



Appalachian National Scenic Trail

A Special Report | March 2010



National Parks Conservation Association®
Protecting Our National Parks for Future Generations

STATE ♦ OF THE ♦ PARKS®

Center for State of the Parks®

More than a century ago, Congress established Yellowstone as the world's first national park. That single act was the beginning of a remarkable and ongoing effort to protect this nation's natural, historical, and cultural heritage.

Today, Americans are learning that national park designation alone cannot provide full resource protection. Many parks are compromised by development of adjacent lands, air and water pollution, invasive plants and animals, and rapid increases in motorized recreation. Park officials often lack adequate information on the condition of critical resources.

The National Parks Conservation Association initiated the State of the Parks program in 2000 to assess the condition of natural and cultural resources in the national parks. The goal is to provide information that will help policymakers, the public, and the National Park Service improve conditions in national parks, celebrate successes as models for other parks, and ensure a lasting legacy for future generations.

To learn more about the Center for State of the Parks, visit www.npca.org/stateoftheparks or contact: NPCA, Center for State of the Parks, P.O. Box 737, Fort Collins, CO 80522; phone: 970.493.2545; email: stateoftheparks@npca.org.

Since 1919, the National Parks Conservation Association has been the leading voice of the American people in protecting and enhancing our National Park System. NPCA, its members, and partners work together to protect the park system and preserve our nation's natural, historical, and cultural heritage for generations to come.

- More than 325,000 members
- Twenty-four regional and field offices
- More than 120,000 activists

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MIKE ELLERY

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On the cover: A.T. shelter in Vermont near Bourne Pond ©iStockphoto.com/Dan Barnard; yellow lady slipper by Philip Jordan; hiker at Baker Peak, Vermont by Laurie Potteiger. Above: Trail Days in Damascus, Virginia.

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Introduction

BENJAMIN TUPPER

Meandering some 2,178 miles between Springer Mountain in Georgia and Mount Katahdin in Maine, the Appalachian National Scenic Trail (A.T.) is the United States’ most beloved recreational footpath. The trail follows the spine of the Appalachian Mountains, passing through 14 states and six national parks, eight national forests (which contain 1,015 miles, or 47 percent of the trail), two national wildlife refuges, 67 state-owned land areas (e.g., game lands, forests, or parks), and more than a dozen local municipal watershed properties. The Appalachian Trail’s protected corridor (a swath of land averaging about 1,000 feet in width) encompasses more than 250,000 acres, making it one of the largest units of the National Park System in the eastern United States. The trail passes through some of the most significant and rare ecosystems remaining along the East Coast.

The Appalachian Trail provides solitude, quiet, and a wilderness-like experience that is accessible to millions of residents on the Eastern Seaboard. Those living in cities such as Boston, New York, Philadelphia, Baltimore, Washington, D.C., and Atlanta are within a few hours’ drive of trailheads. Each year, approximately two million hikers walk some portion of the trail, whether it be a mile, the entire length, or something in between. They are drawn to the trail for myriad reasons: recreation and exercise, wildflower and wildlife viewing, and spiritual and psychological renewal. The A.T. serves as a gathering place for old friends and provides ample opportunities for hikers to make new ones. The trail offers opportunities, challenges, obstacles, goals

America needs her forests and her wild spaces quite as much as her cities and her settled places.

—Benton MacKaye
Appalachian Trail visionary



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Wooden signs, along with more than 165,000 painted blazes on trees, help hikers stay on the trail.



Key Findings

- **Incompatible development threatens trail resources and integrity.** The narrow, linear nature of the trail corridor, coupled with its prime location along the crest of the Appalachian Mountains, leaves it susceptible to an array of development threats, such as pipelines, power lines, racetracks, quarries, residences, and energy-producing wind turbines. Increasing motorized off-road vehicle and mountain bike use along the narrow boundaries of the A.T. also represents a perennial challenge that threatens both natural and cultural resources, as well as the visitor experience.
- **Trail protection efforts must be ongoing and will evolve.** The state and federal land protection efforts for the Appalachian Trail sparked by the 1968 National Trails System Act have been remarkably successful in securing a continuous protected corridor around the trail between Maine and Georgia, but this slender thread of protected land will not be enough to protect the A.T. in perpetuity. While there will be some opportunity in the years ahead to protect additional high-value conservation lands, the next era of trail protection must involve raising awareness of the trail and its value in neighboring communities and influencing local land uses. The Commonwealth of Pennsylvania took an important step in 2008 when it passed a law requiring municipalities and counties through which the A.T. passes to enact ordinances to protect trail values. Appalachian Trail managers recognize the significance of this legislation and will support efforts to enact similar legislation in other states.
- **Increased recognition of the Appalachian Trail as a valued part of our national heritage would enhance protection.** The Appalachian Trail is eligible for listing in the National Register of Historic Places or even designation as a national historic landmark. Such listing or designation would help to increase the trail's visibility, and it also would contribute to resource protection by allowing A.T. managers to apply for funding that is designated for listed properties. In addition, the listing would help to ensure that an appropriate level of review and adequate mitigation is achieved for projects with the potential to harm the trail. Managers are pursuing National Register designation. Perhaps more significantly, the Appalachian Trail Conservancy and the National Park Service are advancing programs such as *A Trail to Every Classroom* and the *Community Partners Program*. These programs raise awareness of and appreciation for the A.T. as a resource that is a part of community history and contributes to the quality of life of the people and communities through which it passes.
- **Appalachian Trail resource managers need more and better information.** While the Appalachian Trail is well known as a continuous footpath spanning the Appalachian Mountains between Georgia and Maine, it is less well known for the wealth of natural and cultural resources harbored within its protected corridor. These resources would benefit from further study. Recent recognition of the A.T. as an important "mega-transsect" for environmental monitoring purposes—because of the unique piece of geography that it occupies and its icon status—gave birth to the A.T. MEGA-Transsect project, a citizen science-based program sponsored by NPS and ATC that uses the A.T. to engage citizens and others in monitoring a variety of critical indicators of environmental health, important not only to good management of the A.T., but to the overall ecological health of the region. The A.T. and its protected corridor also provide a laboratory well suited to study the effects of climate change.

to be reached, and something to measure oneself against. In addition to providing recreational opportunities and enjoyment of the outdoors, the trail offers visitors a wealth of cultural resources. America's heritage, in the form of historic structures, cultural landscapes, and archaeological sites, is located along the Appalachian Trail.

This report by the National Parks Conservation Association's Center for State of the Parks provides a brief overview of the history of the Appalachian National Scenic Trail, an explanation of how the trail is managed, descriptions of the trail's natural, cultural, and recreational resources and the challenges they face, and recommendations for how to bolster current efforts to protect and preserve this American icon.

A Unique Concept Takes Shape

The Appalachian Trail began as the vision of one man, a landscape architect named Benton MacKaye, who outlined his plan for a trail along the Appalachian Mountains in 1921. MacKaye was concerned about loss of habitat and wildlife, diminishing recreational opportunities, and deteriorating environmental health for the eastern United States, as well as the effects of these changes on area residents. He envisioned more than a mere footpath, but rather a system of protected land dotted with mountaintop lodges where easterners could reacquire themselves with nature in their own backyards. MacKaye organized and convened the first conference of Appalachian Trail enthusiasts in Washington, D.C., in 1925. The assembled gathering of hikers, foresters, and public officials embraced his vision of creating a primitive trail experience in proximity to the urban centers of the eastern United States. They began by creating the organization that later became the Appalachian Trail Conservancy (ATC).

The first section of the trail was constructed in Harriman and Bear Mountain State Parks, New York, in 1923. Under the guidance of ATC chairman Myron Avery, thousands of volunteers constructed the Appalachian Trail throughout the 1920s and 1930s. By 1937 a continuous footpath from Maine to Georgia was completed. During the 1930s and 1940s, the Civilian Conservation Corps (CCC) built much of the original infrastructure along the trail, including rock walls and steps, cabins and shelters, and fire towers.

The protected corridor surrounding the Appalachian Trail today is a direct result of a 30-plus-year land-acquisition program pursued by the National Park Service, U.S. Forest Service, and a number of states, supported primarily by federal Land and Water Conservation Fund (LWCF) appropriations. While some lands along the trail—primarily inholdings within the national forest system—were acquired following the initial National Trails System Act of 1968, most have been acquired since amendments to the act were adopted in 1978.

Specifically, the National Park Service has acquired 111,485 acres, the U.S. Forest Service has acquired 56,457 acres, and various states have acquired 19,493 acres for a total of 187,435 acres. Thousands of additional publicly owned acres bring the total protected area of the Appalachian Trail to more than 250,000 acres. This total includes lands specifically acquired for the Appalachian Trail and lands that are managed primarily for trail purposes on other federal- and state-administered lands. The Appalachian Trail's land-acquisition program has been both consistently funded and successful in acquiring land for the trail.

The Appalachian National Scenic Trail is unique from other park units in several ways: It was established, constructed, and continues to be maintained, rebuilt, relocated, supported, and protected by dedicated volunteers; it is managed by a consortium of private organizations and public agencies; and it has an unusual shape—a long, thin swath of land that traverses along the ridges of the Eastern Seaboard.





COURTESY OF THE APPALACHIAN TRAIL CONSERVANCY

Benton MacKaye (left) and Myron Avery in 1931. Avery helped bring MacKaye's vision of the trail to fruition.

Volunteers are the lifeblood of the Appalachian Trail. In addition to those who built the trail and those who maintain it, a host of economists, scientists, and planners lend their expertise to A.T. managers in efforts to protect the trail. In 2008 approximately 6,000 volunteers devoted more than 200,000 hours to maintain and manage the Appalachian Trail, participating in projects that included trail maintenance and building, data collection, invasive non-native species removal, rare plant and natural community monitoring, boundary maintenance, and a variety of other natural resource monitoring and management activities. The work of these volunteers is guided and supported by the Appalachian Trail Conservancy and its 30 affiliated trail-maintaining clubs.

Trail Management via Public-Private Partnership: A Model of Cooperation

Managing the Appalachian National Scenic Trail has required a herculean effort since the trail's inception. Responsibility for trail management has varied over time but has always depended upon partnerships between public and private entities. Today, two entities work together to oversee the entire length of the Appalachian National Scenic Trail: the Appalachian Trail Conservancy (ATC), a private nonprofit established in 1925, and the National Park Service (NPS). (With about one-half of Appalachian Trail lands within its borders, the U.S. Forest Service is also a major manager of the

Appalachian Trail.)

The roles and responsibilities of the ATC and the NPS's Appalachian Trail Park Office (ATPO) have been outlined within a memorandum of understanding that dates back to 1984 and that has been renewed periodically. The ATC is responsible for day-to-day management of the Appalachian Trail, coordination of 30 independent trail-maintaining clubs, financial management and fundraising for the trail, maintenance of the trail and its associated structures, and stewardship of the lands through which it passes. The ATPO retains primary responsibility for federal land acquisition, boundary surveys, issuance of special use permits (i.e., permission required for uses ranging from hang gliding to conducting natural resource research on federal land), law enforcement, environmental compliance, and overall administration of more than 85,000 acres of federally acquired Appalachian Trail lands.

This partnership between the ATC and the NPS represents the definition of synergy: Together the two organizations can accomplish much more than either could do alone. Being a part of the National Park System provides the Appalachian Trail with federal protection and funding. Yet, the Park Service could not maintain the trail without the tireless contributions of the ATC, its trail-maintaining clubs, and numerous volunteers, as well as the private funds poured into these efforts. The arrangement is considered a model for public-private collaboration in conservation and stewardship of nationally significant public lands.

Although the ATC and ATPO oversee the management of the trail along its entire length,



NY-NJ TRAIL CONFERENCE

A young volunteer helps with trail improvement at Bear Mountain State Park in New York.

Recommendations

- **Increase funding:** Additional federal funding is needed to support necessary natural and cultural resource inventories and associated resource interpretation, as well as to pursue National Register designation.
- **Fully protect trail:** Today the goal of a permanently protected Appalachian Trail footpath owned entirely by the public is within reach. Just over 10 miles of the trail are not publicly owned—only about 150 properties remain to be protected on the trail in order to reach this goal.
- **Continue adding high-priority lands to protected trail corridor:** Some privately owned lands bordering the Appalachian Trail have special natural or cultural resource significance, or are otherwise important to the trail experience. Including these lands within the Appalachian National Scenic Trail is important so that their resources can be protected by A.T. managers and enjoyed by trail visitors. A primary way that A.T. managers protect additional lands is through support from the Land and Water Conservation Fund (LWCF), a federal program that provides funds for land acquisition and easements, among other resource projects. The A.T. has significantly benefitted from LWCF-supported appropriations, and funding should be accessed in the future for selected properties possessing important natural or cultural resources. Continued congressional support for the LWCF with funds directed toward protecting the Appalachian Trail corridor will allow managers to improve protection of the A.T.'s resources.
- **Continue to vigorously defend the A.T. from impacts of external projects and identify appropriate mitigation to offset unavoidable impacts:** Decisions affecting the placement and design of roads, electric-transmission corridors, wind-energy projects, wireless-communications facilities, and other development should reflect recognition of the special and fragile character of the A.T., its resources, and adjacent landscapes. Potentially acceptable crossing locations for road and energy projects should be identified, and so should treasured trail landscapes where such proposals will not be entertained. As society strives to create a sustainable energy future and balance competing needs, substantial and meaningful mitigation must be identified to compensate for unavoidable impacts.
- **Celebrate the Appalachian Trail's remarkable private support:** Federal funds support less than half of the annual cost of managing the Appalachian Trail. The balance comes from the Appalachian Trail Conservancy, its members and supporters, and from its affiliated clubs and their volunteers. Decades ago, the ATC formally accepted delegated management responsibility for the NPS-acquired public trail corridor lands, and must raise funds to carry out those responsibilities. The ATC needs ongoing support to continue to provide longstanding, large-scale programs such as its seasonal trail crew and Ridge Runner programs, as well as to expand its community-outreach programs.

Top: Volunteers help paint blazes to mark the trail.

Middle: A hiker enjoys the scenery along the trail.

Bottom: The ATC Mid-Atlantic Regional Office in Boiling Springs, Pennsylvania.



TED MARTELLO



D. L. ENNIS



DESTINY JARVIS



BUNNY MEDEIROS

myriad other public agencies—including national parks, national forests, the Tennessee Valley Authority, state parks, state game commissions, state forests, state highway departments, county parks, town parks, and water reservoir authorities—administer portions of the trail corridor. Understandably, the sheer number of organizations and differences in mandates and administrative policies can make decision-making and planning complicated. The ATC and ATPO strive to encourage some consistency in management along the trail, primarily through a series of memorandums of understanding and special management-area designations in forest plans. In addition, the ATC has produced a local management planning guide, which is a compendium of trail-management policies.

The most significant factor affecting a park's ability to protect its resources is the annual funding it receives from Congress. Through the unique management partnership between the National Park Service and the Appalachian Trail Conservancy, these organizations can share resources, but difficult decisions must be made on how this limited funding is spent. Furthermore, because the trail passes through lands administered by a host of different federal, state, and local agencies, a reduction in one of these agency's budgets shifts the burden onto the other partners, making it difficult for them to achieve their goals for resource management programs and trail protection. Private funding sources are integral to managing and protecting the trail, but acquiring private funding is sometimes difficult because of the misperception that the trail is adequately protected due to its status within the National Park System. The ATC and its affiliated clubs provide about \$3 million annually in contributed volunteer services to the trail.



LB BRYANT

Above: A hiker takes a break from the trail to visit the Damascus, Virginia, branch library, dubbed "the friendliest little library on the trail."

Below: A hiker looks out over a spectacular view of the Blue Ridge Mountains.



A Reason for Continued Protection

CARL HAGELIN

Natural and Cultural Resources Abound Along the Trail

Traversing the ridges of the Appalachian Mountains and passing through countless valleys, ravines, gaps, forests, and meadows, and crossing numerous streams, creeks, seasonal rivulets, ecosystems, habitats, and microclimates, the Appalachian Trail has the capacity to serve as an indicator of the health of the natural resources of the entire Eastern Seaboard. You can assess this vast area by examining the scenic landscapes, fragile and rare habitats, flora and fauna, soils, watersheds, waterways, mountains, meadows, and alpine habitats. The Appalachian Trail serves as a protected corridor along which plants and animals can move—a feature that could prove to be critical in the future if climate change projections are realized and plants and animals must migrate to survive.

At this time, not enough is known about the current condition of the trail's diverse natural resources—plants, wildlife, and ecosystems. Formal natural resource data collection is costly and requires coordination among many agencies along the trail's 2,178 miles and associated protected lands. Time, funding, and staffing limitations constrain the amount of natural resource data that can be collected. Resource managers are addressing these limitations through an initiative called the MEGA-Transect program (see "Appalachian Trail MEGA-Transect Program" on page 12).

Even less is known about the trail's diverse cultural resources, such as historic structures, archaeological and historic sites, and paleontological resources. This overall lack of knowledge, as well as conflicting trail uses and

Hikers walk along a wooden boardwalk in New Jersey, built to protect sensitive natural resources and help hikers navigate flood-prone areas.



A.T. hikers plan the next day's route from the Matts Creek Shelter in Virginia.

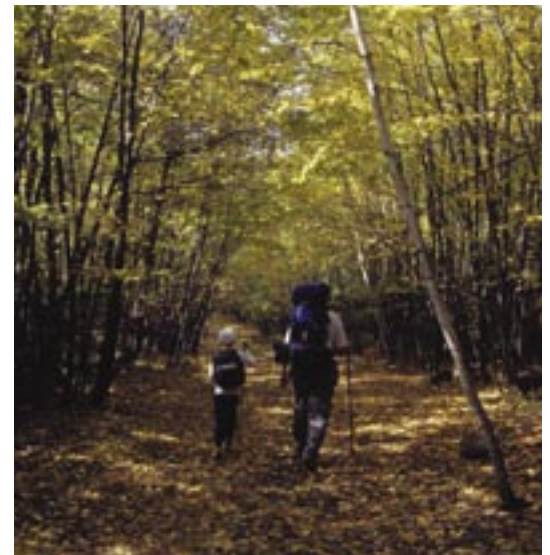
KATIE ROBINSON

encroaching developments adjacent to the A.T. corridor, puts the trail's significant resources at risk. Conducting trail-wide cultural resource inventories would be a first step toward identifying resources and protecting them. Some site-specific inventories of cultural and archaeological resources have been completed prior to activities such as shelter construction, but what's stopping trail-wide inventories is primarily a lack of funds. Similar funding shortages face many other national parks, also preventing them from conducting comprehensive inventories. Faced with the realities of limited funds and multiple threats, protecting the trail's known cultural resources takes top priority for A.T. resource managers, while expanding the search to identify additional resources remains secondary.

Regardless of the condition of the trail's unmeasured natural resources and those cultural resources that have yet to be discovered, land managers do know that a number of issues threaten the Appalachian Trail and the hiking experience. The trail's shape and length leave it vulnerable to incompatible adjacent development and inappropriate use (e.g., off-road vehicle use), and the proliferation and entrenchment of invasive non-native plant species is facilitated. Maintaining trail land corridor boundaries, monitoring natural resource threats, and coordinating goals and tasks are also significant challenges due to the multitude of management partners that oversee the Appalachian National Scenic Trail.

Goal Within Reach

Since the passage of the 1968 legislation establishing the Appalachian National Scenic Trail and the subsequent 1978 amendments expanding the land acquisition authority for protection of the A. T. corridor, it has been the goal of the National Park Service and trail advocates to have a permanently protected footpath that is entirely in public ownership. Today that goal is within reach. Of the more than 2,100 miles of the A.T., just over 10 miles are not owned by NPS, the Forest Service, or one of the states or municipalities through which the trail passes. Only about 150 properties remain to be acquired on the trail in order to reach the goal. The NPS and the Appalachian Trail Conservancy will also continue to take advantage of opportunities to expand the zone of protection along the A.T. where particular conservation values or significant scenic viewsheds are at stake.



GARY SZEIC

The A.T. appeals to people of all ages, and it provides opportunities for families to spend time together.



JEFF ZIMMERMAN PHOTOGRAPHY

Sunrise breaks over the splendid natural resources of the Grayson Highlands in Virginia.

NATURAL RESOURCES— Trail Corridor Includes Many Habitats and Myriad Species

An incredible array of natural resources—plants, animals, habitats, soils, scenic vistas, rivers, and streams—is located within the swath of land encompassed by the Appalachian Trail corridor. These resources not only comprise the hiking experience, but also provide valuable ecosystem services. For example, forests along the Appalachian Trail corridor give hikers a sense of isolation while anchoring the watersheds that provide drinking water to more than 10 percent of the nation’s population. The Appalachian Trail passes through eight distinct ecoregions (i.e., areas defined by environmental conditions and natural features) and at least 14 major forest types, including some of the largest and least fragmented tracts of forest remaining in the eastern United States.

The Appalachian Trail Conservancy and Appalachian Trail Park Office arranged and funded, using a combination of public and private funds, natural heritage inventories for the entire trail between 1989 and 2001. These inventories were conducted by state natural heritage offices and identified more than 2,200 occurrences of rare plant and animal species and communities. Populations of six threatened or endangered and 360 individual state-listed rare species of plants were among those documented. More than 80 globally rare plant community types have been

identified to date on the trail, including red spruce/Fraser fir forest and Southern Appalachian mountain bogs—two of the most endangered ecosystems in the United States. The red spruce and Fraser fir populations throughout the Southern Appalachians have been decimated by pollution, aphid infestation, acid rain deposition, spruce budworm, and balsam woolly adelgid. Southern Appalachian mountain bogs have been damaged by logging, mining, grazing, feral hogs, agriculture, residential development, and road building. Any activity that causes a change in the surrounding water flow patterns can destroy these unique systems. Also present along the trail are other rare habitats and unique plant communities, such as alpine tundra (a treeless ecosystem resulting from elevation rather than latitude), subalpine krummholz (stunted trees that occur near tree line on a mountain), grassy balds (open summits densely covered with native grasses), and heath balds (habitats found along narrow ridges and mountain crests that consist of dense evergreen shrubs, especially rhododendron), among others.

Regularly monitoring natural resources is critical to detect trends that could be occurring over time, such as changes in species distributions or even disappearance of some species. However, establishing a comprehensive natural resources monitoring program is difficult, largely due to the trail’s exceptional length. Currently there are more than 50 volunteer-based natural-heritage

WAYNE COLLINS



White-tailed deer are common along the Appalachian Trail.

monitoring sites located within all 14 A.T. states. Along the Appalachian Trail, the Northeast Temperate Network of the National Park Service's Inventory and Monitoring Program coordinates some natural resources monitoring, such as air quality, water quality, forest health, migratory breeding birds, atmospheric deposition, invasive species, visitor usage, alpine and high elevation vegetation, and ozone. A.T. managers also rely on citizen scientists and hikers to gather data to complement the information collected by formal resource monitoring programs. Because data collection standards may vary among individuals, using these data to make management decisions can be problematic. In an effort to standardize data collection, there are efforts under way to develop data-collection protocols for use by citizen scientists.

In addition to presenting challenges for resource monitoring, the trail's narrow configuration and great length leave it vulnerable to threats that originate both within and outside its boundaries. The natural resources along the Appalachian Trail are at risk from natural as well as human-induced changes, including air and water quality degradation from pollution; species loss and

Children assist with invasive non-native plant removal as a part of the Trail to Every Classroom program.



JULIE JUDKINS

natural community impacts from climate change; soil compaction; trampling of sensitive plant species and damage from trail overuse; invasions of non-native plant species; and illicit collection of rare plants and animals. Over the past five years the entire trail was assessed by ATPO, the ATC, and trail-maintaining clubs to identify trail problems (e.g., erosion and trampling of vegetation) and potential solutions such as short relocations to protect rare plant species or communities. To address the problem of non-native species, A.T. managers could inventory plant and animal species to acquire baseline conditions, periodically survey and collect data to determine trends, and set long-term objectives to guide management. Some of this work is being done at certain high-risk sites, and the ATC is working to expand its site-monitoring capacity. Currently, two full-time law enforcement rangers employed by the Appalachian Trail Park Office coordinate the law enforcement efforts to protect animal and plant species along the trail.

Non-Native Plant Species—Native Species Face Encroaching Invaders

Invasive non-native plants are a critical concern along the entire length of the Appalachian Trail and are a considerable threat to the trail's ecosystems. Oftentimes invasive non-native plant species lack natural predators and can withstand diseases that plague native species. The result is that invasive non-native plants can outcompete native species, quickly becoming entrenched while threatening the survival of both common and rare native species. Native herbivorous wildlife, especially those that only eat certain native plants, are particularly vulnerable to any decrease in the availability of native plants.

Appalachian Trail managers engage volunteers to help collect invasive non-native plant species data. In 2005, a hiker surveyed the entire trail (to 30 feet on either side) for the presence of invasive non-native plant species. This survey documented invasive non-native plants at 250 locations between North Carolina and Maine, covering more than 1,300 acres or 9 percent of the area surveyed. The survey found that Virginia, West Virginia, Maryland, and Pennsylvania had the highest percentages of land plagued by invasive non-native plant species. According to the hiker's data the most common invasive non-native species trail-wide are multiflora rose (*Rosa multiflora*) and garlic mustard (*Alliaria petiolata*), followed by Japanese honeysuckle (*Lonicera japonica*), Japanese stilt grass (*Microstegium vimineum*), tree of heaven (*Ailanthus altissima*), and crown vetch (*Securigera varia*).

Controlling the spread of invasive non-native plants along the Appalachian Trail is difficult because adjacent lands can be sources of non-



JAMIE DONALDSON

In 2008, a volunteer-based non-native plant removal project using Angora goats was initiated on Roan Bald, on the North Carolina-Tennessee border. To learn more about this project or to "adopt" a goat visit <http://baatanygoatproject.blogspot.com/>.

natives, and foot traffic along the Appalachian Trail creates bare soil that may be colonized by non-native plant species. Additionally, hikers moving along the trail may unintentionally spread non-native plant seeds to other locations via their boots and other gear. Although managing invasive non-native species along the trail is a daunting challenge, A.T. managers still make serious efforts to do so. The Appalachian Trail Park Office receives assistance from three National Park Service Exotic Plant Management Teams (EPMTs)—Northeast EPMT, Mid-Atlantic EPMT, and the National Capital Region EPMT. The Park Service EPMTs and private contractors have targeted a number of the worst invasive plants, such as multiflora rose, Japanese stilt grass, garlic mustard, Japanese honeysuckle, Japanese barberry (*Berberis thunbergii*), autumn olive (*Elaeagnus umbellata*), glossy buckthorn (*Frangula alnus*), wavyleaf basketgrass (*Oplismenus hirtellus* ssp. *undulatifolius*), purple loosestrife (*Lythrum salicaria*), and common reed (*Phragmites australis*). Trail-maintaining clubs have also added invasive non-native plant control into their work plans in an effort to inventory and eradicate these species.

In 2008 several invasive non-native plant control projects started along the Appalachian Trail, increasing the number of control sites on the trail from five to 14. The Appalachian Trail Park Office, Appalachian Trail Conservancy, the Connecticut chapter of the Appalachian Mountain Club, and The Nature Conservancy joined in fall 2008 to participate in The Nature Conservancy's Weed-it-Now program to remove invasive non-native plants in the Berkshire Taconic Forest near the Connecticut-Massachusetts border in western Massachusetts. Since 2002, the Weed-it-Now program has removed invasive non-native plants such as Japanese barberry and garlic mustard from more than 9,000 acres, including portions of the Appalachian National Scenic Trail. Another project involved the Mid-Atlantic EPMT and some 180 volunteers, who removed invasive plants along the Appalachian Trail in northern Virginia. In Georgia, North Carolina, and Tennessee, partners from nonprofit organizations and government agencies have joined together to develop a cooperative weed-management partnership. The partnership's goal is to inventory approximately 14 of the most threatening

KAREN LUTZ



Hiking the Trail

"A Trail to Every Classroom" Initiative Inspires Educators and Students Alike

In 2006, the Appalachian Trail Conservancy and the National Park Service developed A Trail to Every Classroom (TTEC) as a three-season professional development program for K-12 teachers that promotes conservation, civic participation, and healthy lifestyles by using the Appalachian Trail as an educational resource. By inviting teams of teachers and community partners from the 14 trail states to a week-long summer institute and subsequent regional workshops, TTEC invests in a trail-wide network of educators and students.

The core strategy of TTEC is sustainable service-learning, which combines the best practices of place-based education, sustainable development, and service-learning. The program builds sustainability by promoting partnerships between teachers, trail volunteers, and agency partners. The Trail to Every Classroom program engages teams of teachers from the same school to promote multi-disciplinary/whole school approaches to curriculum development, and adds skills to their tool kits by offering sessions in curriculum planning, reflection, grant writing, program evaluation, student assessment through experiential education, and hike leadership.

This program has been supported through a variety of funding sources within the National Park Service, as well as through foundation and corporate support secured by ATC.

Teachers participate in a Trail to Every Classroom training session.



KATHRYN CASE

Left: Volunteers monitor water quality at Laurel Fork Creek in Tennessee.

Right: Bicknell's thrush is one of the rare species monitored along the Appalachian Trail.



SARAH FREY

species in and around significant natural heritage areas and wilderness areas. The partnership has also initiated control efforts in high-priority areas of North Carolina, where volunteers use manual methods and chemical agents on non-native invasive plant species. Workshops presented by ATC and Park Service EPMT staff provide information on non-native species identification and what participants can do on the trail and at home to prevent the spread of invasive plants. A field day on the trail following these workshops allows volunteers, students, hikers, and agency partners to inventory or control non-natives, or to restore areas that have already been treated.

Appalachian Trail MEGA-Transect Program—An Exciting Opportunity to Learn More About the Trail's Resources

The Appalachian National Scenic Trail corridor is an ideal swath of land for long-term ecological research. The trail is long, permanently protected, covers an elevation gradient that ranges from near sea level to some of the highest points on the Eastern Seaboard, receives a wide range of moisture, and experiences large temperature fluctuations. As a result, the Appalachian Trail corridor may encompass one of the richest assemblages of temperate zone species in the world. Because of the factors previously mentioned (e.g., length, budget, logistics), extensive research, inventorying, and monitoring of species and habitats along the Appalachian Trail require the

help of volunteers to collect and compile data and coordinate research. The trail is located in close proximity to a number of universities and colleges, which may be sources of volunteers interested in engaging in high-quality long-term research.

To better understand the health of the trail's natural resources, the Appalachian Trail Conservancy and the Appalachian Trail Park Office have initiated the Appalachian Trail MEGA-Transect program. The MEGA-Transect is designed to unite existing research efforts while identifying new opportunities to monitor, understand, and communicate the long-term ecological health of the Appalachian region. Federal, state, and local agencies; private organizations; nonprofits; research universities; schools and youth groups; and individuals, including hikers, are encouraged to supply data on air and water quality; invasive non-native plant locations and dispersion rates; rare, threatened, and endangered species; visitor impacts (e.g., effects on soil, water, and vegetation); seasonal life cycles (i.e., the timing of plant flowering and other seasonal biological events); and the effects of global climate change on natural resources, among many other topics. ATC and Appalachian Trail Park Office staff are working to develop standardized data-collection protocols that should be used by these groups. The ATC and ATPO hope that the MEGA-Transect program will help bring residents closer to the A.T., get them out on the trail, and help them learn more about

the resources and conditions of the ecosystems in their backyards.

Rare plant monitoring and vegetation mapping, collaborative efforts among the National Park Service, Appalachian Trail Conservancy, U.S. Geological Survey, and NatureServe (a nonprofit conservation organization), are currently under way and there are plans to compile and analyze data in the near future. Citizen scientists collect data on birds along the A.T. via 38 North American Breeding Bird Survey routes. The Cornell Lab of Ornithology and the National Audubon Society developed this project to allow citizen scientists to easily collect and share data on bird species. The Vermont Institute of Natural Science has established 32 Mountain BirdWatch routes along the Appalachian Trail's northern section to track certain alpine/subalpine bird species such as Bicknell's thrush (*Catharus bicknelli*) and other montane forest bird species. Data collected from this project are entered into an electronic database maintained by the Vermont Institute of Natural Science, which is widely used by bird-watchers, scientists, and conservationists.

Air Quality—Pollution Makes Hiking More Difficult and Threatens Human Health

Air quality has a profound effect on hiker health and enjoyment of the Appalachian Trail, as well as the health of people residing near the A.T. corridor, and the natural resources along the trail. Obscured views, breathing difficulties, tree deaths resulting in degraded landscapes, and damage to plants are just a few possible consequences of poor air quality. While neither the Appalachian Trail Conservancy nor the Appalachian Trail Park Office operates any air-quality monitoring stations along the A.T., data are collected near the trail by numerous stations operated by federal and state air-quality monitoring programs. The Appalachian Trail MEGA-Transect program aims to collect new data and compile existing data in an effort to expand air-quality monitoring efforts.

Air quality threats along the Appalachian Trail fall into three main categories: wet and dry acid deposition, ground-level ozone, and visibility reductions due to haze and particulates. While data show that trends for sulfur (SO_4) deposition, nitrogen (NO_3) deposition, haze, and ozone within the A.T.'s airshed are either stable or improving, current levels are high and are cause for concern. Heavy metals emitted from smelters and other industrial sources are also a concern and can affect air and water quality within the trail corridor. The heavy metals enter rivers, lakes, streams, and creeks in runoff during and after rainfall. Human ingestion of heavy metals can result in reduced growth and development, cancer, organ damage, nervous system damage, and in extreme cases, death.

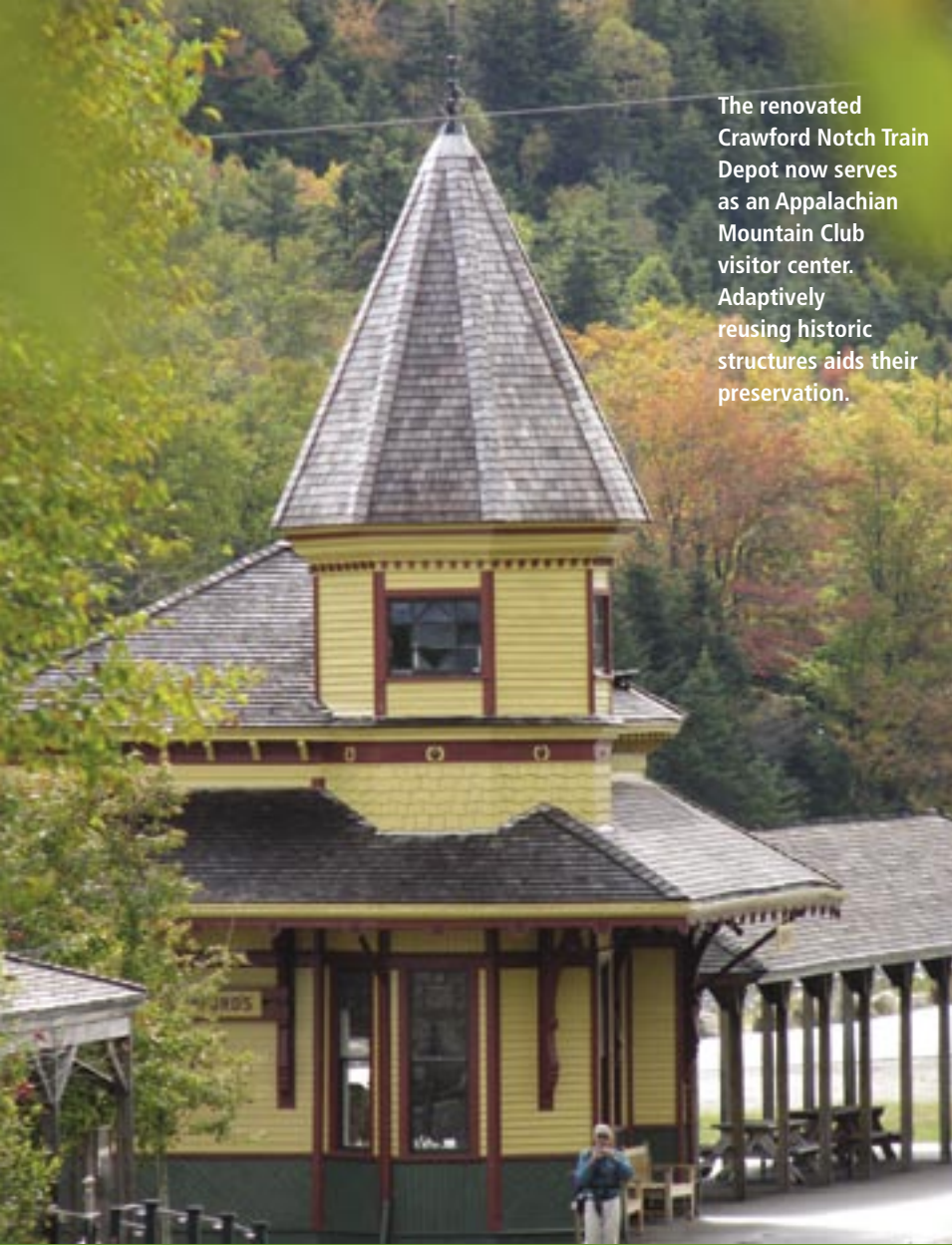
Situated downwind of coal-fired power plants, the Appalachian Mountains receive some of the highest acid deposition rates in North America. When sulfur dioxide (SO_2) and nitrogen oxides (NO and NO_2) react with water, oxygen, and other chemicals in the atmosphere, various acidic compounds are formed that fall to the Earth with precipitation. Sulfur dioxide and nitrogen oxides are commonly emitted from fossil fuel-burning power plants and other combustion sources and can be carried by wind across hundreds of miles.

The results of acidic precipitation on plants and trees include slower growth, leaf injury, and potentially the death of sections of forests, which can lead to losses of food and habitat for a number of animal species. Such losses can increase mortality or result in migration to more hospitable areas. Since serious acidification and associated adverse effects (e.g., damage to fine roots that reduces a plant's ability to absorb nutrients) have been observed at Great Smoky Mountains National Park, Shenandoah National Park, and a number of national forests within the Appalachian Mountains, there is a high probability that current levels of acid deposition are contributing to soil and surface water acidification, soil nutrient

NATIONAL PARK SERVICE



The view of Shaver Hollow (located just west of the A.T.) on a clear day and a hazy day (in Shenandoah National Park).



The renovated Crawford Notch Train Depot now serves as an Appalachian Mountain Club visitor center. Adaptively reusing historic structures aids their preservation.

APPALACHIAN MOUNTAIN CLUB

Hiking the Trail

Historic Structures Serve Today's Hikers

Perhaps the best way to provide for the continued preservation of a historic building is to adaptively re-use the structure in some other capacity than that for which it was originally intended. Two examples of adaptive re-use can be seen along the Appalachian Trail at Crawford Notch in White Mountain National Forest. Members of the Appalachian Mountain Club restored two structures—the Crawford Notch train depot and the Crawford House artist's studio. The train depot was built in 1891 to serve visitors staying at the Crawford House, which was built in 1828 by the Crawford family to house visitors to the White Mountains. The restored Crawford Notch train depot is now used as a visitor center with exhibits on the area's rich natural resources and human history. Renowned landscape painter Frank Shapleigh was the artist-in-residence at the Crawford House artist's studio during the summers from 1877 to 1893. The Crawford House artist's studio is now used to accommodate hikers for overnight stays.

imbalance, and plant and animal species loss along the trail.

Increased concentrations of ground-level ozone are a concern along the Appalachian Trail. Ground-level ozone is formed by chemical reactions that occur when nitrogen oxides and volatile organic compounds combine in the presence of sunlight. The risks of elevated levels of ozone to humans include lung tissue damage, reduced lung function, and increased lung sensitivity to other irritants. High concentrations of ozone also affect a plant's ability to produce and store food, which compromises growth, reproduction, and overall plant health. These weakened plants are then more susceptible to disease, pests, and environmental stresses. Air pollution, including ground-level ozone and acidic precipitation, is substantial across much of the Appalachian Trail corridor and is increasingly contributing to the death of sensitive vegetation, including red spruce (*Picea rubens*) and sugar maple (*Acer saccharum*).

In addition to directly harming resources, diminished air quality reduces visibility along the trail, affecting one of the A.T.'s most enjoyed features: expansive views from mountain ridges and viewpoints. Without the effects of air pollution, visibility in the eastern United States is approximately 90 miles at very high elevations. Because of poor air quality, summer visibility along the A.T. within Shenandoah National Park is sometimes as little as 10 to 12 miles or less, while hikers in Great Smoky Mountains National Park may only be able to see 12 to 16 miles. These ranges are among the lowest along the entire trail, despite being located within national parks.

Water Quality—Degraded Water Quality an Issue for Hikers and Wildlife

The Appalachian Trail corridor contains nearly 1,800 streams, rivers, and lakes. Many of them serve as vital water sources for hikers and crucial habitat for plants and animals. Downstream of the trail this water supplies drinking water to communities, provides additional habitat, and is used to produce electricity at hydroelectric power stations.

In the trail's 2008 resource management plan, the Appalachian Trail Park Office identified four main threats to the trail's water quality: climate change; wet and dry deposition of nitrate, sulfate, and heavy metals; excess nutrients; and erosion. Risks from climate change include the possibility of more frequent and/or severe weather that can result in flooding, increased water temperature, changes in types of precipitation, and lakes remaining open during the winter, among other effects. Each of these changes will bring unknown consequences for native plant and animal species and water quality along the Appalachian Trail.



PHILLIP JORDAN

Streams, rivers, and lakes along the A.T. provide drinking water for people and wildlife. Left: Long Creek Falls, Georgia.

Deposition of nitrate, sulfate, and heavy metals are concerns as discussed in the “Air Quality” section (page 13). Excess nutrients in bodies of water come from either atmospheric sources (e.g., ammonium deposited with rainfall) or from human or animal waste. Privies that are located too close to bodies of water, and nutrient loading from agricultural and grazing practices could result in pollutants leaching into waterways, leading to changes in species composition (toward species that can survive in altered systems) as well as human health risks from elevated levels of fecal coliform bacteria in drinking water. Appalachian Trail managers are actively seeking to minimize contamination from human waste by replacing traditional pit privies with composting toilets and by choosing better sites for privies.

Rainfall and adjacent land uses (e.g., commercial and residential development, farming, and logging) erode soils, which are deposited in streams, rivers, and lakes. This erosion increases sedimentation and cloudiness, ultimately resulting

in altered habitats. For example, increased sedimentation can suffocate trout eggs and freshwater mussels, leading to reduced survival and reproductive success rates.

Global Climate Change—A.T. Offers Opportunity to Study Its Effects

Climate is a key driver of natural systems and affects ecosystem structure, composition, and function. Global climate change has the potential to alter every ecosystem on Earth and is truly a global pandemic of leviathan proportion. Climate change could result in alterations in seasonal maximum and minimum temperatures, changes in mean annual precipitation, and shifts in the seasonality of precipitation. The effects on natural habitats include, but are not limited to, increasing severity and frequency of damaging storms, wildfires, and droughts, as well as increased pest insect populations and opportunities for invasive non-native plants to proliferate. Climate change could also cause species to shift their



TIMOTHY CUMMINGS

Fitzgerald Falls in New York.

Hiking the Trail

Ridge Runners and Other Caretakers Educate Hikers and Protect High-Use Areas

The Appalachian National Scenic Trail is comprised of more than 250,000 acres of parkland and 4,000 miles of park boundary. It is the longest of the Park Service units. Protection of this resource is neither practical nor possible through traditional means. It is accomplished through the collaboration and cooperation of a multitude of agencies and management partners. The Appalachian Trail Park Office's two full-time law enforcement rangers work with local law enforcement officials along the trail to ensure hiker safety, to establish emergency response, and to maintain trail corridor boundaries. To bolster the protection of resources and to encourage appropriate hiking habits (e.g., Leave No Trace hiking and camping practices, staying on the trail to protect sensitive plant communities, and camping in designated areas), the Appalachian Trail Conservancy established the Ridge Runner program more than a decade ago. Program participants provide a friendly, consistent, and reliable presence on the trail during the heavy-use seasons. The Ridge Runners are seasonal ATC employees whose main role is to deter potential harm to the trail sites and facilities, including natural and cultural resources, along high-use sections of the trail and at heavily used overnight sites. Although they do not have law-enforcement capability, the Ridge Runners serve as resources for trail users and their presence reduces the likelihood of vandalism, poaching, or inadvertent damage to resources.

Endangered Gray's lilies are a target for poaching.



ROBERT G. SHAW

ranges northward and upward, result in a loss of biodiversity and changes in species composition along the trail, and alter phenological (seasonal) life cycles. Temperature changes also can affect the feeding and breeding cycles of bird species by changing the timing of insect hatches. Alpine plants and wildlife are particularly susceptible to these changes as they cannot migrate upslope as temperatures increase, and they are adapted to a narrow set of conditions.

The A.T. MEGA-Transsect program offers scientists and researchers the opportunity to study the effects of climate change on eastern plants and animals, especially range shifts (both up-latitude and up-slope) and changes in tree species composition. The trail provides a protected swath of land that includes a multitude of habitats, microclimates, and elevational and latitudinal variations. Scientists are particularly concerned about the “mountain island” effect where species become stranded at the highest elevation in an area.

Plant and Animal Poaching—Illegal Harvesting of Plants and Animals a Trail-Wide Concern

Appalachian Trail managers have documented wildlife poaching and illicit plant collection, especially of rare, threatened, and endangered species, along the Appalachian Trail. Poachers have particularly focused on wild ginseng (*Panax quinquefolius*), which can be used for medicinal uses. Ornamental plant species that are also targeted by poachers include lady slipper orchids (subfamily *Cypripedioideae*), kidney-leaved twayblade (*Listera smallii*), dwarf violet iris (*Iris verna*), and trillium (*Trillium* spp.). Gray's lily (*Lilium grayi*), a species that is listed as endangered in Tennessee and threatened in North Carolina, is also poached. Animals that are known to be illegally harvested along the trail include timber rattlesnakes (*Crotalus horridus*), white-tailed deer (*Odocoileus virginianus*), and black bears (*Ursus americanus*).

Protecting these species over the trail's 2,178 miles is accomplished through the cooperative efforts of local, state, and federal agencies, depending on law enforcement jurisdiction. Two full-time law enforcement rangers employed by the Appalachian Trail Park Office coordinate law enforcement efforts by providing investigative and technical support and through the tracking and documenting of incidents.

Learn about some ways that A.T. managers are boosting resource protection in “Ridge Runners and Caretakers Educate Hikers and Protect High-Use Areas” (left).



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CULTURAL RESOURCES— Numerous Resources, Limited Data

The Appalachian National Scenic Trail is not solely a recreational footpath surrounded by natural resources; the trail corridor encompasses a wealth of nationally significant cultural resources. The history of the lands along the Appalachian Trail and the history of the trail itself are rich and include the stories of American Indians, pioneers, settlers, and farmers; wars; resource industries; and outdoor recreation that preceded the establishment of the Appalachian Trail. For example, Pilger Ruh (Pilgrim's Rest) Spring in Pennsylvania was used extensively by American Indians, missionaries, government officials, and settlers dating back before the 18th century. Later, Civil War soldiers journeyed up and down the Appalachian Mountains during the bloodiest four years the nation has ever known. The Civil War Battle of South Mountain in Maryland took place on land that is now protected within the Appalachian Trail corridor. The Confederate capture of Union troops

at Harpers Ferry as well as the Confederate defeat and retreat after Antietam also took place on lands now within the trail corridor.

Despite the historical importance of many lands within the Appalachian Trail corridor—as well as the cultural importance of the trail itself, its historic structures, and its ties to the thousands of people who have had a hand in building and maintaining it—acknowledgment, preservation, and interpretation of the cultural resources along the trail are generally lacking. Like many national parks that were established mainly for natural resource protection or recreational opportunities, cultural resource protection along the Appalachian Trail is limited. While hundreds of archaeological sites have been documented within the Appalachian Trail corridor, many as part of a 2003 survey of the Fox Gap section of the South Mountain Battlefield in Maryland, perhaps thousands still lie buried waiting to be discovered and explored. A.T. managers have made a conscious decision to limit the number

Hand-built rock and timber bridges are among the myriad cultural resources located along the trail. Pictured here is the Laurel Fork Creek bridge in Tennessee.

Volunteers with the New York-New Jersey Trail Conference help to build a safer and more ecologically sensitive trail in Bear Mountain State Park, New York.



This newly finished section of trail is safer for hikers and will reduce erosion.



Hiking the Trail

Trail Restored in Bear Mountain State Park

The Appalachian National Scenic Trail is at risk of being “loved to death.” Each year an estimated two million hikers walk at least a portion of the Appalachian Trail. Wear and tear from hikers’ footsteps can significantly damage the trail (e.g., compact soil, exacerbate erosion, trample vegetation, widen or deepen the trail), making hiking more difficult and even dangerous in some areas. Located just an hour’s drive from New York City, Bear Mountain State Park attracts hundreds of thousands of visitors every year. Bear Mountain has become one of the most heavily used sections of the Appalachian Trail, frequented by both Appalachian Trail through and section hikers, as well as day hikers looking to stretch their legs along some of the oldest sections of the Appalachian Trail.

The Bear Mountain Trails Project was launched in 2006 in an effort to improve the condition of this section of the Appalachian Trail and the hiking experience along it. Echoing the overall cooperative management style of the trail, the Bear Mountain Trails Project is a partnership between the Appalachian Trail Conservancy, the New York-New Jersey Trail Conference, the Palisades Interstate Park Commission, the New York State Office of Parks, Recreation and Historic Preservation, and the National Park Service Appalachian Trail Park Office. Volunteers and skilled trail builders have joined forces to design and construct an entirely new route for the Appalachian Trail over Bear Mountain that can withstand this heavy use, with design elements and standards atypical of the Appalachian Trail in most other locations, but well suited to this unique location. Wide enough to accommodate larger numbers of hikers, the grade of the new route is low enough to encourage hikers to remain on it and to allow water to flow over it instead of down it, reducing or eliminating erosion. In construction techniques reminiscent of the Works Progress Administration work done there nearly eight decades ago, native stone from the site is cut and shaped to size and used to build crib wall—essentially a retaining wall constructed to support trail tread as it traverses a slope—and to install steps where the grade is too steep to allow tread on the crib wall. As the first section of new trail nears completion, Bear Mountain Trails Project partners will now work toward closing and restoring the old portions of the trail and the miles of social trails that have developed over the years. When the Bear Mountain Trails Project is fully completed, hopefully in 2012 or 2013, Bear Mountain will have three miles of new, state-of-the-art trail for all Appalachian Trail hikers to enjoy.

APPALACHIAN TRAIL CONSERVANCY

APPALACHIAN TRAIL CONSERVANCY

of historical markers and interpretive waysides near cultural resources along the trail in order to avoid signage clutter, to respect wilderness-area designation, and for fear that such attention would lead to vandalism and artifact hunting, which are already issues along certain sections of the trail. While these concerns are valid, limiting the acknowledgement and interpretation of historic sites and cultural resources prevents them from gaining the recognition they deserve and limits the public's understanding of, and perhaps willingness to protect and preserve, these resources.

The Appalachian Trail corridor—the footpath and associated infrastructure (e.g., bridges, shelters, backcountry huts, viewpoints, and rock steps)—constitutes one of the nation's most significant cultural landscapes. The trail's cultural landscape also includes thousands of individual prehistoric and historic archaeological sites that lie along the Appalachian Trail corridor. The Civilian Conservation Corps-built infrastructure along the trail (e.g., rock walls and steps, cabins and shelters, and fire towers) might not be here today without the trail clubs that maintain, repair, and restore them when necessary.

Historic Structures— Historically Significant Buildings and Structures Line the Trail

The Appalachian National Scenic Trail corridor contains a host of historic structures (the exact number is unknown), such as shelters built by the Civilian Conservation Corps, early industrial buildings, monuments, fire lookouts, and rock walls, that help to tell the story of the United States. Some fire towers are now used as observation platforms that provide stunning views for hikers. Adaptively reusing historic structures is a great way to ensure their protection. Other historic structures offer hikers the opportunity to pause and learn something about important people and events in the nation's history. For example, the first monument to General George Washington—a stone tower built by the people of Boonsboro, Maryland, in 1827—is located along the Appalachian Trail in Washington Monument State Park in Maryland. Washington surveyed the Appalachian Mountains as a young man and led his army through them during the Revolutionary War.

The Appalachian Trail traverses land that supported the growth and development of the United States. Hikers pass by many quarries, kilns, furnace sites, and mines that demonstrate how natural resources were used to fuel industrial growth during the 18th and 19th centuries. Pine Grove Furnace in Cumberland County, Pennsylvania, is one example of an early industrial historic structure located along the trail. Now located within a state park, the Pine Grove Furnace is a stone structure



DESTROY JARVIS

In Washington Monument State Park, Maryland, the Appalachian Trail passes near the first monument built to commemorate George Washington.

that produced iron products, including cast-iron pots and kettles and wrought-iron goods, for more than 130 years. The history of the furnace is interpreted for hikers via wayside exhibits. Many of the known historic sites and structures along the trail are described in books produced by the Appalachian Trail Conservancy. These guides allow hikers to learn about the historic resources that they see while traveling the trail.

The various trail-maintaining clubs associated with the Appalachian Trail Conservancy care for the historic structures in their respective regions, restoring and rehabilitating historic trail shelters when necessary. Recently, members of the Green Mountain Club rehabilitated two historic structures on the Appalachian Trail in Vermont—the Glastenbury Fire Tower and the Prosper Ski Tow Warming Hut—which now provide hikers wonderful views and shelter from the elements.

National Designation for Appalachian Trail's Cultural Resources

The Appalachian National Scenic Trail corridor and the cultural resources located within this swath of land are likely to be eligible for listing in the National Register of Historic Places, and the

trail itself is probably qualified to be listed as a national historic landmark. The National Register of Historic Places is the official list of historic properties determined to be worthy of protection. A resource that is determined to be exceptionally significant is listed as a national historic landmark, which is recognition of a resource's value to preserving and interpreting the heritage of the United States. The Landmarks Committee of the National Park System Advisory Board and the secretary of the Interior are responsible for making the decision on whether to designate the trail as a national historic landmark. Robert Grumet, a National Park Service historian, completed a cultural resources survey in 2002 that identified more than 1,200 components that contribute to the trail's national significance, such as shelters, Civilian Conservation Corps camps, viewpoints, improved roads, bridges, impoundments, buildings, monuments, towers, railroad grades, and the ruins of a moonshine still.

The Appalachian Trail's numerous historic structures have historical significance for a number of reasons, but A.T. managers are not currently using their limited staff and funding to nominate structures to the National Register

Hikers stop for a rest at the Thomas Knob Shelter in Virginia.



APPALACHIAN TRAIL CONSERVANCY

of Historic Places. However, they do consider all these structures to be eligible, which provides a level of protection in itself because the National Historic Preservation Act mandates that federal agencies must consider the effects of their actions on properties listed in or eligible to be listed in the National Register of Historic Places. Without a determination of eligibility confirmed by the state historic preservation officer, however, properties are not protected from the actions of other federal agencies.

A consultant was hired in 2009 to complete additional groundwork and analysis, which helped the ATC and ATPO decide to pursue National Register designation for the trail. This work began in 2009. There are two options that A.T. managers can use to list the Appalachian Trail corridor in the National Register—14 separate state-by-state designations or one overall multistate designation that includes the whole trail corridor. Once listed in the National Register, a resource is eligible to receive public and private support to increase awareness and protection. Listing the Appalachian Trail in the National Register of Historic Places would bring increased recognition, management, and protection of the trail's cultural resources.

Adjacent Development— Incompatible Land Use Threatens the Integrity of Trail Experience

The biggest threat to the Appalachian National Scenic Trail's cultural and natural resources is the encroachment of residential and commercial development. Adjacent development threatens the trail in several ways: It interrupts natural viewsheds, diminishing the hiking experience, and it facilitates illegal motorized vehicle use, which can damage the trail, lead to looting and vandalism of cultural resources (and poaching of natural resources), and further diminish the hiking experience, among others.

In general, the protective corridor that has been acquired along the A.T. averages 1,000 feet in width. Where the trail crosses existing public lands such as parks, forests, and game-management units, the trail is generally more protected. Most adjacent lands have been designated as special management zones and the lands and resources within those zones are managed primarily for trail purposes by avoiding paralleling or intersecting roads and limiting timber harvesting and other incompatible activities. Still, the narrow protective corridor or "greenway" that has been acquired or designated along the A.T. is vulnerable to adjacent residential and commercial development as well as energy, communications, and transportation projects.

For more than 30 years, Appalachian Trail managers have pursued an ambitious land-



ERICH RAINVILLE

Hiking the Trail

Rocky Run Shelter Renovated

A shelter with a solid roof and a dry floor can be a most welcome sight for weary hikers on the Appalachian Trail, especially after a long day sloggling through the rain, sleet, or even snow. Unadorned shelters were a part of Benton MacKaye's original vision for the trail, and today there are more than 250 scattered along the A.T. Many shelters were built by Civilian Conservation Corps (CCC) crews in the 1930s and 1940s. After years of weathering and routine wear and tear, just 15 of these CCC-built structures remain today. Some of the remaining CCC-era shelters, as well as more recently built enclosures, are in ill repair and in need of renovation despite the best efforts of the volunteer groups that help to maintain them. Regardless of their condition, these trail shelters—some of them listed in the National Register of Historic Places—are integral parts of the Appalachian Trail's cultural landscape.

The Rocky Run shelter, built in 1940 by the Civilian Conservation Corps near Boonsboro, Maryland, was slated to be torn down due to its deteriorated condition. The structure was saved from demolition when Preservation Maryland, the state's oldest historic preservation organization, stepped in to provide funding for the renovation. Volunteers with the Potomac Appalachian Trail Club replaced rotted timber, wood shakes on the roof, and the wood floor. The renovated Rocky Run shelter reopened to hikers in fall 2008. The renovation of this shelter is a model for successful collaboration to preserve resources. In a typical year, trail-maintaining clubs renovate or replace anywhere from one to four shelters.

acquisition program to establish a permanent right-of-way and greenway for the A.T. as the primary means to mitigate the impacts of adjacent development bordering the trail. At the time of the 1978 amendments to the National Trails System Act, approximately 800 miles of the trail were situated along road shoulders or on private lands subject to development. By the late 1970s more than 26 miles of the A.T. in northern Virginia followed the shoulder of Route 601. Today, the full length of the footpath there has been relocated to a wooded corridor acquired by the National Park Service that includes a number of sweeping vistas of the Shenandoah Valley.

Today, just over 10 miles of the A.T. remain in private ownership, a testament to the success of the Appalachian Trail land-acquisition program. Many examples where development impacts were avoided through timely land acquisition by federal and state agencies as well as through the ATC land-trust program can be cited. For example, in the Cumberland Valley of Pennsylvania south of Harrisburg—the longest valley crossing along the A.T.—rapid residential and commercial development threatened to sever the A.T. and to consume adjacent prime agricultural lands. As a result of the National Park Service land-acquisition program there, a pleasant route for the A.T. now follows along a low ridgeline through the valley in an open-space corridor that also includes portions of working agricultural lands that are managed through a special-use permit program.

Development along Appalachian Mountain ridges, including energy-producing wind turbines

and telecommunications towers, can diminish one of the joys of hiking the Appalachian Trail—the experience of mountaintop vistas and expansive views of adjacent forested and agricultural landscapes. It is a major priority of the ATC and the ATPO to protect the trail's miles of uninterrupted views by opposing projects that would mar adjacent scenic and historic landscapes. Trail advocates want to see these developments placed outside of the trail's viewshed when possible, so hikers can fully experience historic cultural landscapes and the sense of isolation of remote areas.

One example of how to help achieve this goal is the voluntary agreement that was reached some years ago between the Appalachian Trail Conservancy (assisted by the American Hiking Society) and the telecommunications industry that calls for early notification of wireless communications facilities proposed within one mile of any national scenic trail, including the Appalachian Trail. While compliance has not been 100 percent, there have been numerous instances in which early notification allowed A.T. managers to proactively work with wireless communications developers to design or site the proposed facilities in a way that protected the trail experience. Less intrusive strategies include strategic placement of the facilities, height limitations, utilizing existing structures, and designing and painting structures to minimize visual disruptions.

The impacts of wind-energy developments are not limited solely to aesthetic considerations such as undeveloped scenic vistas. These developments often include high-grade access roads in fragile, high-elevation terrain, outbuildings, and transmission lines. They adversely affect soils (e.g., increase erosion or compaction), vegetation (e.g., facilitate the spread of invasive non-native plants), and wildlife (e.g., harm migratory birds and bats that collide with blades). A.T. managers opposed Maine Mountain Power's proposal to build 30 400-foot wind turbines adjacent to the A.T. corridor on the ridges of Redington and Black Nubble Mountains, some within one mile of especially remote and scenic sections of the Appalachian Trail. The Maine Appalachian Trail Club, the Appalachian Trail Conservancy, and the National Park Service also opposed this development and were instrumental in blocking the project. Eventually the Maine Land Use Regulation Commission rejected the project in 2007 and has upheld this decision several times. The Appalachian Trail Conservancy and Park Service would like to see improved siting criteria in states where wind energy appears to be viable as well as on federal lands, such as national forests, where landscapes bordering the A.T. or other

Power lines are one example of adjacent development that mars the scenic viewshed along the trail. This photo was taken on Peters Mountain in Giles County, Virginia.



JESSICA ANDERSON



NICHOLAS A. TONELLI

sensitive resources might be excluded.

Roads also threaten the resources and experience of the Appalachian National Scenic Trail. They detract from the wilderness experience, they are noisy, they are venues for illegal trespass by motorized vehicles, they increase the incidence of vandalism and litter, and they pose a safety threat to hikers who must cross them when hiking the trail. Portions of the Appalachian Trail run parallel to major roads and relocating the trail off of and away from roads has long been a top priority of A.T. managers.

Pennsylvania has enacted legislation to manage threats to the trail posed by adjacent development. The 2008 amendment to Pennsylvania's Appalachian Trail Act of 1978 requires the affected counties and 58 local townships along the Appalachian Trail to enact zoning ordinances aimed at protecting the trail from incompatible adjacent land uses. The Appalachian Trail Conservancy is working to provide guidance on specific zoning ordinances, including setback

distances, sightlines, building heights, night lighting, and other design elements, to protect the trail's viewshed and hiker experience. Working with so many counties and local municipalities is an extremely labor-intensive undertaking for the ATC, so while it is possible that a legislative approach could be applied in other states bordering the A.T., it is more likely the ATC will attempt to influence local land-use controls through other means as an outgrowth of their emerging community-partner program.

While Appalachian Trail managers hope to defend the trail and adjacent landscapes from the impacts of adjacent development through a variety of means, it is likely that some land-acquisition capability will continue to be essential to conserve adjacent lands—especially those possessing high-value natural and/or cultural resources.

Stunning vistas, such as this view of Mount Tammany in Warren County, New Jersey, must be protected from air pollution and incompatible development.



KAREN LUITZ

What You Can Do to Help

Perhaps the Appalachian Trail's best asset is the legion of volunteers who have helped over the years to make the A.T. what it is today—America's most beloved and preeminent footpath. Despite all that has been accomplished over the past 80 years there is still much to be done. You can help improve the Appalachian Trail in several ways:

- Join the ranks of the 36,000-member Appalachian Trail Conservancy (www.appalachiantrail.org).
- Learn more about how you can help protect and preserve the Appalachian National Scenic Trail at the Appalachian National Scenic Trail website, www.nps.gov/appa.
- Become a citizen scientist and collect data on the natural and cultural resources along the trail.
- Join a local trail-maintaining club for an afternoon of trail maintenance or spend a week on an A.T. trail crew.
- Purchase an A.T. license plate from your state's department of motor vehicles or help get one for your state.
- Know and practice Leave No Trace (www.Int.org) principles while on the trail.
- Get involved in community planning decisions if you live near the A.T. corridor, and advocate that local development be compatible with the park and its values.
- Join the National Parks Conservation Association, America's leading voice for the national parks, and help support its mission to preserve the parks for the enjoyment of future generations.



APPALACHIAN TRAIL CONSERVANCY

Above: Children and adults celebrated the 2006 National Trails Day at the ATC's Mid-Atlantic Regional Office in Boiling Springs, Pennsylvania.

Below: Volunteers set a stone step on the trail in Bear Mountain State Park, New York.

Acknowledgments

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Back cover: High Point Monument in High Point State Park, New Jersey (photo by Timothy Cummings); the terminus of the Appalachian Trail on Mount Katahdin, Maine (©iStockphoto.com/ Brittany Courville).

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