appalachian Trail with adjacent conservation lands over similar landscapes.

Fig. 04 (below)
The Appalachian Trail in Maine (left), New Hampshire (center) and North Carolina (right) showing the absence of conservation lands around Maine’s A.T.

Today, the A.T. corridor appears as a long, thin line within this vast landscape of large, forested parcels of land. Significant work has been done by NGOs, APPA and the State of Maine towards protecting the A.T. and the greater landscape, but there are large areas that are in need of protection. In order to facilitate and direct future efforts to protect the Appalachian Trail, the Maine Appalachian Trail Land Trust decided to create the Maine A.T. 2020 MATGIC tool as a follow up to Land Acquisition Priorities.

ECOLOGICAL CONTEXT FOR CONSERVATION APPROACHES

Maine has the last remaining large contiguous forest east of the Rocky Mountains. Measures of intactness and ecological integrity and ecological connectivity such as the Human Footprint by the Wildlife Conservation Society Canada, Nature Conservancy models of ecological resilience, and a series of papers by the Wilderness Society on building a national network of conservation lands all cite the national and international conservation value of this forest, which is relatively free of the impacts of permanent land use conversion by human beings and is one of the most valuable tools for climate change mitigation (Griscom et al.). The Appalachian Trail in Maine runs through this landscape of large-scale private ownership. For the last century and a half the large-scale owners harvested the forests for wood products and built roads to transport these wood products. Nonetheless, the forest remains and functions as a natural forest landscape possessing high ecological diversity due to this natural condition, and due to it being within a zone of latitudinal ecological transition and elevational ecological transition from northern hardwood to boreal forest.

The Acadian Forest transition from lower elevation northern hardwood and mixed-wood forest to boreal coniferous forests at higher elevation along the A.T in Maine mirrors a transition that occurs at a larger scale across latitude. Approximately 1,000 feet in elevation gain yields a similar change in physical conditions and biological composition as 100 miles of northward latitude. This range of topographic and landform conditions translates into forest communities ranging from northern hardwood, to northern mixed wood, boreal ecosystems composed of spruce, fir, birch and aspen, subalpine and alpine zones with arctic plant species. The trail landscape in Maine specifically includes large blocks of contiguous, intact forest, characteristic of Maine at the continental scale. High diversity due to the mountain conditions and an intact and ecologically connected landscape translate into an area important for biological diversity. This is the case in the present and will be important in the face of continued eastern forest fragmentation and land use conversion. The A.T. landscape in Maine is simultaneously a large-scale potential ecological refuge under a changing climate where adaptation is likely to occur in place, and a large-scale corridor for adaptive movements of animal and plant species in response to changing climate.

Climate and Wildlife Corridors

Halpin (1997) suggests that establishment of continental-scale “connective corridor systems” as a climate adaptation strategy in North America would have to be centered along the three major mountain ranges, including the Appalachians. He cites the concentration of native vegetation and public lands along these mountain ranges as our best opportunity to capitalize on existing ecological values and conservation areas already in place. Numerous authors have also noted the potential adaptation value and resilience of complex mountain landforms and terrain (Hunter et al. 1988, Anderson and Ferree

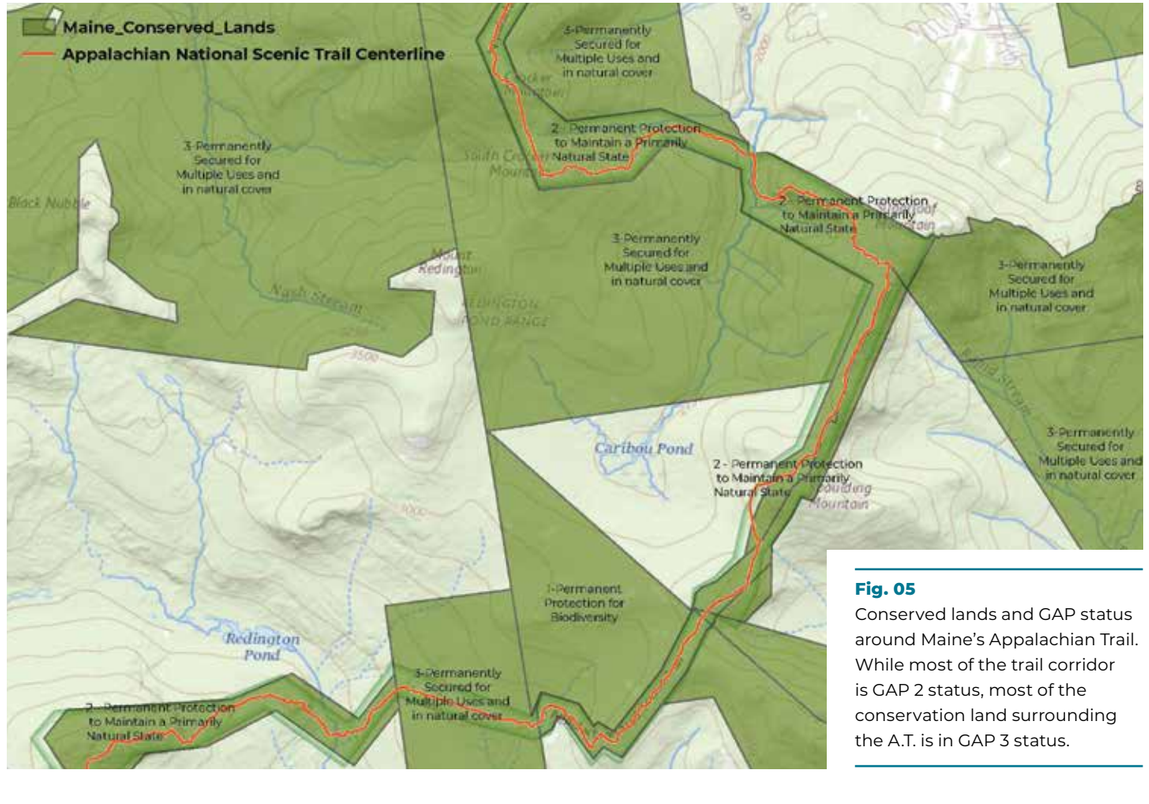


Fig. 05
Conserved lands and GAP status around Maine’s Appalachian Trail. While most of the trail corridor is GAP 2 status, most of the conservation land surrounding the A.T. is in GAP 3 status.

2010, Beier and Brost 2010). More recently, Carroll et al. (2018) modeled future adaptive species movements from existing to predicted climate analogs for North America and identified a potential corridor along the extent of the Appalachian Mountains. Our work is intended to identify priority areas for expansion and better management of this potential “connective corridor system.” If the A.T. is to serve this ecological function and remain viable as a trail providing its ecological and recreational functions within a contiguous landscape, multiple strategies must be employed along the Trail.

GAP Status

McKinley et al, (2019) analyzed the ecological integrity and protection status for the entire Appalachian Trail across all fourteen states. In Maine, 39% of the land in conservation is in GAP 1 and 2 status,[1] most of which is achieved via Baxter State Park, the White Mountain National Forest and state ecological reserves. For definitions of GAP protective status see footnote and Table 4 in McKinley et al, 2019. GAP 1 is conserved for biodiversity and other values with no management interventions permitted, while GAP 2 is for biodiversity with management permitted for this purpose. GAP 3 is for the conservation of multiple values including resource production and harvest, biodiversity, and recreation. While the state of Maine writ large has substantial GAP 3 forests under conservation easement, little of that GAP 3 is adjacent to the A.T. Much of the land along the A.T. corridor in Maine is still in GAP 4, privately owned and managed for timber or as an asset with development value. Elevation of GAP 4 to at least GAP 3 status using working forest conservation easements precludes permanent land conversion while maintaining future potential timber revenues and maintains the possibility of enhanced conservation at a future date. The scenic value, recreational, and ecological value of these lands is conserved using working forest easements and therefore GAP 3 levels of protection are a worthwhile outcome.

1. For information about GAP status codes, see https://www.sciencebase.gov/catalog/item/56bba50ce4b08d617f657956

METHODOLOGY FOR CREATION OF MAINE APPALACHIAN TRAIL GEOSPATIAL INFORMATION FOR CONSERVATION (MATGIC) TOOL

The Appalachian Trail Landscape Partnership (ATLP) was formed in 2015 by the NPS and ATC "to conserve and connect the wild, scenic and cultural wonders of the Appalachian Trail and surrounding landscape." As a confederation of several organizations from fourteen states, the ATLP relies on the cooperative efforts of many partners to meet its conservation goals. As one of the most active members, the Maine Appalachian Trail Land Trust has been looked to for nearly two decades to indicate and promote areas for land conservation in Maine by combining science with local knowledge and experience. In this role, the organization consulted with both NPS and the ATC on the creation of MATGIC with the understanding that the project could be a pilot for other states through which the A.T. passes. This meant that the parameters for the data used to analyze Maine's A.T. region had to draw directly from APPA guidance on priority categories for protection of the entire A.T. The project is firmly rooted in this federal guidance which allows for grounding in the NPS and a continual reference to be connected to when selecting data and categories.

In order to create a framework for analyzing and prioritizing land for conservation in the A.T. region in Maine, several fundamental questions needed to be addressed:

- **What is the boundary of the A.T. region in Maine?**
- **What are the important qualities of the A.T. region in Maine?**
- **How do we measure these qualities?**

Based on the answers to these questions, what are the priority lands for protection of the A.T. region in Maine?

What is the boundary of the A.T. region in Maine?

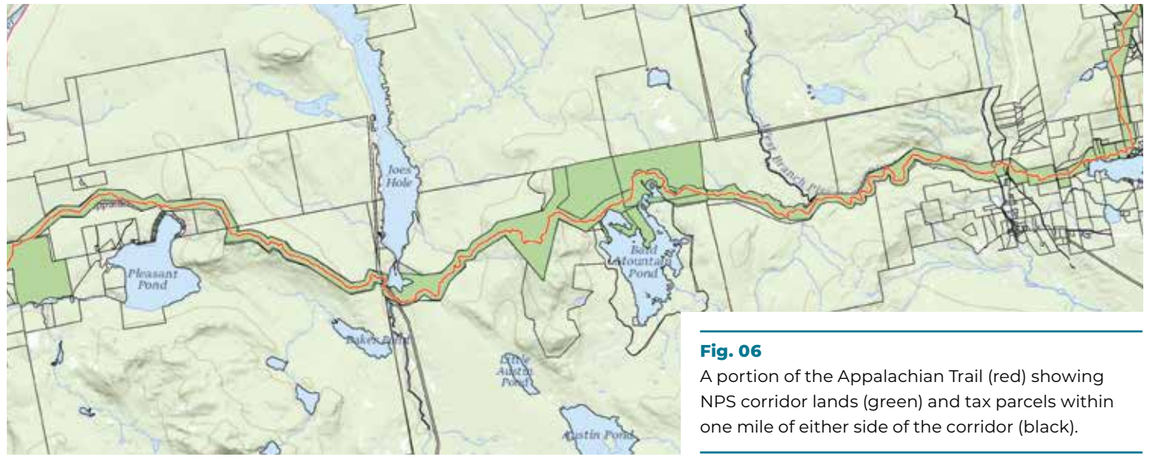


Fig. 06
A portion of the Appalachian Trail (red) showing NPS corridor lands (green) and tax parcels within one mile of either side of the corridor (black).

The primary boundary used in MATGIC is defined by the full extent of any tax parcel that has some portion of its area within one mile of the NPS corridor on either side of the A.T. over the 282 miles of its length in Maine. Potere et al. (2007) showed that the level of protection generally declines with distance from the A.T. (out to 16 km). Our one-mile buffer represents the distance beyond which development likely would not produce direct edge effects on trail corridor lands, though this buffer size may be insufficient for achieving all conservation objectives. In terms of ecology, abiotic edge effects have been demonstrated to extend tens to hundreds of meters into the forest (reviewed by Saunders et al. 1991), and biotic edge effects have been demonstrated to occur hundreds of meters into forest interior (Wilcove 1986, Andren and Angelstam 1988, Patton 1994, Batary and Baldi 2004, Haddad 2015, Haddad et al. 2017, Laurance et al. 2017). We selected the 1-mile buffer to exceed the maximum edge effect distance demonstrated in most of these studies (Beier 2018). Beier recently published a rule of thumb for minimum corridor width based on the need, he argued, to provide overlapping home ranges for long-term transitory residents. His rule of thumb posits that a two-kilometer total width will accommodate 96% of corridor dwelling mammal species (Beier 2018). We rasterized this buffered sampling area using a 270-m resolution grid for the entire extent of the AT across all fourteen states, which resulted in 562,227 hectares of total area (77,123 grid locations) along the buffered A.T.

This "edge effect" phenomenon extends to other features due to the narrow nature of the NPS corridor. Side trails, viewshed areas, high-resilience zones and wildlife habitat are all anchored by the A.T. but extend into unprotected areas. Due to the narrow width of the A.T. corridor, it is also a practical matter to analyze lands closest to and adjacent to the trail and work outwards, rather than within more distant areas of the landscape that have only a tenuous connection to the Appalachian Trail.

Fig. 07
Edge effect: A forest block is anchored by the Appalachian Trail but most of it lies beyond the protected NPS corridor.

This designation of the one-mile area on either side of the NPS A.T. corridor required the collection and in some cases digitization of 3,391 GIS tax parcels, which number represents the entirety of the lands within one mile of Maine's A.T. corridor.

The secondary boundary used in MATGIC is known as the HUC 10.[2] The United States Geological Service divides and sub-divides all watersheds into successively smaller hydrologic units which are classified into four levels: regions, subregions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to twelve digits based on the four levels of classification in the hydrologic unit system (USGS). The HUC 10 boundary around the Appalachian Trail in Maine was created by combining the watershed boundaries through which the A.T. travels in Maine. This secondary boundary creates a much larger unit around the Appalachian Trail which allows for orientation and data analysis on features that extend beyond the 1-mile buffer but still influence the A.T.: rivers, lakes, highways, towns, conserved lands, large contiguous forest blocks, mountain to valley gradients, and more.

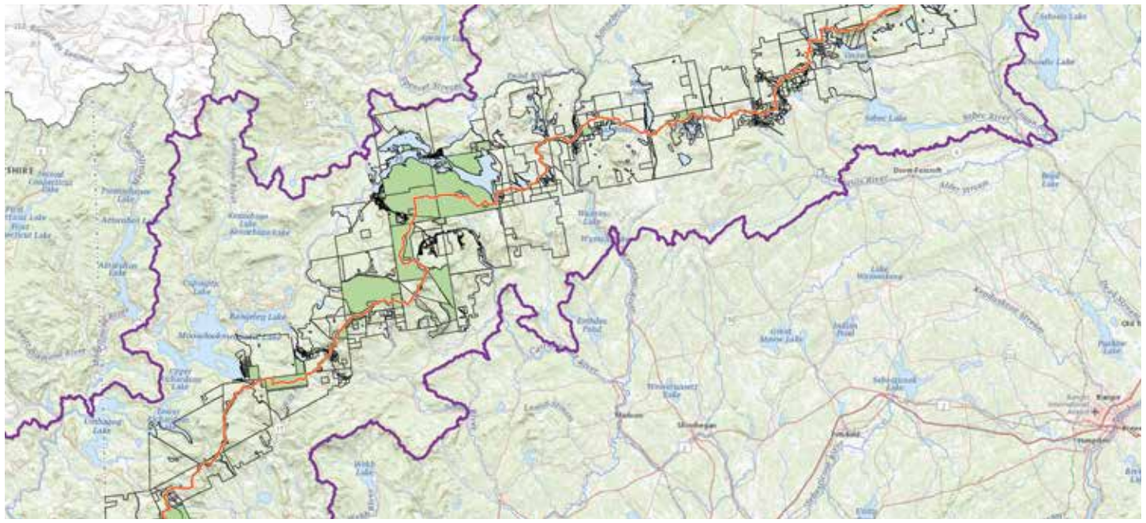


Fig. 08
The secondary boundary of the Appalachian Trail in Maine as defined by the HUC 10 watershed units.

2. https://www.usgs.gov/media/images/watershed-boundary-dataset-structure-visualization

What are the important qualities of the A.T. region in Maine?

The Maine Appalachian Trail Land Trust selected five categories of fundamental resources, values and interpretive themes that make up characteristics of the Appalachian Trail, based on consultation with APPA and ATC staff and analysis of APPA and NPS publications. The most important of these, the Appalachian National Scenic Trail Foundation Document, very clearly states the Appalachian Trail's "purpose, significance, fundamental resources and values, and interpretive themes" (NPS 2). "A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park" (NPS 2). Within this document, APPA lists the Appalachian Trail's **Fundamental Resources and Values:**

- **The Trail Itself**
- **The Empowered Volunteer**
- **Enduring Collaborative Spirit**
- **Experience**
- **Education**
- **Scenery Along the Treadway**
- **Views Beyond the Corridor**
- **Natural Resource Quality and Ecological Connectivity**
- **A Journey Through American Heritage**

Of these listed values, the following fundamental resources or values are quantifiable and connected to the Appalachian Trail region, as opposed to those which are important to the Appalachian Trail but are abstract and unmeasurable for the purposes of this study. ("The Empowered Volunteer"). Brief descriptions have been included from the Foundation Document:

A) Views Beyond the Corridor. *Traversing the height of land, Trail visitors are afforded sweeping views of vast landscapes extending beyond the Trail corridor and are exposed to the splendid range of landforms and history along the Appalachian Mountains. Enjoyment of far-reaching views and deep starry nights are dependent on clean air and clear skies.*

B) Natural Resource Quality and Ecological Connectivity. *The Trail corridor passes through eight separate ecoregions, linking extensive forest landscapes and an extraordinary variety of aquatic and terrestrial habitats over a distance of more than 2,100 miles. The Trail unifes understanding, management, and protection of representative natural resources at a scale that no other single entity can provide, while offering visitors the chance to see, hear, and feel nature all around them.*

C) A Journey Through American Heritage. *The lands along the Appalachian National Scenic Trail are rich in history and include the stories of people—American Indians, pioneers, settlers, farmers, as well as early trailblazers and trail advocates such as Grandma Gatewood—and places, wars, industry, and agriculture. The Trail provides a direct physical link between nationally significant areas such as Great Smoky Mountains National Park, Harpers Ferry National Historical Park, and Green Mountain National Forest.*

D) Visitor Experience. *Within reach of millions, the Trail attracts visitors each year for hikes as short as an afternoon's walk and as long as an extended thru-hike from Georgia to Maine. The Trail offers visitors the opportunity to connect with nature and others, relax, and reflect. The Trail also allows people to challenge themselves, physically and mentally, through self-reliant backcountry recreation and long-distance hiking that are among the best in the world (NPS 12).*

E) Scenery Along the Treadway. *The Trail offers opportunities to view stunning scenery in proximity to the most populated areas of the United States. Within the boundaries of the protected trail corridor, visitors may see native wildlife and flowers, rustic cultural features, seasonal variations, and dynamic weather patterns in environments such as southern balds, pastoral lands, diverse forests, wetlands, rugged outcrops, and mountainous alpine areas.*

These Fundamental Resources or Values, as outlined by APPA and the NPS, are the important qualities of the Appalachian Trail that MATGIC is designed to measure on the 3,391 parcels within one mile of the NPS A.T. corridor in Maine.

How do we measure this importance?

For the California Legacy Project (CLP), Davis et al described a conservation priorities framework that "is intended to serve the dual purpose of helping decision makers to evaluate current opportunities (e.g., current proposal applications for State conservation funds) and to help planners develop longer term conservation strategies that highlight general areas, species and communities for more focused analysis and collaborative planning" (Davis et al 2). Using similar principles, the Maine Appalachian Trail Land Trust created a framework on which to base MATGIC and accompanying priorities analysis:

- **Flexibility.** MATGIC is designed to be adaptable to multiple factors: it should be able to incorporate additional data, landscape boundaries, users, partners, and more, rather than existing as a static snapshot in time. Part of this flexibility is the ability for partner groups to scale an analysis to their landscape of interest.
- **Accessibility.** With some guidance, qualities, methods and results should be comprehensible to both experts and non-expert stakeholders.
- **Explicitness.** Terms must be defined unambiguously, data inputs and outputs must be obvious and well documented, and the methods must be clear, accountable, and repeatable by others.
- **Feasibility.** The prioritization method must be practicable using existing knowledge, data and information.
- **Accounting and communication of uncertainty.** Methods should include qualitative or ideally quantitative estimation and communication of sources of error, bias, and uncertainty. It is noted when data is either imperfect or subject to caveats.
- **Enhanceable over time.** MATGIC must be robust to changes in data and improvements in models and analytical approaches.
- **Driven by theory, data and knowledge.** MATGIC should strengthen and support analysis of specialists and local experts by synthesizing appropriate data and information over entire planning regions.
- **Encompassing of ecological and socioeconomic considerations.** It is important to recognize that there are social, economic, and ecological tradeoffs in pursuing any particular resource conservation strategy. MATGIC should aim to the maximum extent possible to represent and quantify those tradeoffs.
- **Evaluated by effective performance monitoring.** While the CLP method "should identify specific measures of success and performance targets that are readily observable and amenable to pre- and post-project monitoring", MATGIC is designed to be a decision support tool for a landscape, rather than a for a state government agency. This accountability will ultimately lie beyond the scope of this project.

This framework served as a reference when the Maine Appalachian Trail Land Trust engaged in the process of selecting GIS data to quantify Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity, American Heritage, Visitor Experience, and Scenery Along the Treadway. This selection process involved a committee analysis of the Fundamental Resources and Values to translate qualitative references like "splendid range of landforms" or "representative natural resources" into quantifiable units for which there was existing Geographic Information Systems (GIS) data. In keeping with the framework from Davis et al listed above, the authors of this study and the committee acknowledge that our "methods should include qualitative or ideally quantitative estimation and communication of sources of error, bias, and uncertainty." Selecting data, however thoroughly researched and scientifically sound that data might be, is still a process that can lead to such error, bias and uncertainty.

The process first involved an inventory of the meaning and characteristics of the Fundamental Resources/ Values, followed by collection of GIS datasets that best measure these qualities. The datasets selected are either geographically-based (i.e., 2,700-foot elevation line, 500-foot buffer around waterbodies, location of historical sites) or have been created by other conservation entities and are widely used (The Wildlife Conservation Society's Human Influence Index, The Nature Conservancy's Ecological and Terrestrial Resilience data, Maine Natural Areas Program Rare Natural Communities and Plants). By using these two types of data, the committee and authors hope to mitigate the "error, bias and uncertainty" that comes with selecting some datasets over others. In order to further limit error, bias and uncertainty, **no scoring or weighting system or other derived model value was created for MATGIC.** The datasets that have been chosen contain values that provide sufficient information which, combined with GIS spatial analytic tools, allows for ranking and prioritization.

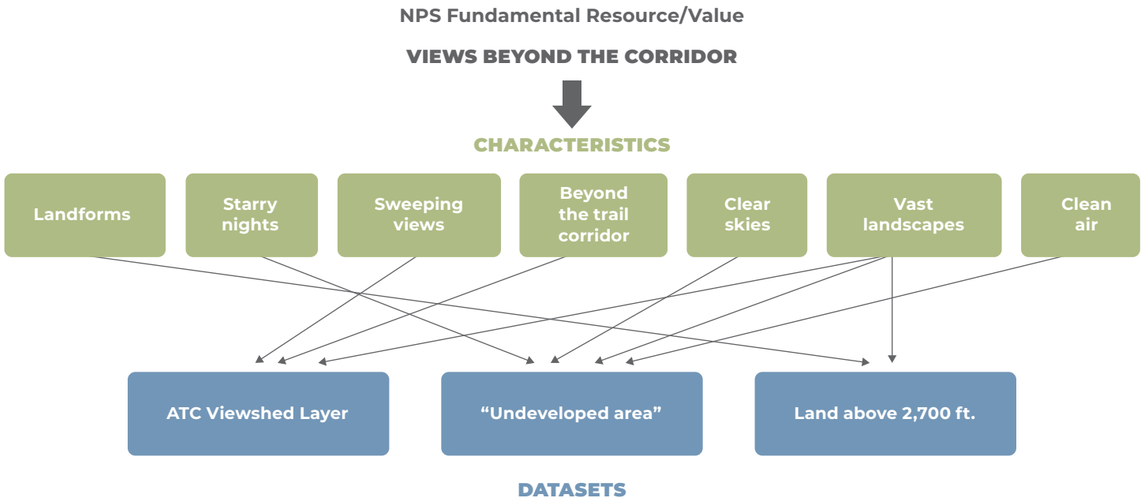
Datasets for Measuring Fundamental Resources

(A) Views Beyond the Corridor

Traversing the height of land, Trail visitors are afforded sweeping views of vast landscapes extending beyond the Trail corridor and are exposed to the splendid range of landforms and history along the Appalachian Mountains. Enjoyment of far-reaching views and deep starry nights are dependent on clean air and clear skies. (NPS 7)

The datasets selected for the Views Beyond the Corridor capture qualitative information linked to the narrative descriptions of the scenic vistas provided by the Appalachian Trail. Keywords highlight some of the qualities in Views Beyond the Corridor: sweeping views, vast landscapes, landforms, far-reaching views, clear skies. Sweeping views and vast landscapes denote elevation and varied topography, notably from a high point like those along the A.T. Clear skies and far-reaching views indicate a lack of obstruction from a built environment and a lack of light pollution from sources related to development. When viewing a landscape from the A.T. the qualities that comprise scenic beauty are large in scale—unbroken forest, rocky alpine areas, vast valleys, etc.

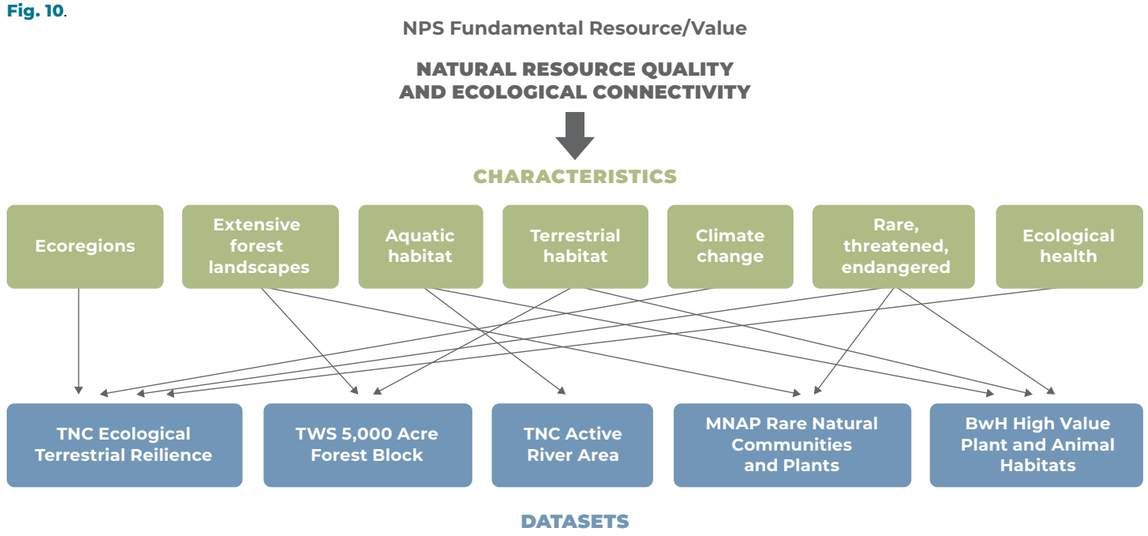
Fig. 09



Datasets

1. "Undeveloped area" (V01). The Human Influence Index (HII) of the Northern Appalachian/Acadian ecoregion is a measure of direct human influence on terrestrial ecosystems at a resolution of 90 m using best available datasets on human settlement (population density, dwelling density, urban areas), access (roads, rail lines), landscape transformation (landuse/landcover, dams, mines, watersheds), and electrical power infrastructure (utility corridors). The lowest three deciles of the Human Influence Index (HII) are the "undeveloped area." The dataset range is 1–47. Lowest three deciles (least developed): <=8.
2. Appalachian Trail Conservancy Viewshed Layer (V02). This was developed by using viewshed/viewpoint calculators based on topography, elevation and shade layers in a Digital Elevation Model (DEM). Land that can be seen from any point on the Appalachian Trail is depicted.
3. 2,700-foot elevation area (V03). LUPC P-MA (Mountain Area Protection Subdistrict) is defined in part by need "to preserve mountain areas for their scenic values and recreational opportunities." The 2,700-foot elevation area is commonly used to define "high elevation areas" in the northeast, which is only 0.7% of Maine's land area (Publicover et al 1).

Fig. 10.



(B) Natural Resource Quality and Ecological Connectivity

The Trail corridor passes through eight separate ecoregions, linking extensive forest landscapes and an extraordinary variety of aquatic and terrestrial habitats over a distance of more than 2,100 miles. The Trail unifies understanding, management, and protection of representative natural resources at a scale that no other single entity can provide, while offering visitors the chance to see, hear, and feel nature all around them. (NPS 9)

The datasets that best capture the natural qualities of the Appalachian Trail landscape in Maine have been created by conservation organizations or Maine state agencies and are widely used. They help to identify the most resilient lands and areas where there is great potential for carbon storage, and are representative indicators of natural ecological function and intactness.

Datasets

1. TNC Ecological Terrestrial Resilience (N01). A site's Resilience Score estimates its capacity to maintain species diversity and ecological function as the climate changes. The Maine A.T. region is entirely in the component data and TNC paired data on local connectedness so Terrestrial Resilient Sites/Score is used and scaled to show only "Above Average" or "Far Above Average" lands within the HUC 10 area.
2. The Wilderness Society 5,000 Acre Forest Blocks (N02). This data, derived from the Human Influence Index data, shows contiguous ecological cores 5,000 acres and greater scoring 0-10 in that model. The undeveloped layer used in "Views Beyond the Corridor" is derived from the same parent dataset but includes the least impacted three deciles of any size. Typically, these lands are in blocks much bigger than the "5,000 acre block" dataset. Although they have greater human impact, they are still typically forested and can serve as a guide to large matrix forest blocks important to ecological connectivity and other large scale processes in addition to being an indicator of undeveloped viewsheds.
3. TNC Active River Area (N03). A dataset of all aquatic resources, with a 500-foot buffer according to a conceptual framework created by The Nature Conservancy.
4. Maine Natural Areas Program Rare Natural Communities and Plants (N04). Captures ecological communities highlighted by MNAP.
5. Beginning with Habitat High Value Plant and Animal Habitats (N05). Contains state-listed plant and animal species components of this dataset.

(C) American Heritage

The lands along the Appalachian National Scenic Trail are rich in history and include the stories of people—American Indians, pioneers, settlers, farmers, as well as early trailblazers and trail advocates such as Grandma Gatewood—and places, wars, industry, and agriculture. The Trail provides a direct physical link between nationally significant areas such as Great Smoky Mountains National Park, Harpers Ferry National Historical Park, and Green Mountain National Forest. (NPS 7)

The importance of American Heritage sites to the Appalachian Trail is widely recognized and the A.T. itself is now eligible to be listed on the National Register of Historic Places. The 382 sites in MATGIC are indicated by location-based vector data, rather than raster data. Despite this number, American Heritage sites in the Appalachian Trail region of Maine are widely dispersed and not unified by a common theme (e.g. Civil War battlefield sites near the A.T. in Virginia). Consequently, Heritage sites were not a factor in defining priority areas. The only section of Maine's A.T. with a concentration of heritage sites is in the Carry Ponds area due to the presence of the Arnold Trail To Quebec Historic District.

Datasets

1. Maine Department of Transportation Historic Places. Sites that were eligible for the NRHP but were not listed.
2. Data from Historical Societies. Several historical societies in towns along the A.T. contributed locally-known historical and cultural sites in the Maine A.T. region.
3. Maine Historic Preservation Commission Sites of Pre/historic Significance. These are Native American portage sites where artifacts are known or assumed to be.
4. National Register of Historic Places. Several sites in the A.T. region of Maine have been placed in the National Register.

(D) Visitor Experience

The Appalachian National Scenic Trail offers the opportunity to experience simplicity, self-reliance, adventure, discovery, and connection with nature as a means of slowing down in a fast-paced society. Through the intimate setting of a fern-filled woodland or the sweeping expanse of an alpine ridge, a personal experience on the Appalachian National Scenic Trail has the power to transform and uplift the human spirit, whether traveling solo or as part of a group of fellow hikers. (NPS 9)

Visitor Experience comprises the infrastructure of the trail which people travel on, live in, sleep in, hike over, etc., rather than a quantitative translation of qualities like "discovery" or "self-reliance." The data for Visitor Experience is part of the map of A.T. resources in Maine; including these items allows for assessment and decision support by looking at ancillary factors for conserving lands. Is there an A.T. side trail on a property? Is there an adjacent Scenic Byway? Is the parcel accessible from a trail access location?

Datasets

1. Trail Access Locations. Trailheads, parking areas, road pull over areas, all with a 500-foot buffer (sound, gathering area)
2. Shelter locations and designated campsites. With 500-foot buffer denoting influence area.
3. Official A.T. Side Trails. With 500-foot buffer denoting influence area.
4. National and State Scenic Byway Corridors. With 500-foot buffer denoting influence area.
5. Motorized Trails. Hexagonalized to mask trailbed as required by State of Maine for use of data.
6. A.T. Communities. Appalachian Trail Conservancy designation based on completion of a series of steps and application by municipalities.

(E) Scenery Along the Treadway

The Trail offers opportunities to view stunning scenery in proximity to the most populated areas of the United States. Within the boundaries of the protected trail corridor, visitors may see native wildlife and flowers, rustic cultural features, seasonal variations, and dynamic weather patterns in environments such as southern balds, pastoral lands, diverse forests, wetlands, rugged outcrops, and mountainous alpine areas. (NPS 7)

The data for Scenery Along the Treadway is designed to analyze areas where the A.T. corridor directly interacts with land outside the protected corridor—mainly, areas where public roads/development effects (sights, sounds, dumping, bootleg trails, etc.) bleed into the trail area (Clark 2). Conservation in the Maine A.T. region is typically focused on protecting large-scale natural values but occasionally there are opportunities to limit the encroachment of external factors antithetical to the values indicated in Scenery Along the Treadway. Conservation at this level usually focuses on smaller parcels and is aimed at buffering value, rather than ecological or viewshed protection. Note: Scenery Along the Treadway is used only in specific situations where the Appalachian Trail crosses roadways; this data is not part of the analysis portion for prioritization.

Datasets:

1. A.T. treadway with a 500-foot buffer
2. Road crossings of A.T. corridor with a 500-foot buffer
3. A full description of the datasets and sources is contained in Appendix 3 following the text of this document.

METHODOLOGY: DATA ANALYSIS

The data sets for the five fundamental resources or values of the Maine A.T. region were evaluated for each of the 3,391 tax parcels within one mile of the Appalachian Trail corridor yielding a count, density, or measure, depending upon the nature of the dataset, for the extent of the polygon of each tax parcel. A general practice when using GIS for conservation prioritization is to overlay data (in the form of rasters) on parcel polygons in order to see if cells within parcels have a particular value. This practice typically involves visual inspection and estimation of, e.g. the proportion or acreage of a parcel with a particular score. If parcel polygons are indeed used, the typical practice is to examine the values for various datasets on some subject parcel rather than to a priori examine all real estate parcels before a particular conservation project already has some traction.

What this practice does not provide are quantifiable values for the amounts of conservation values that are present in a parcel nor quantifiable values for comparison across the other parcels in a landscape. Users are left to "eyeball" the amount of Undeveloped Area (for example) in a parcel—a major source of error, bias and uncertainty, and one for which MATGIC found many examples. Moreover, there is no way to compare one parcel to another except through the "eyeball" test. The potential of a dataset like TNC's Resilient and Connected Landscapes data as a conservation tool is unrealized if the data is not connected in a quantified manner to the landscape itself through the fundamental units of land ownership and land transactions. Moreover, it is helpful to have the ability to calculate the total acreage of a particular value or attribute within a parcel for comparison to other parcels or groups of parcels.

The solution to this problem was found by taking the raster dataset overlays listed above and applying the data to each of the 3,391 tax parcels within one mile of the A.T. in Maine, so that each parcel has a value for each dataset. This eliminates the sources of error, bias and uncertainty in using raster overlays through visual inspection only, and allows for replicable quantitative comparison, ranking and assessment of each of the 3,391 individual parcels. The result is that rather than noting that Parcel 3290 has a large area of Undeveloped Area, the numerical figures show exactly how much:

Parcel ID	Total Acres	Undeveloped Area Acres	Rank	Undeveloped Area %	Rank
3290	3,364	3,000	103 of 3,391	89.17%	284 of 3,391

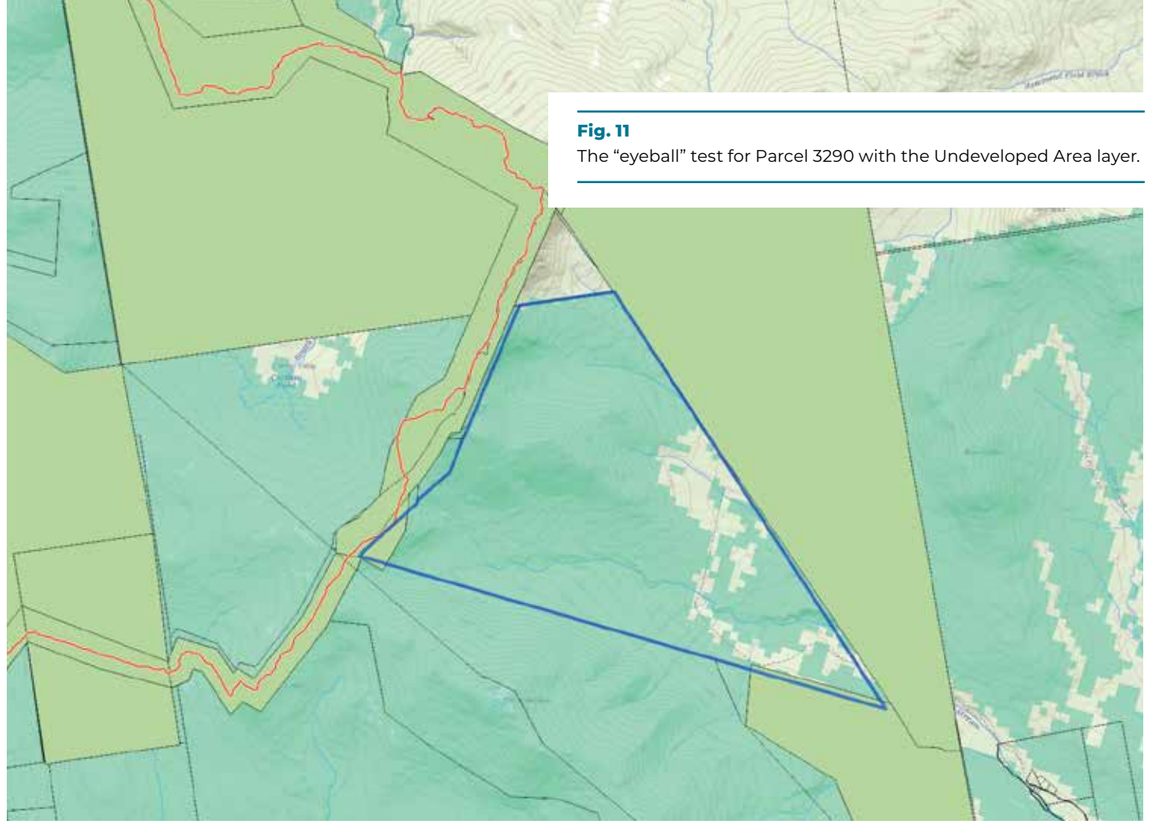


Fig. 11
The "eyeball" test for Parcel 3290 with the Undeveloped Area layer.

The datasets for Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity, and American Heritage were applied to the 3,391 parcels in this manner, providing for display on each parcel of the values in both raw acres and percentage of a parcel that contains the dataset (in this instance for Parcel 3290).

By including both acres and percentage of each dataset on every individual parcel, MATGIC can be used to prioritize parcels in ways that the visual scan is not able to perform due to potential viewer subjectivity and lack of accuracy and precision. Very small parcels can be evaluated in order to combine several together to create a larger project. Areas of threatened or endangered species can be specifically targeted to reach viability goals for specific populations. Values such as acres of a conservation value per dollar per parcel can be calculated, allowing for the maximization of resources when weighing one project against another, as in this example for Parcel 377 (500 acres) versus Parcel 441 (14,023 acres):

Dataset	Parcel 377	Parcel 441
TNC Resilient (Acres)	405 acres	4,703 acres
TNC Resilient (Percent)	80.91%	33.54%

This method allows for aggregation of smaller parcels into large landscape-scale conservation projects that can have values that are similar to or even greater than large parcels.

The datasets for Scenery Along the Treadway and Visitor Experience were not applied to the 3,391 individual parcels along the A.T. in Maine because quantifying those values does not meaningfully advance their ability to prioritize conservation parcels. The presence or absence of an official Appalachian Trail Side Trail, for example, is sufficient information in and of itself in terms of decision support. Whether there are 5 acres or 20 acres of trail in a parcel is not relevant to trail users—what is important is the presence of a trail, which will then require further analysis to determine need.

As a result of applying the datasets to each of the 3,391 parcels in the one-mile area of the A.T. in Maine, the Maine Appalachian Trail Land Trust has quantifiable figures for each parcel that can provide for an assessment of each that directly relates to the values described in the Appalachian National Scenic Trail Foundation Document. This answers the question as to how to measure the values of the A.T. in Maine.

Table 1

Undeveloped Area (Acres)	Rank	Undeveloped Area (Percent)	Rank
3,000	103 of 3,391	89.17%	284 of 3,391
Viewshed Area (Acres)	**Rank**	**Viewshed Area (Percent)**	**Rank**
2,624	88 of 3,391	79.19%	2,798 of 3,391
2,700-foot Elevation (Acres)	**Rank**	**2,700-foot Elevation (Percent)**	**Rank**
626	35 of 3,391	18.63%	54 of 3,391
TNC Resilience (Acres)	**Rank**	**TNC Resilience**	**Rank**
3,320	60 of 3,391	98.69%	96 of 3,391
TWS Forest Block (Acres)	**Rank**	**TWS Forest Block (percent)**	**Rank**
2,030	91 of 3,391	60.33%	189 of 3,391
Active River Area (Acres)	**Rank**	**Active River Area (percent)**	**Rank**
520	100 of 3,391	15.46%	2,064 of 3,391
Rare Natural Communities (Acres)[3]	**Rank**	**Rare Natural Communities (Percent)**	**Rank**
84	101 of 3,391	2.5%	136 of 3,391
Plant & Animal Habitats (Acres)	**Rank**	**Plant & Animal Habitats (Percent)**	**Rank**
15,467	18 of 3,391	459.71%	37 of 3,391
Historical Sites (number)	**Rank**	**-**	**-**
0	-		

3. Values for Rare Natural Communities and Plant and Animal Habitats exceed the acreage in a parcel and 100% due to multiple habitats and species being included. For example, a 500-acre parcel with 100% of its acreage containing two Rare Natural Communities would have values of 1,000 acres and 200% for this category.

METHODOLOGY: PRIORITY AREAS DETERMINATION

In determining priority areas, we did not develop co-occurrence or other models based on any type of synthesis as our intention was to keep the original attribute of each dataset separate and in its original units. We did, however, decide to focus our comparative spatial analyses on subsets of the data distributions determined by decision rules we developed and summarized in Table 2. These decision rules were developed to make subsequent comparisons among the higher ranking and higher scoring parcels from the original dataset now comprising these rescaled distributions.

The purpose of any prioritization exercise is to strike a balance between inclusivity and exclusivity, or deeming everything as significant or very little as significant. We reviewed the original data distributions and map projections and developed these filters for use in the spatial tool and in this report. For example, there is some acreage of Undeveloped Area on 1,000 of the 3,391 parcels within one mile of Maine's A.T. By re-scaling the data across the entire landscape distribution to eliminate all parcels which do not contain at least 75% of their aggregate acreage as Undeveloped Area (this was one method applied to select a subset of data at least better than the median value), it reduces the pool of parcels from 3,391 to 403 parcels. Although this introduces a certain amount of subjectivity regarding the value for a count, density, or score that may or may not be considered, this is a stated and replicable parsing of the data and not a hidden bias.

The rescaled data were subsequently classified using Jenks Natural Breaks. Class breaks are identified that best group similar values and that maximize the differences between classes. The map is created by showing darker colors in parcels with a higher numeric value within the scaling that was applied. This allows for clusters of parcels to be discerned in areas with a high concentration of parcels containing that particular conservation value. For example, the map showing all parcels with some percentage of the parcel in the 2,700-foot Elevation Area indicates an obvious concentration in the High Peaks Region where ten of the fourteen highest mountains in Maine are. This indicates the high probability of a priority area for that dataset.

This quantitative spatial ranking can then be reported in tabular form, in order to provide assessments of individual parcels (note the corresponding color from the legend on the map in this table for Parcel 3290) Highlighting individual cells provides an overview for individual parcels that is based in quantitative data, but remains easy to interpret (i.e., if a cell contains a color it has reached the scaling benchmark for that particular dataset. More colors indicates more priority levels of conservation value.)

Table 2

ATTRIBUTE SET	SCALING APPLIED TO 3,391 PARCELS
Views Beyond the Corridor	
Undeveloped Area—Acreage in the best three deciles	Area of attribute greater than or equal to 75% of parcel
ATC Viewshed	Area of attribute greater than or equal to 85% of parcel and parcel must be over 500 acres in area
2,700-foot Elevation Area	No scaling
Natural Resource Quality and Ecological Connectivity	
TNC Ecological Terrestrial Resilience—Areas of Above Average and Far Above Average	Area of attribute over 1,000 acres in parcel
TNC Ecological Terrestrial Resilience—Areas of Above Average and Far Above Average	Area of attribute greater than or equal to 80% of parcel
TNC Ecological Terrestrial Resilience—Areas of Far Above Average	Area of attribute in the Far Above Average level is greater than 10% of parcel
TWS 5,000-Acre Forest Block	Area of attribute greater than or equal to 75% of parcel
TNC Active River Area	Area of attribute greater than or equal to 0.1 acre of parcel
MNAP Rare Natural Communities	No scaling
MNAP State Listed Habitats	No scaling
American Heritage	
Total Sites in Parcel	Number of sites in parcel greater than or equal to three

For the creation of Priority Areas, clustering of darker parcels is usually evident in a broad scale view of the A.T., but this subjective visual scan is another potential source of error, bias or uncertainty which needed to be checked against a quantitative analysis. This analysis was undertaken using ESRI's Hot Spot Analysis Tool. The tool calculates the Getis-Ord Gi* statistic (a spatial autocorrelation statistic) for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially (ESRI). The Hot Spot Analysis Tool was used to show spatial clustering for all of the datasets under Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity and American Heritage (both raw scores of acres in a parcel and percentage of area of a parcel) as a check against the visual inspection method. Please see Hot Spot Analysis Maps (Appendix 2).

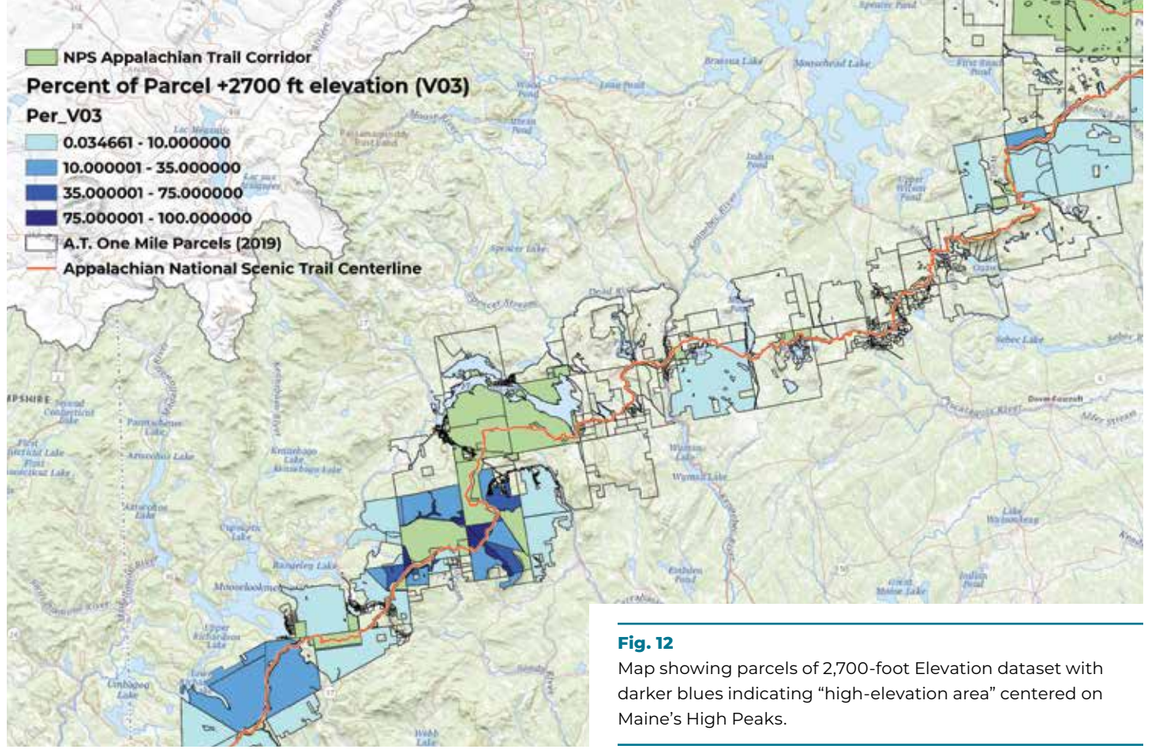


Fig. 12
Map showing parcels of 2,700-foot Elevation dataset with darker blues indicating "high-elevation area" centered on Maine's High Peaks.

Table 3

DATA		RANK (OF 3391)	PERCENTILE
Acres Undeveloped Layer	3000.0	103	96.72%
Percent Undeveloped Layer	89.2%	284	90.97%
Acres Viewshed	2664.4	88	97.20%
Percent Viewshed	79.2%	2798	11.01%
Acres 2700-foot area	626.9	35	98.89%
Percent 2700-foot area	18.6%	54	98.28%
Acres TNC Ecoregional	3320.2	60	98.09%
Percent TNC Ecoregional	98.7%	96	96.95%
Acres TNC Ecoregional—Far Above Average	40.2	97	96.91%
Percent TNC Ecoregional—Far Above Average	1.2%	181	94.24%
Acres TNC Ecoregional—Above Average	3279.9	60	98.09%
Percent TNC Ecoregional—Above Average	97.5%	75	97.61%
Acres TWS 5000-acre Forest Block	2029.9	91	97.11%
Percent TWS 5000-acre Forest Block	60.3%	189	93.99%
Acres TNC Active River Area	520.0	100	96.82%
Percent TNC Active River Area	15.5%	2064	34.35%
Acres MNAP Rare Natural Communities and Plants	84.2	101	96.79%
Percent MNAP Rare Natural Communities and Plants	2.5%	136	95.67%
Acres MNAP State Listed Animal Habitats	15466.6	18	99.43%
Percent MNAP State Listed Animal Habitats	459.7%	37	98.82%
Historic Sites	0	0	0.00%

PRIORITY FOCUS AREAS 2020

The purpose of these priority focus areas is to assist in conservation efforts along the Appalachian Trail in Maine by broadly indicating areas which are most in need of protection in order to retain the values characteristic of the A.T. region in Maine, as indicated in the Appalachian National Scenic Trail Foundation Document (Views Beyond the Corridor, Natural Resource Quality and Ecological Connectivity, American Heritage, Visitor Experience, Scenery Along the Treadway). The prioritization process is not simply a ranking of which parcels contain the highest quantitative values; land conservation is complex and relies upon many factors. As indicated by Davis et al in the California Legacy Project, any prioritization methodology should be driven by theory, data and knowledge. The Maine A.T. Land Trust, having a conservation mission focused exclusively on this landscape, is able to contribute a considerable amount of knowledge to this prioritization process. The process must also take into account socioeconomic considerations that exist on the ground in the A.T. region of Maine as competing human interests vie for limited land.

What follows is an overview, from north to south, of the Priority Focus Areas for the Maine Appalachian Trail region starting in 2020. The goal of the inclusion of this section is to provide partners, agencies, foundations and conservation professionals with enough information to draw increased attention to each Priority Focus Area. As such, individual parcels are not specifically listed or highlighted in order to maintain discretion regarding ongoing conservation projects in any of the Priority Focus Areas. While assembling MATGIC, landowner data for nearly all of the 3,391 tax parcels was painstakingly compiled. While all of this data is publicly available, having to assemble it across thousands of tax parcels provides a form of anonymity which is important to protect. Several of the datasets used have been obtained from owners with the understanding that they will be used for conservation planning purposes only. The Maine Appalachian Trail Land Trust has developed a formatted “scorecard” document which provides data and analysis for individual parcels—based on these considerations, data from MATGIC on individual tax parcels is only available by request.

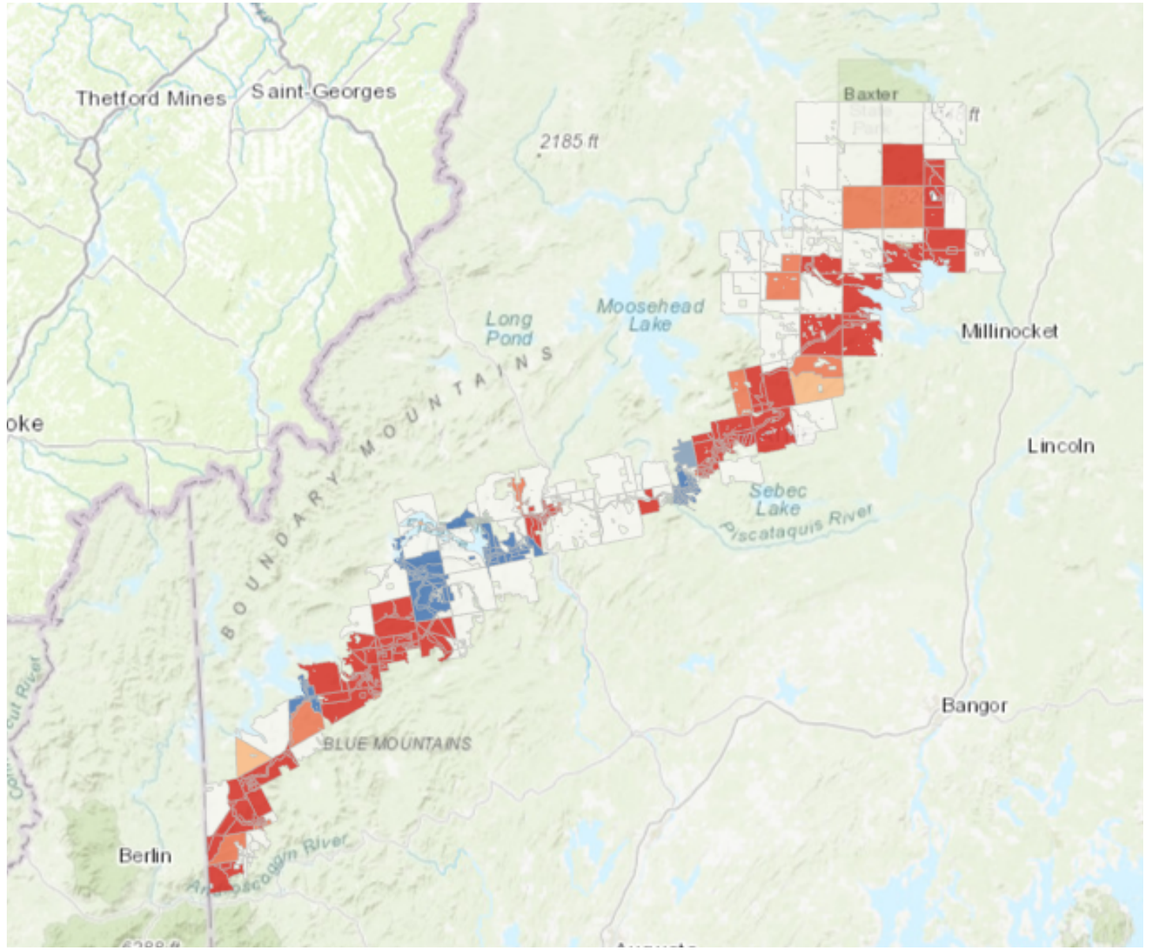


Fig. 13
Hot Spot Map used for determining priority focus areas based on parcels with 80% climate resilient acreage.

- Hot Spot with 99% Confidence
- Hot Spot with 95% Confidence
- Hot Spot with 90% Confidence
- Not Significant
- Cold Spot with 90% Confidence
- Cold Spot with 95% Confidence
- Cold Spot with 99% Confidence

Priority Focus Area #1: Hundred-Mile Wilderness

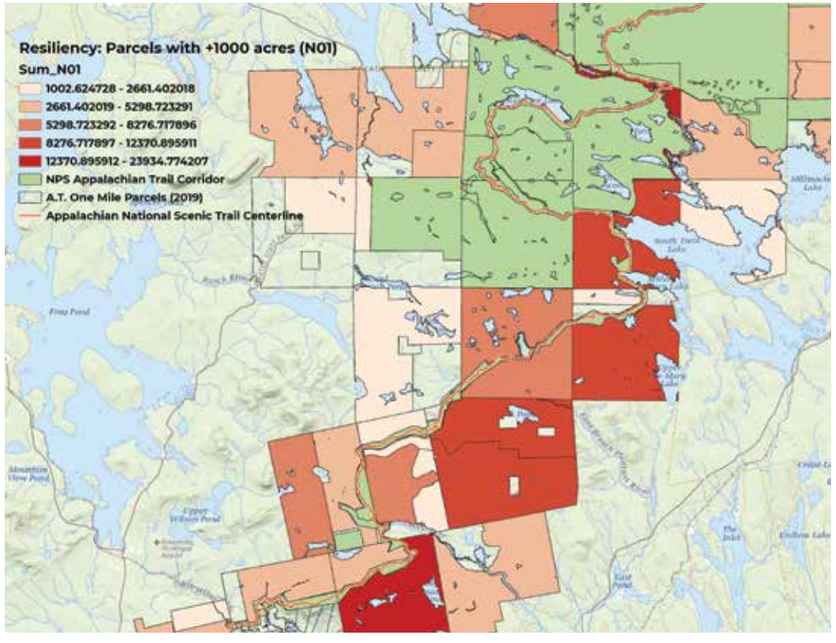


Fig. 14
For demonstration purposes we have chosen to portray the rescaled data for resilient acres (real extent not the proportion of land scoring above average and far above average) within the Hundred Mile Wilderness. In contrast to an area of smaller tax parcels due to subdivision (see discussion of sample attribute for Monson Priority Focus Area below), the Hundred Mile Wilderness has larger parcels and the parcels score high for values such as resiliency. This subset of the resiliency data portrays the distribution of the data rescaled to portray resilient parcels with at least 1000 acres. As the map demonstrates there are several of these parcels which contain greater than 8000 resilient acres.

Background

Now one of the most famous sections of the Appalachian Trail, the Hundred-Mile Wilderness was given this title by Steve Clark, President of the MATC, to denote this area of Maine's A.T. as a branding effort ("Wilderness" is a relative term in this commercial working forest). It was also meant as a cautionary moniker, since the region is still one with long distances along the A.T. where resupply at a road crossing is difficult. The Hundred-Mile Wilderness was mostly unconserved working forest until 1988 when the paper companies who owned vast tracts of land in the region began selling their holdings (Conkling). Despite the turmoil the land has remained largely undeveloped and has retained much of its intact, natural character due to its status as part of "Maine's woodbasket." Tax parcels in the Hundred-Mile Wilderness are large and undivided; landowners still tend to be Maine-based forest products companies, rather than national or multinational TIMOs (Timber Investment Management Organizations). Two factors have been instrumental in this relatively stable situation: the presence of the Appalachian Mountain Club's Maine Woods Initiative and the KI-Jo Mary Multiple Use Management Forest. The Maine Woods Initiative comprises over 70,000 acres of conserved lands which are used for recreation, forest products, carbon storage and education. The KI-Jo Mary Forest is a 175,000-acre, privately-owned commercial forest, which is managed by North Maine Woods Inc. for both timber production and recreation. There are several landowners in the organization who cooperatively maintain roads, bridges, campsites and privies for outdoor recreation, while at the same time continuing to sustain their forest products businesses from the land. Over thirty miles of the A.T. passes through the KI-Jo Mary Forest.

The Hundred-Mile Wilderness has been a priority conservation area since the 1990's and remains so today. Past efforts have resulted in conservation acquisitions like the Nahmakanta Public Reserve Lands (State of Maine, 1990), the Katahdin Forest Easement (State of Maine, 2006), Gulf Hagas Whitecap (State of Maine and NGO, 2017) and the Debsconeg Lakes Wilderness Area (The Nature Conservancy, 2002). These have provided permanent protection on a scale of acreage that surpasses any of the other sections of Maine's A.T. Rather than denoting that the Hundred-Mile Wilderness is secure, what this figure indicates is an opportunity that currently exists to protect a unique place that will not remain in its wild state forever. The Maine Woods is a globally-significant ecological area and the 100-Mile Wilderness is a core area within it (McMahon 1). Ensuring that these large, contiguous blocks of forest remain unfragmented and healthy is vital to the ecological health of the whole.

Characteristics—Views Beyond the Corridor (A)

- **Overall high percentage rankings for Views Beyond the Corridor data.** Generally, parcels of smaller acreage are able to achieve high percentage rankings easier than larger ones. Combined with high acreage values, the fact that the Hundred-Mile Wilderness area contains several parcels that still rank in the 95th percentile for several of these categories indicates an area of great conservation value.

- **Broad areas of elevation (plateau) but a small percentage and acreage of land above 2,700 feet.** Aside from White Cap Mountain which is already protected by the NPS corridor and the Gulf Hagas Whitecap project, there are just a handful of peaks above 3,000 feet in the Hundred-Mile Wilderness. However, elevation to 2,700 feet does indicate an environment which will retain many ecological characteristics during an era of climate change. The numerous water bodies can be expected to retain brook trout habitat and terrestrial species like Canada lynx can persist.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **Large tax parcels that contain very high aggregate acreage of Natural Resource Quality and Ecological Integrity data.** In particular, the unconserved parcels in the Hundred-Mile Wilderness priority focus area rank very high in terms of Resilient acres (both Above Average and Far Above Average) and TWS 5,000 Acre Forest Block acres. These areas are also very high ranking for Views Beyond the Corridor acreage, including the Undeveloped Area. The presence of large tax parcels (10,000 acres and above) is in itself an indicator of a remote, unimpacted landscape that has not faced development and consequent subdivision of lots.

- **High percentage rankings for Natural Resource Quality and Ecological Connectivity data.** As noted above, the fact that the Hundred-Mile Wilderness contains several parcels that rank in the 95th percentile, despite the large size of the parcels, indicates an area of great conservation value.

- **The beginnings of fragmentation.** While the Hundred-Mile Wilderness priority area wholly encompasses the large TWS 5,000 Acre Forest Blocks that exist in the region, these blocks are fragmented and due to fragmentation the percentage rankings are lower than in other areas along Maine's A.T.

- **High acreage for Active River area due to the presence of many ponds and streams.** The percentage values are slightly lower due to the large size of the parcels, but the area is known for several large ponds and lakes and their coldwater fisheries.

Characteristics —Visitor Experience (D)

- **Lower than average concentration of motorized trails.** The KI-Jo Mary Multiple Use Management Forest prohibits ATV use and limits snowmobile access due to ongoing timber operations.

- **Lower than average concentration of hiking trails.** With the exception of the Gulf Hagas trail network, the Nahmakanta Public Reserve Unit trails and the White Brook Trail (all of which are on protected land) there are no hiking trails branching from the A.T. in the Hundred-Mile Wilderness. The A.T. itself is the dominant route in the region.

Future Work

As Maine and the world faces a rapidly-changing climate, conservation efforts that focus on large, climate-resilient and forested blocks will be a primary focus if Maine is to reach the ambitious goals of the Maine Climate Council.[4] The unconserved parcels of the Hundred-Mile Wilderness present an opportunity to protect such lands on a scale that is rivaled by few other areas in the United States.

4. https://www.maine.gov/future/initiatives/climate/climate-council

Priority Focus Area #2: Monson Area

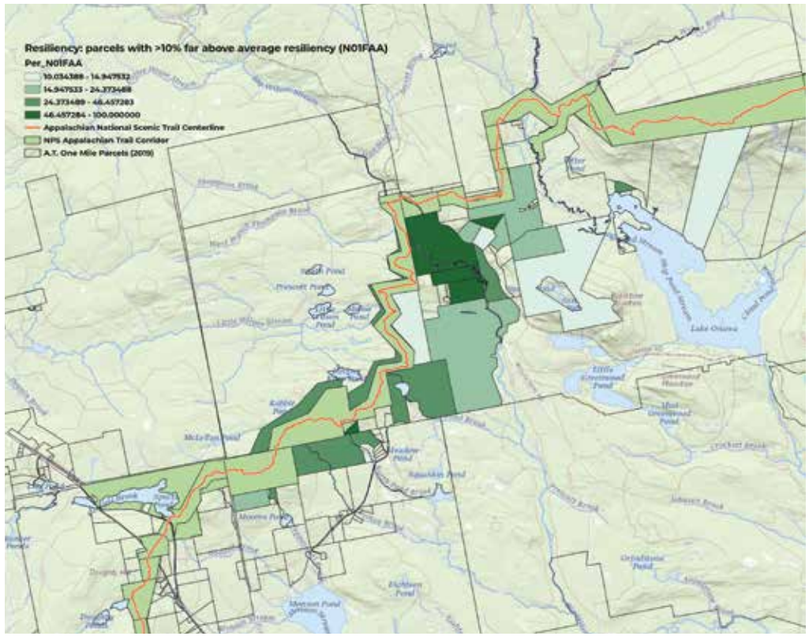


Fig. 15
Parcels with greater than 10% of its area scoring far above average for resiliency are portrayed in Figure 15 for Priority Focus Area #2. This graphic representation of this rescaled subset of the data shows three contiguous parcels scoring between 46% and 100% of the parcel scoring far above average resiliency in this new distribution for this attribute. Unlike the larger tax parcels that characterize the lands of the Hundred Mile Wilderness, the Monson area has been subdivided into smaller parcels that nonetheless have high conservation value and might be conserved as a package. By looking at score of an attribute by percent of the block, it allows us to understand the potential conservation value of a parcel or group of parcels that otherwise might be overlooked if they were evaluated based on size.

Background

Monson, an official A.T. Community[5] with a population of about 700, is known for being the gateway town to the Hundred-Mile Wilderness and for the numerous services it has traditionally provided to thru-hikers (hostel, food, supplies, post office, etc.). In recent years, foundations interested in economic development, recreation and the arts have developed infrastructure and programs focused on increasing the profile of Monson as an outdoors and arts destination. This has included the promotion of local trails as a destination for visitors.

Conservation efforts have generally remained focused on the remote lands to the north; consequently, the A.T. corridor averages just 900 feet to 1300 feet wide in Monson and the surrounding towns, with the only corridor protection being a portion of the Moosehead Region Conservation Easement on either side of the NPS corridor north of Big Wilson Stream. The Barren-Chairback and White Cap Ranges and Gulf Hagas and the Hundred-Mile Wilderness have tended to overshadow the lands in and around Monson as a recreation destination and area for land protection.

MATGIC indicates that the Monson area—comprised of the 1-mile parcels in Monson, Shirley, and Elliotsville Township from approximately the East Branch of the Piscataquis River in the south to Big Wilson Stream in the north—is a conservation priority area in its own right. The Appalachian Trail in states south of Maine frequently passes directly through small towns; Monson is the only town in Maine where the downtown area is within walking distance of the trail[6]. Route 6, the only state highway to Moosehead Lake, also passes through town and adds to the sense that Monson is an area to pass through on the way to more scenic and ecologically important areas. The science indicates this is a focus area in its own right.

5. https://wildeast.appalachiantrail.org/explore/communities/monson-me/

6. The A.T. passes close to the most densely populated area of Caratunk, but this town has a population of 66 and there is not a network of services. Caratunk is, however, the only place along the A.T. in Maine where buildings are visible nearby.

Characteristics—Views Beyond the Corridor (A)

- **Developed urban core, but close proximity to areas of low human impact and high resiliency that are important for northeast connectivity.** There is an opportunity to preserve these qualities and maintain a contiguous landscape along the A.T. by conserving just a few parcels in critical areas like the Doughty Ponds and Little Wilson Stream.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **Highest concentration of high resiliency areas (Wilson Valley) including several parcels with >10% FAA**. The highest concentration of very high resiliency parcels (both large and small acreage) along the entire A.T. in Maine is within a few miles of the center of Monson, just to the north of the most developed areas in Elliotsville Plantation.

Characteristics—Visitor Experience (D)

- **Accessibility**. There are several water features in the region that are a destination for day hiking, fishing, cross country skiing, snowmobiling and more. Many of these have wayfinding and trailhead parking that is within one or two miles of a public road. With the exception of a few high points like Buck Hill, the terrain is below 1,500 feet. Due to the proximity to Monson, these factors both indicate accessibility.

Future Work

Monson is an official A.T. Community and there is great potential for the town to develop as a recreation area based on the tremendous ecological resources within a short radius. There is also great risk to these lands that they become increasingly fragmented by real estate and second home development. Unlike many parcels along the A.T. in Maine, the Monson area is characterized by smaller lots that are not suitable for timber harvesting, but are suitable for development. The case could be made that, more than any other stretch of the trail in Maine, this area is under threat of fragmentation and land conversion.

Priority Focus Area #3: Caratunk-Bald Mountain Pond

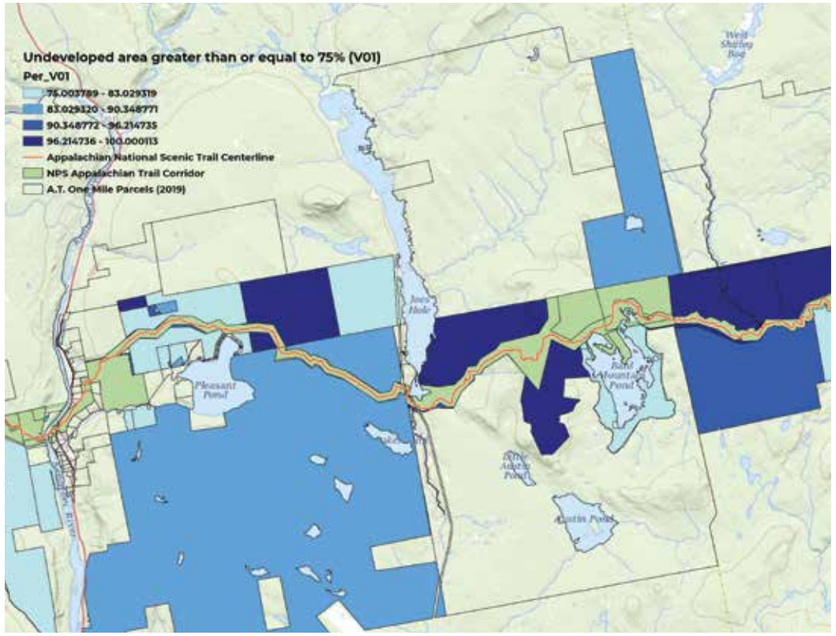


Fig. 16
This distribution of data portrayed in Figure 16 from the Undeveloped Layer (human footprint values in the least impacted three deciles) is the subset of data with more than 75 % of the parcel scoring in the least impacted three deciles. As this map demonstrates several parcels have at least 90 percent of their acreage in the least impacted three deciles and might represent another example of a package of parcels (some contiguous with each other via the AT protected corridor) that might be assembled as part of a conservation project. Another notable feature here is the single large parcel that scores better than 83% for the extent of acreage scoring in the least impacted three deciles.

Background

The Appalachian Trail crosses the Kennebec River, which thru-hikers cross via a canoe ferry service during summer months, at the town of Caratunk (pop. 66) on Route 201. The A.T. proceeds through The Forks Plantation, Bald Mountain Township, and Blanchard Township before crossing the Piscataquis River and entering the town of Monson. Originally part of the "Million Acres" portion of the Bingham Purchase, today the region is known as a destination for whitewater rafting on the Kennebec River due to the presence of Harris Station Dam—the largest hydroelectric dam in Maine—upstream at Indian Pond. Aside from homes in Caratunk and along the northern shore of Pleasant Pond, the region remains largely undeveloped and unroaded. Central Maine Power Company's energy transmission line from Harris Station Dam to points south bisects the Caratunk-Bald Mountain Pond region, crossing the Appalachian Trail corridor at Joe's Hole south of Moxie Pond. Due to the lack of high-elevation terrain the region has been heavily managed by forest products industry companies for two centuries, and under that ownership the region has been used for seasonal camps (under company leases), hunting, fishing and snowmobiling. In comparison to other recreational areas along Maine's A.T., there are fewer hiking trails, state parks, ski resorts and local conservation areas. Camp leases are largely held by Maine residents and many of these lease holders reside in the local area, rather than in southern Maine. Despite the presence of many pristine ponds, low mountains with scenic views, and several waterfalls easily accessible from Route 201, the Caratunk-Bald Mountain Pond section of Maine's A.T. region is quiet and less visited than other areas.

Characteristics—Views Beyond the Corridor (A)

- **Unfragmented ownership, undeveloped parcels.** Due to the proximity to state highways, the region has remained in the ownership of just a few large forest products management companies and therefore presents an opportunity for large-scale protection of high-acreage parcels.
- **Lack of high-elevation mountain areas but elevations of 1,000 to 2,700 feet.** Despite lower peaks, this is a large plateau area where elevation is a prominent indicator of many present ecological values: coldwater fisheries, MNAP habitats and species, elevation gradient indicative of connectivity.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **Large, highly-resilient parcels in an area of connectivity.** There are roughly 30,000 acres of above average climate-resilient lands between Caratunk and Monson. These areas buffer core far above average resilient lands, including the largest contiguous block left along the A.T.
- **TWS 5,000 acre block is captured almost entirely.** Despite proximity to state highways, a 61,000-acre TWS 5,000 matrix forest area lies almost entirely within the parcels along the A.T. from Caratunk to Monson. These are remote, largely unfragmented forests surrounding high climate-resiliency lands.

Characteristics—Visitor Experience (D)

- **Recreation area potential.** Due to public road access and lack of truly rugged terrain, the Caratunk-Bald Mountain Pond area is accessible for motorized recreation, rafting, sightseeing on an international scenic byway, seasonal homes development, and fishing.

Future Work

The Caratunk-Bald Mountain Pond section has not been the focus of widespread conservation efforts, but with the completion of the Bald Mountain Pond project (2019, 2,609 acres) the A.T. region in this stretch is gaining notice for many of the characteristics listed above. The fact that these lands are almost entirely owned by four national forest products companies who have all worked with conservation organizations previously, means that there is a unique opportunity to protect very large parcels in a region of high ecological and recreational value. Where many recent conservation projects are in the 2,500-acre to 10,000-acre size along the A.T., the Caratunk-Bald Mountain pond area could see projects of up to 25,000 acres. This size would align with the scope of the parcels and the existence of large areas of resilient landscapes, matrix forest and connectivity which has seen very low human impact.

Priority Focus Area #4: Maine's High Peaks

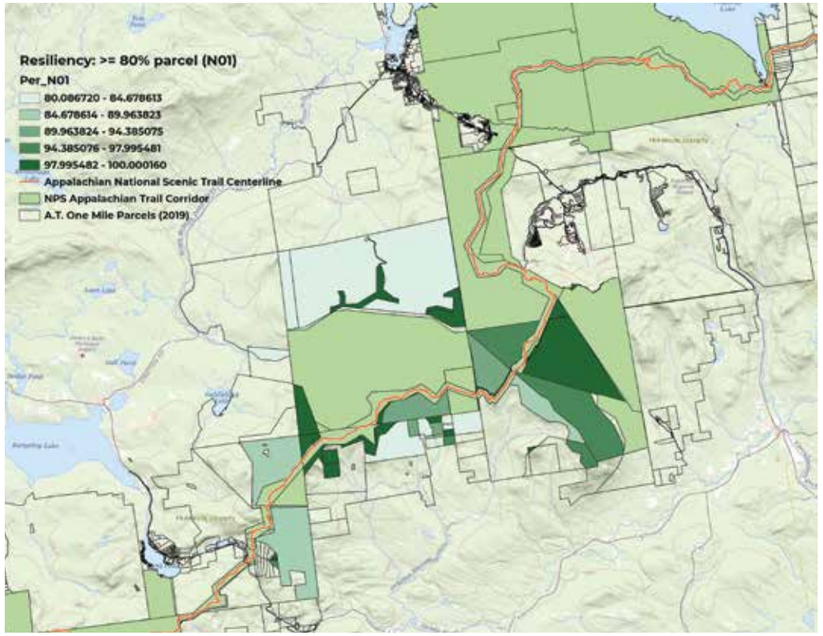


Fig. 17
In Figure 17, for demonstration purposes we have chosen to portray percent of a parcel scoring as above average or far above average for resiliency. This was the same ecological attribute (resiliency) we examined above in the Hundred Mile Wilderness, but in that example we showed the distribution of rescaled data for the actual acres of land for parcels having at least 1000 acres scoring as resilient. The data here for the High Peaks is the subset of data for parcels with at least 80 % of their parcel scoring as resilient (above average and far above average). Several parcels in Maine's High Peaks have more than 95 % of the extent of the land unit scoring as resilient. There are parcels that stand alone as their own conservation project and several that might be assembled as a package.

Background

Maine's High Peaks area is the primary mountain region of the Appalachian Trail in the state, with ten of the state's fourteen highest mountains on or accessible to the A.T. over a stretch of 52 miles. The longest stretch of the A.T. without a road crossing—32.2 miles—lies from Route 4 in the south to Route 27 in the north. Remarkably, aside from the Bigelow Public Reserve Land and the A.T. corridor itself, the High Peaks was largely in private ownership until 2002. From that date conservation efforts initiated by the Maine Appalachian Trail Land Trust and partner organizations launched an era of projects which have resulted today in the protection of approximately 40,000 acres of the High Peaks region. As of 2020 there are currently four conservation projects in the pipeline, totaling an additional 20,000 acres.

The High Peaks region has been a destination for outdoor recreation for nearly two hundred years, initially for hunting, fishing, trapping and vacations in sporting camps. Today, visitors flock to the Rangeley Lakes region in the west, Sugarloaf USA in the northeast, and Flagstaff Lake in the north, for downhill skiing, cross country skiing, hunting, fishing, sightseeing, mountain biking, boating, camping and more. The rugged terrain, which once allowed for delay in access for timber harvesting and real estate development, has today allowed for extensive trail networks (both motorized and non-motorized) and many wild areas. The local economy is increasingly dependent on outdoor recreation as a means for economic development. Two additional features are noteworthy: the presence of the U.S. Department of the Navy's Survival, Evasion, Resistance, and Escape Facility (SERE East Base) and the Penobscot Nation's Tribal land holding of 24,222 acres in Carrabassett Valley.

Characteristics—Views Beyond the Corridor (A)

- **Large areas above 2,700 feet not protected.** These lands are among the most unique in the state and contain high concentrations of Rare Natural Communities and State Listed Animal Habitats, and are among the most undeveloped according to the HHI index. The largest concentration of unprotected parcels containing these lands above 2,700 feet is in the High Peaks.

- **Large Undeveloped Area with existing conservation land value will be eroded without more protection.** Since 2002, conservation efforts have advanced to the point where thousands of acres of land containing the ecological and recreational values indicated herein, have been protected. Much of this work would be undone or rendered of negligible value if adjacent lands or inholdings are degraded, developed or converted to other uses.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **High resiliency landscape (both aggregate acres and percent of parcels).** Mountainous terrain tends to have large resilient areas and this is the most extensive mountain area along the A.T. in Maine. It is a core area for northeast ecological connectivity on the regional scale.

- **TWS 5,000 area is almost wholly within the A.T. landscape.** The High Peaks contains a 48,000± acre block, nearly all of which is contained in the one-mile parcel region. Given the contiguity with existing conservation lands, protection of the remaining areas would represent a significant achievement.

Characteristics—Visitor Experience (D)

- **Existing outdoor recreation economy in the region.** Maine's High Peaks is a renowned recreation area that, more than other sections on Maine's A.T., is in a position to leverage local conservation land to grow the economy. More conserved lands means more trails, campsites, scenic vista and other areas which can be leveraged for jobs, attracting new residents and quality of life for communities.

Future Work

At this time, ongoing conservation efforts in the High Peaks will continue to protect land along the A.T. Given the unique nature of many of the ecological elements and the magnitude of the threat of climate change and habitat loss in the United States, it is more important than ever to retain high-value conservation lands such as those that occur in the High Peaks. With the continued growth of the outdoor recreation economy, these efforts also serve to provide for economic growth.

Priority Focus Area #5: Bemis-Old Blue Mountain

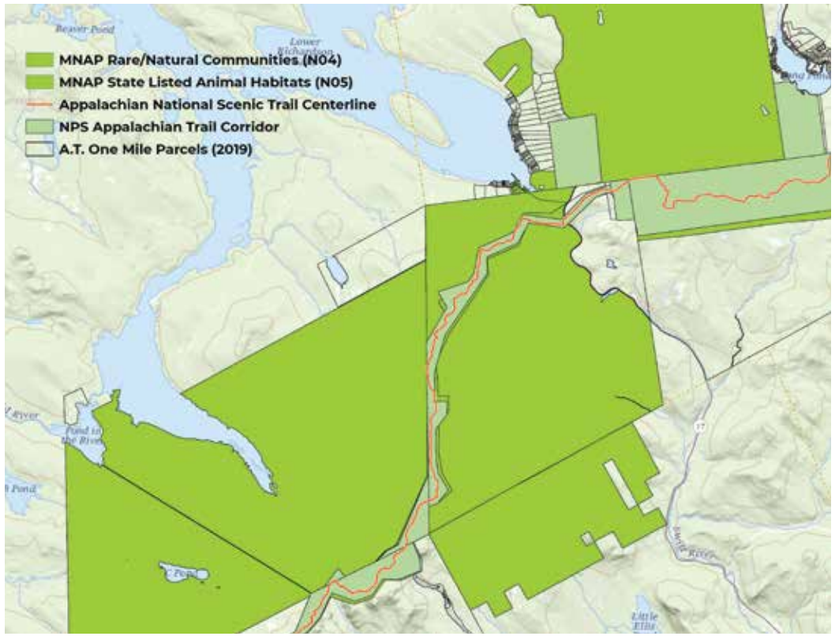


Fig. 18
Figure 18 of the Bemis-Old Blue Mountain Area is a great example of the breadth of this decision support tool in its capture of landscape level values such as intactness, lack of development and fragmentation, and predicted resilience which combines landscape and biodiversity and habitat measures along with measures of biodiversity and habitat. As this map demonstrates, five sizable parcels qualify in our binary model that notes whether a parcel has or doesn't have documented MNAP Rare/Natural Communities or MNAP State Listed Animal Habitats. While this measure does not depict a density or range on a continuum, as previously discussed, the presence of these communities and habitats is indication of conservation value.

Background

The section of Maine's Appalachian Trail from East B Hill Road in the south to Route 17 in the north is dominated by the Bemis-Old Blue-Elephant Mountain complex and Sawyer and Black Brook notches. To the north and west lay Mooselookmeguntic and Richardson Lakes, respectively. The town of Andover, a rest and resupply point with amenities for thru-hikers, is the largest population center near the A.T. until it passes near Rangeley further north. The Rangeley Lakes Scenic Byway, a national scenic byway whose crowning attraction is the viewpoint stop at Height of Land, is on Route 17 in the east.

Like the High Peaks region, the area was popular beginning in the 19th century for hunting and fishing camps and remains a destination for traditional outdoor uses. Due to close proximity to the Ellis and Swift River floodplain areas agriculture was more active here than in other Appalachian Trail regions in Maine. The forest products industry remains a strong presence in the area; the Rumford Mill, approximately twenty miles to the south, has been in operation since 1901.

Despite numerous recreation assets and natural features, the Bemis-Old Blue area has been overshadowed by adjacent regions that have historically enjoyed greater popularity. The area lies between the Mahoosucs/Grafton Notch and the Rangeley Lakes/High Peaks. To the south lies Mount Blue State Park and the adjacent Tumbledown Public Lands, one of the most popular locations in the state for camping and hiking; it syphons off much of the traffic venturing north. Online trip reports rarely mention hikes up Bemis Mountain or Old Blue Mountain; lower peaks like Moody Mountain or Sawyer Mountain are even less traveled. There are numerous motorized trails for ATV and snowmobile use, and several family camping/trail areas located around distinct features like Coos Canyon, Devil's Den, Angel Falls and South Arm. Despite this, the Bemis-Old Blue section is largely without conservation protection due to its nature as an "in-between" area of the A.T. With the exception of an 11,000± acre parcel of the sprawling Pingree Easement which merely touches the NPS land at one point, the entire A.T. corridor in the Bemis-Old Blue region is unprotected.

Characteristics—Views Beyond the Corridor (A)

- **Lack of protection for the A.T. corridor.** Despite being a rugged and scenic section with characteristics that define public land areas, the A.T. corridor averages just 1,000 feet in width from East B. Hill Road to Route 17 (23.4 trail miles). There is only one conservation area of note (the Four Ponds Public Reserve Land) along this stretch, making this perhaps the most vulnerable section of Maine's A.T.
- **Mountainous terrain that lacks protection.** The aggregate acreage of 2,700 foot elevation land is second only to Maine's High Peaks region, which is an area that has seen significant conservation focus since 2002. Like the High Peaks before conservation efforts took root, there are several mountain peaks of note where only the very summit is protected.
- **Large undeveloped parcels in the ownership of just a few landowners.** Four forest products landowners hold the vast majority of the acreage, allowing for more efficient land transactions.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **Large areas of unprotected TWS 5,000 acre cores.** In the priority areas directly to the north and south, these core areas have seen significant protection. In the Bemis-Old Blue Mountain region, these cores are largely unprotected, putting connectivity at risk.
- **Diversity of rare natural communities and state listed animal habitats.** In contrast to other A.T. areas where these might be limited to a single natural community or a single plant/animal species, the Bemis-Old Blue section contains a diversity of these indicators, from insect species to raptors to the largest unprotected area of "old growth" forest left along Maine's A.T. This variety indicates a broad area of ecologically-intact communities.

Future Work

Unfortunately, due to many factors outside the control of conservation organizations or landowners, it can be difficult to catalyze land protection in an area that has seen little to none previously. The conservation values in the Bemis-Old Blue section of Maine's A.T. are equal to, or exceed, those of areas that are currently the focus of active land conservation transactions. Without alignment of these external factors it is believed that the Bemis-Old Blue section will continue to be overlooked in importance going forward unless tools such as MATGIC can draw the attention the area deserves for its own sake and to maintain ecological connectivity and integrity along the trail landscape in Maine. Land conservation transactions are usually consummated over a period of years and until the current slate of projects is completed, it may be difficult, though nonetheless important, to protect land in a new focal area.

Priority Focus Area #6: Mahoosucs

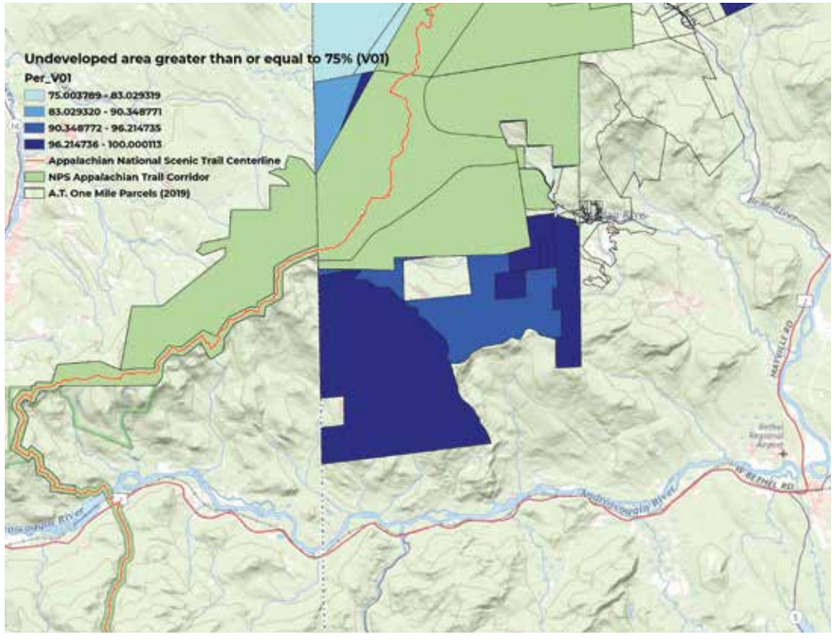


Fig. 19
Similar to Figure 16, Figure 19 of the Mahoosucs area portrays the subset of the Undeveloped Area data distribution (scoring in the least impacted three deciles within the Human Footprint Model) whereby at least 75 % of the parcel is in the least impacted three deciles. This attribute measures the presence not only of scenic resources viewed from the Appalachian Trail but also captures the presence of blocks of matrix forest important to conserving the entire ecological gradient from valley floor to summit ridge and also important to ecological connectivity. Note also the proximity of these resources to major highways.

Background

The A.T. enters Maine via the Mahoosuc Range, which begins a few miles to the southwest on Mount Success in New Hampshire. The Mahoosucs are known for what is commonly called “the toughest mile on the A.T.”, the section through the steep, boulder-strewn Mahoosuc Notch. While there are not as many 4,000-foot peaks at the High Peaks section further north, there are several mountains approaching that elevation and there are many notable natural features in the Mahoosucs: alpine bogs, ravines, sweeping overlooks, waterfalls, caves, many of which are accessible from Route 26. The Mahoosucs are a popular area for outdoor recreation and tourism due to Grafton Notch State Park/Mahoosuc Public Reserve Land Unit (34,936 acres), proximity to a state highway, and proximity to more populous areas of Maine. Sunday River Resort is approximately five miles from the A.T. and there is significant second home development just outside public lands. The town of Bethel, with an economy based on outdoor recreation, is just to the south of the resort.

The Grafton Loop Trail can be reached from Portland, Maine, in approximately 1 hour and 45 minutes—the closest A.T. trailhead to the state’s largest city. Due to this proximity to population centers and the presence of many trails, parking areas, and supply support, the Mahoosucs are popular for day hiking, backpacking, camping, backcountry skiing, ATV riding, snowmobile use, fishing, mountain biking and more. Other uses include sightseeing, swimming, picnicking and events (like weddings). Though these uses are anchored in the existing conservation estate, there are large unprotected areas and conservation organizations have continued to protect land around the Appalachian Trail. Work in this region continues today.

Characteristics—Views Beyond the Corridor (A)

- **Undeveloped Areas with connectivity in south, west and northwest.** There are extensive conservation lands to the south towards the White Mountain National Forest, and towards the Rangeley Lakes region to the north. These conserved lands are both a reason for protection and an indication of the need for connectivity at a broader scale.

Characteristics—Natural Resource Quality and Ecological Connectivity (B)

- **While most high resilience and low human influence areas have been protected, there are important edge areas.** These areas include the Bull Branch valley, Long Mountain and Sunday River Whitecap, all of which have high ecological value and are prominently in the A.T. viewshed.

- **Threat of development.** As the closest area of the A.T. to population centers to the south, the Mahoosucs face the greatest threat from development that can lead to habitat fragmentation.

Characteristics—Visitor Experience (D)

- **Recreation and access.** There are existing trails and recreation areas which are not protected, and where public access is not permanently protected. Conservation has been an important part of the local economy and securing these areas would ensure a continuation of that trend.

Future Work

Significant areas of the Mahoosuc area of the A.T. region are protected and the region is the focus of ongoing conservation efforts. High recreation use also indicates a high-visibility location which past visitors will be interested in ensuring remains open for recreation and as a wild place. This public interest may be offset by the growth of second home development, particularly in the Route 2 and Route 26 corridors. Areas along the Grafton Loop Trail—an official A.T. side trail—have already faced development pressures and will continue to do so. Protection of the Mahoosucs will need to strike a balance between these development pressures and the degradation of the ecological assets which are a large part of the desire for visitation.

CONCLUSION

Saddleback Mountain

The six priority focus areas in this report have been highlighted because these areas contain the greatest concentration of conservation values related to the Appalachian Trail in Maine, while at the same time face some of the greatest risk of loss of those values. The A.T. is a special place in Maine and in our country as a whole, as many hikers and other outdoor recreation fans can attest. But this report and the GIS data underlying its methods indicates that the region is special for many other reasons: as a climate corridor in a changing world; as a resource for economic development as timber markets and industries shift; as a place of unique and vanishing ecological diversity. The goal of this publication is not only to highlight the existence of these elements but to direct efforts to protect them.

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APPENDIX 1

WABANAKI: PEOPLE OF THE DAWNLAND

No discussion about land and land conservation in Maine would be complete without acknowledging and briefly describing the history of the interaction between two peoples and the land use practices and property ownership concepts that distinguished them. For the Wabanaki Confederacy, and in particular the Penobscot people who were the original inhabitants in much of the A.T. landscape, Maine is their Homeland:

> *Homeland is the land from which the Penobscot people come from and which their culture derives from. Homeland for the Penobscot would extend throughout much of what is now known as Maine and beyond its borders. An important concept concerning worldview would be Penobscot people would not be to say the land belongs to the Penobscot. Instead, the Penobscot belong to the land and can use the land and resources while respecting and protecting it. (Penobscot Nation’s Cultural and Historic Preservation Department 113).*

When European colonists arrived in Maine the result was “on one side, an evolving capitalist property system that treated natural resources as economic commodities and that granted landowners extensive, exclusive land exploitation rights, and, on the other side, an Indian property system characterized by complex shared land use rights and more ecologically stable land use practices” (Freyfogle 718). Between 1616 and 1619, between 75 and 90 percent of Native Americans in Maine died from European diseases during The Great Dying, and further wars with and among the colonial powers took their toll in the early 18th century. The European system of land ownership became fully entrenched in Maine and continues to exist over this landscape today. The people of the Wabanaki Confederacy were left with little choice but to try and recover portions of their Homeland via treaties:

- 1794: the Passamaquoddies signed a treaty with the State of Massachusetts in which they agreed to give their territory, except for approximately 23,730 acres, to the State. The Penobscots, after they had signed treaties in 1796 and 1818 and 1833, retained islands in the Penobscot River above present-day Bangor.
- 1796: First treaty following the original 1794 treaty to reduce Penobscot land acreage by ceding territory to the State of Massachusetts.
- 1833: 95% of Penobscot land was transferred to the State of Maine and the Penobscot trust fund was established with the $50,000 that the State paid for the four townships (Maine Indian Tribal-State Commission 5-6)

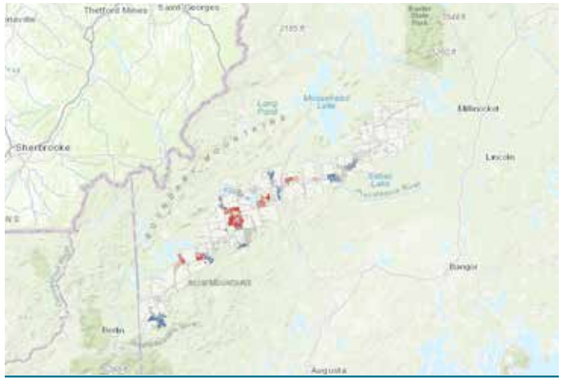
Today, the Penobscot Nation occupies only a fraction of their ancestral territory, which is divided into Reservation Land, Trust Land, Fee Land:

- Reservation Land: Islands System 4840.88 acres, Matagamon Reservation 24 acres
- Trust Land – 86,357.52 acres. All lands purchased since October 10, 1980 and conveyed to the United States of America in Trust for the Penobscot Nation.
- Fee Land – 28,004.80 acres. All lands of the Penobscot Nation which are not in either category of Reservation Land or Trust land are owned by the Nation in Fee and are owned under and subject to all laws and regulations of the State of Maine relating to land and land ownership.

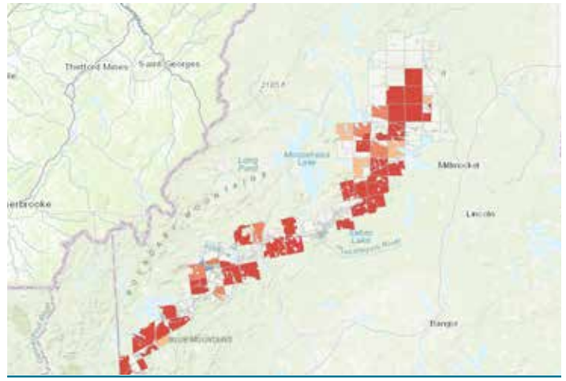
Of these lands currently in Penobscot Nation land base, the Fee Land in Carrabassett Valley is the only portion in the Maine Appalachian Trail Landscape as defined in this study. As Penobscot beliefs and traditions are deeply related to the land in the traditional territory of the Wabanaki people, the Carrabassett Valley lands and any other holdings of the Penobscot Nation are outside of the scope, intent and meaning of this study. It can only be hoped that in the future more of the A.T. landscape in Maine, as an overlay and construct on the traditional territory of the Wabanaki people, can be stewarded and protected in a way that reflects these traditional uses and concepts of life forces which provide for people and other things in the world.

APPENDIX 2

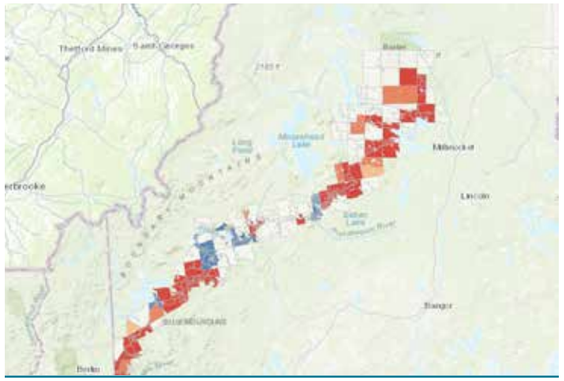
PRIORITIZATION FOCUS MAPS



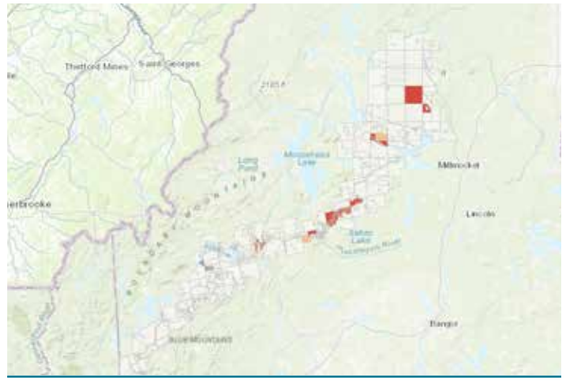
Hot Spots: Percent of Parcel in Viewshed 85%
(500 acre parcels and above)



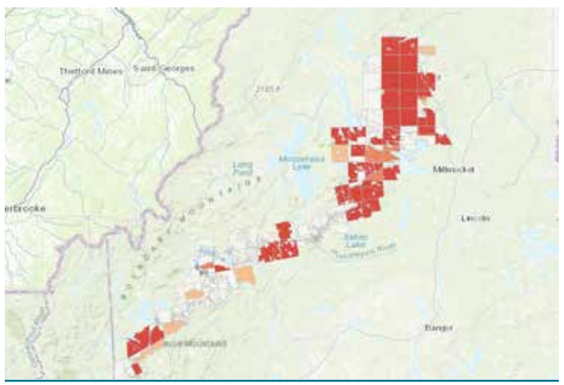
Hot Spots: 1000 Acres Resilient Parcels



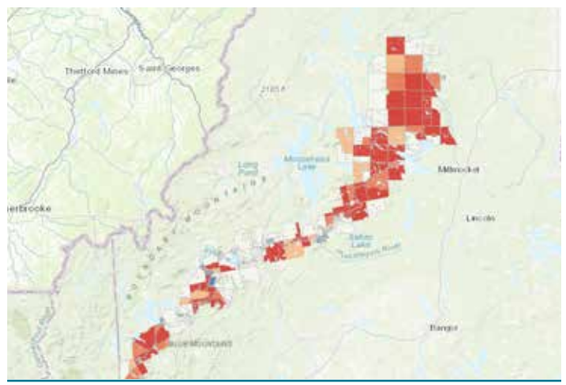
Hot Spots: 80% Resilient Parcels



Hot Spots: 10% Far Above Average Resilience

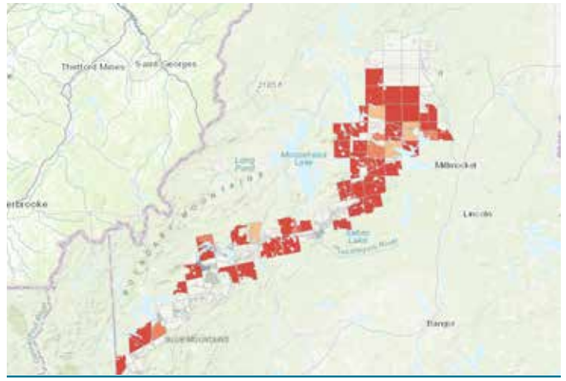


Hot Spots: TWS 5000 Acre Block, Acres

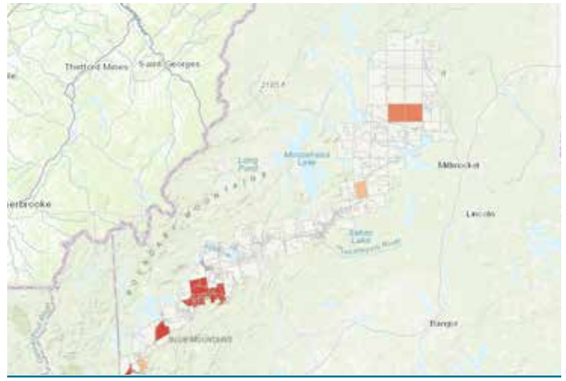


Hot Spots: TWS 5000 Acre Block 75%

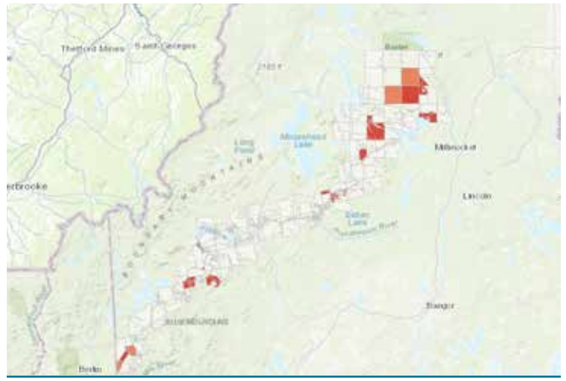
Hot Spot with 99% Confidence
Hot Spot with 95% Confidence
Hot Spot with 90% Confidence
Not Significant
Cold Spot with 90% Confidence
Cold Spot with 95% Confidence
Cold Spot with 99% Confidence



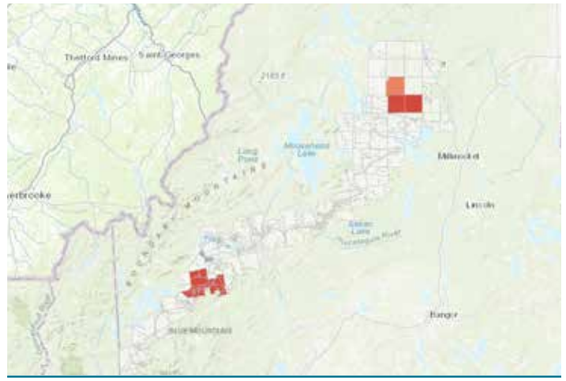
Hot Spots: TNC Active River Area, above 0.1 acres



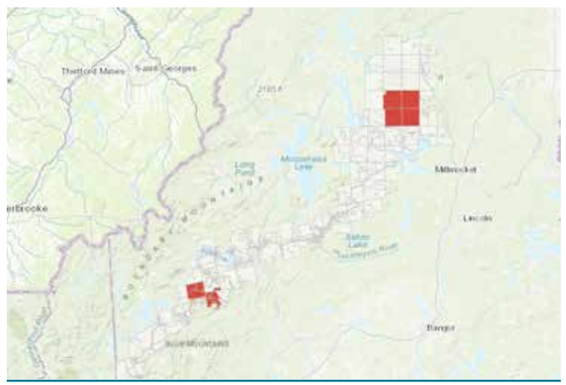
Hot Spots: Percent of parcel above 2700 foot elevation



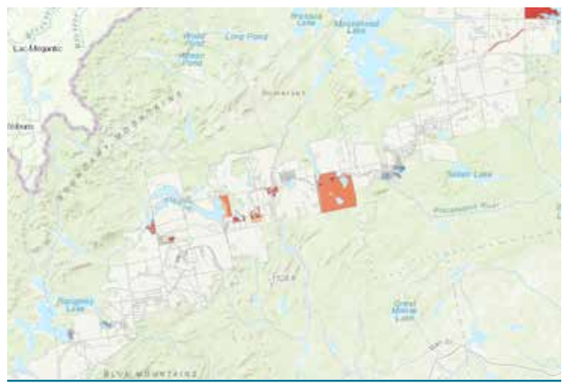
Hot Spots: MNAP Rare Natural Communities



Hot Spots: State Listed Animal and Plant Habitats



Hot Spots: Historic/Cultural Sites, 3 sites



Hot Spots: State Listed Animal Habitats, Acres

APPENDIX 3

SAMPLE SCORECARD

Maine A.T. 2020 Scorecard

Project Name: Moxie Pond
Parcel: FID 3268

Moxie Pond

FID	3268
FID_1	2115
TPL	SO026012
GEOCODE	25805
GPL	25805012
PLAN_LOT	01-02
MAP_BK_LOT	
AT_ADJAC	1
AT_CORRID	0
ACRES	1844.698284
TOWN	Bald Mountain Twp T2 R3
COUNTY	Somerset
PRIORITY	1
NOTES	
OWNER	
DIST	Kennebec District

Maine A.T. 2020 Scorecard

Project Name: Moxie Pond
Parcel: FID 3268

Parcel Analysis

Indicators - Views Beyond the Corridor

Data		Rank (of 3391)	Percentile
Acres Undeveloped Layer	1815.835643	125	96.31%
Percent Undeveloped Layer	98.44%	176	94.81%
Acres Viewshed	1831.665365	107	96.84%
Percent Viewshed	99.29%	2288	32.53%
Acres 2700-foot area	0	N/A	0.00%
Percent 2700-foot area	0	N/A	0.00%

Analysis - Views Beyond the Corridor

The Moxie Pond project, located on the north side of the A.T. corridor in the Caratunk-Bald Mountain Pond priority focus area, lies along a stretch of Maine's A.T. between the Pleasant Pond Mountain and Moxie Bald Mountain. These peaks are low in elevation compared to other areas of the A.T. in Maine but the region is flanked by numerous large waterbodies and the terrain slopes down to flatter ground on the north and south sides of the A.T. Consequently, the Moxie Pond parcel ranks very high in the percentage of the parcel that is visible from the A.T., despite the ranking of 2288 out of 3391 parcels along Maine's A.T. for this metric Viewshed data generally favors smaller parcels - Moxie Pond is actually the 7th-ranked parcel over 1,000 acres for this metric, making it extremely important in terms of views and scenic beauty.

Though this area has long been a working forest and continues to support active timber operations, the Undeveloped Area encompasses nearly the entire acreage of the Moxie Pond parcel. The only areas out of this ranking are directly along the shore of Moxie Pond. There are other large parcels in the Caratunk-Bald Mountain Pond priority focus area with similar or higher Undeveloped Area percentages and ranking, but none that is as prominently in the A.T. viewshed as Moxie Pond. It is a key parcel for Views Beyond the Corridor in an area of sweeping views.

Maine A.T. 2020 Scorecard

Project Name: Moxie Pond
Parcel: FID 3268

Indicators - Natural Resource Quality and Ecological Connectivity

Data		Rank(of 3391)	Percentile
Acres TNC Ecoregional	1077.487886	120	96.46%
Percent TNC Ecoregional	58.41%	447	86.82%
Acres TNC Ecoregional - Far Above Average	19.816698	131	96.14%
Percent TNC Ecoregional - Far Above Average	1.07%	188	94.46%
Acres TNC Ecoregional - Above Average	1057.671189	120	96.46%
Percent TNC Ecoregional - Above Average	57.34%	421	87.58%
Acres TWS 5000-acre Forest Block	1709.110079	97	97.14%
Percent TWS 5000-acre Forest Block	92.65%	95	97.20%
Acres TNC Active River Area	242.827442	140	95.87%
Percent TNC Active River Area	13.16%	2106	37.89%
Acres MNAP Rare Natural Communities and Plants	0.039672	191	94.37%
Percent MNAP Rare Natural Communities and Plants	0.002151%	193	94.31%
Acres MNAP State Listed Animal Habitats	0	N/A	0.00%
Percent MNAP State Listed Animal Habitats	0	N/A	0.00%

Analysis - Natural Resource Quality and Ecological Connectivity

Moxie Pond is within the prioritized subset of data at the high end of the statewide distribution for total area of a parcel scoring high for climate resilience (1077.49 acres) but the overall percentage of resilient acres for the size of the project is somewhat lower (58.41%, ranking 447 out of 3319 parcels). It is, however, contiguous to parcels with approximately 20,000 acres of high climate-resilient acreage, making this parcel important as part of a bigger block of resilient land. This is indicated by the ranking of 188 out of 3391 in Far Above Average climate-resilient acres. 92.65% of the parcel contains TWS 5000-acre block acreage, in this case the 34,959-acre block that covers the Caratunk-Bald Mountain Pond priority focus area. Thus it is part of an identified large ecological core area of animal and plant habitat. The significant undeveloped area discussed above as part of Visitor

Maine A.T. 2020 Scorecard

Project Name: Moxie Pond
Parcel: FID 3268

Experience also suggests that this forest is important matrix forest needed for large viable refugia and ecological connectivity among refugia. The Active River figure typically favors large, lower-elevation parcels with large water bodies, but this relatively high number (ranking 140 out of 3391) indicates the elevation gradient of the parcel from the nearby ridges of Moxie Bald to the shore of Moxie Pond. Bald Mountain Brook crosses the parcel and enters Moxie Pond in the southwestern portion. Moxie Pond does not rank high for Rare Natural Communities or State Listed Animal Habitats but it borders areas with significant concentrations of both of these.

Analysis - American Heritage

The Maine Appalachian Trail Land Trust database contains two historic/cultural sites for the Moxie Pond parcel. The first is the possible remains of railroad and logging infrastructure on the shore of Joe's Hole, as this was the location on the Somerset Railroad where logs were loaded for rail transport (source: Old Canada Road Historical Society). The other possible site is the documented presence of a pre/historic tool-making site at the southern end of Moxie Pond, as listed by the Maine Historic Preservation Commission. The site, which is listed as a 1km square in order to mask the exact location, is listed as "not significant".

Analysis - Visitor Experience

The Bald Mountain Brook lean-to is just to the south of the Moxie Pond parcel, in the A.T. corridor. There are two listed side trails adjacent: the Moxie Bald cutoff trail and the North Peak side trail from the Appalachian Trail. There is a large network of motorized trails in the area, including club trail 101 for ATVs (Moose Alley Riders) and the Bald Mountain Trail for snowmobiles (Valley Riders SC). Both of these follow Bald Mountain Road, a logging road which enters from the south over the A.T. and continues north. There are several camps on the western side of Joe's Hole and Moxie Pond where Troutdale Road provides access from the south. The proposed New England Clean Energy Connect powerline corridor lies just to the west of the Moxie Pond parcel, on the west side of Moxie Pond. The property is likely used for hunting and fishing due to the presences of seasonal homes, good road access and a cooperative landowner.

APPENDIX 4

DATASET DESCRIPTIONS

Views Beyond the Corridor

- "Undeveloped area" (V01). Based on The Human Influence Index (HII) of the Northern Appalachian/ Acadian ecoregion.

  Report: Woolmer, G., Trombulak, S.C., Ray, J.C., Doran, P.J., Anderson, M.G., Baldwin, R.F., Morgan, A. and Sanderson, E.W. 2008. Rescaling the Human Footprint: A tool for conservation planning at an ecoregional scale .Landscape and Urban Planning. Vol 87 Issue 1. p 42–53.

  Dataset Access: https://nalcc.databasin.org/datasets/9659e5c946bc44ada17ab4dd8135f44e

- Appalachian Trail Conservancy Viewshed Layer (V02). Provided by ATC directly to the Maine Appalachian Trail Land Trust.

- 2,700-foot elevation area (V03).

  Report: Part of the "AMC Northeastern High Elevation Areas" dataset. 2,700-foot elevation area is derived from US Geological Survey 30m resolution Digital Elevation Model data as referenced in Publicover et al.

  Dataset Access: AMC via Google Earth kmz file: https://cdn.outdoors.org/wp-content/uploads/2019/10/08150107/Northeastern-High-Elevation-Areas_10_08_2019.kmz

Natural Resource Quality and Ecological Connectivity

- TNC Ecological Terrestrial Resilience (N01).

  Report: Anderson, Mark G., et al. "Resilient and connected landscapes for terrestrial conservation." The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office Boston, MA (2016): 1-149.

  Dataset Access: http://www.conservationgateway.org/ConservationByGeography/NorthAmerica/UnitedStates/edc/reportsdata/terrestrial/resilience/Pages/Downloads.aspx

- The Wilderness Society 5,000 Acre Forest Blocks (N02).

  Report: Woolmer, G., Trombulak, S.C., Ray, J.C., Doran, P.J., Anderson, M.G., Baldwin, R.F., Morgan, A. and Sanderson, E.W. 2008. Rescaling the Human Footprint: A tool for conservation planning at an ecoregional scale .Landscape and Urban Planning. Vol 87 Issue 1. p 42–53.

  Dataset Access: Via DataBasin at https://nalcc.databasin.org/datasets/3b089c3900604a078b946ae3fb31b580 Provided by Peter McKinley, The Wilderness Society, Hallowell, Maine, peter_mckinley@tws.org Originator: Wildlife Conservation Society CanadaPublication Date: November 2007 Title: Human Footprint of the Northern Appalachian/Acadian Ecoregion Edition: Version 1.0 Geospatial Data Presentation Form: raster digital data Other Citation Details: Copyright 2007 Wildlife Conservation Society Canada. All rights reserved

  Dataset consists of contiguous ecological cores 5,000 acres and greater scoring 0-10 in the Human Footprint model, patches less than 5,000 acres and scoring 0-10 , and all landscape scoring 11-20 were separately identified. These attributes are identified across the Acadian ecoregion and spatially distributed by Nature Conservancy matrix Forest Blocks Tiers 1,2, and 3 within northeastern Vermont, northern New Hampshire, and Maine.

- TNC Active River Area (N03).

  Report: Smith, Mark P., et al. “The active river area: A conservation framework for protecting rivers and streams.” The Nature Conservancy, Boston, MA (2008).

  Dataset Access: http://easterndivision.s3.amazonaws.com/Freshwater/App_LCC__10m_ARA_simplified.7z

- Maine Natural Areas Program Rare Natural Communities and Plants (N04).

  Dataset Access: Maine Geolibrary Catalog

  https://geolibrary-maine.opendata.arcgis.com/datasets/maine-endangered-threatened-and-special-concern-wildlife-habitat-summarized-layer

  Data consists of State Listed Animals (ETSC). Wildlife species whose conservation status is listed as Endangered, Threatened, or of Special Concern. Data is based on recent observations and is presented with a generalized buffer. Rare Plants—known rare, threatened, or endangered plant occurrences based on field observations by Maine Natural Areas Program (MNAP) staff.

- Beginning with Habitat High Value Plant and Animal Habitats (N05). Contains state-listed plant and animal species components of this dataset.

  Dataset Access: Maine Geolibrary Catalog, provided directly by the Beginning with Habitat program https://www.beginningwithhabitat.org/the_maps/gis_data_request.html

  The MNAP has classified and distinguished 104 different natural community types that collectively cover the state’s landscape. Mapped rare natural communities or ecosystems, or exemplary examples of common natural communities or ecosystems, are based on field surveys and aerial photo interpretation.

American Heritage

- Maine Department of Transportation Historic Places.

  Dataset Access: Data layer created by Maine Historic Preservation Commission and Maine Department of Transportation and provided to the Maine Appalachian Trail Land Trust. https://www.maine.gov/mdot/mapviewer/?show=Historic%20Districts,Historic%20Properties,Roads%20General&hide=FFC,MEDOT%20Regions

  National Register listed and eligible properties within five (5) miles of either side of the Appalachian Trail centerline in Maine.

- Data from Historical Societies.

Dataset Access: Locations for potential historical sites were provided to the Maine Appalachian Trail Land Trust by the Sandy River and Rangeley Lakes Railroad, the Museums of the Bethel Historical Society, the Maine Appalachian Trail Club, the Old Canada Road Historical Society, the Maine Encyclopedia, the Arnold Expedition Historical Society, the Madrid Historical Society and the Monson Historical Society. Data was provided via the online data collection app Fulcrum (fulcrumapp.com).

- Maine Historic Preservation Commission Sites of Pre/historic Significance.

  Dataset Access: Provided by Maine Historic Preservation Commission.

  Two sets using 1/2km squares rather than points to protect site location, and most of the attribute data has been stripped to include site number and town for pre-contact sites, site number, site name, town, and site type for historic sites. https://www.maine.gov/mdot/mapviewer/?show=Historic%20Districts,Historic%20Properties,Roads%20General&hide=FFC,MEDOT%20Regions

- National Register of Historic Places. Several sites in the A.T. region of Maine have been placed in the National Register.

  Dataset Access: Provided by Maine Historic Preservation Commission.

  National Register properties and districts (minus those with address restrictions) within a 10-mile corridor along the Appalachian Trail in Maine.

Visitor Experience

- Trail Access Locations. Trailheads, parking areas, road pull over areas, all with a 500-foot buffer (sound, gathering area)

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust.

- Shelter locations and designated campsites. With 500-foot buffer denoting influence area.

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust.

- Official A.T. Side Trails. With 500-foot buffer denoting influence area.

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust. Some trails were updated with data incorporated from the Maine Appalachian Trail Land Trust.

- National and State Scenic Byway Corridors. With 500-foot buffer denoting influence area.

  Dataset Access: https://geolibrary-maine.opendata.arcgis.com/datasets/mainedot-scenic-byways

- Motorized Trails.

  Dataset Access: Dataset was provided by the State of Maine to the Center for Community GIS as the Maine Appalachian Trail Land Trust’s GIS consultant for this project. Motorized Trails data was compiled from local club data and then hexagonalized to mask trailbed as required by State of Maine for use of data.

- A.T. Communities.

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust.

Scenery Along the Treadway

- A.T. treadway with a 500-foot buffer

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust.

- Road crossings of A.T. corridor with a 500-foot buffer

  Dataset Access: Provided by ATC directly to the Maine Appalachian Trail Land Trust.

Saddleback Mountain

MAINE
Appalachian Trail
LAND TRUST

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