The Benefits of New Hampshire's Open Space

THE VALUE OF WORKING FARMS AND FORESTS, NATURAL LANDS, AND WATERS

THE REPORT WAS A COLLABORATIVE EFFORT BETWEEN

The Nature Conservancy

New Hampshire Association of Conservation Commissions

New Hampshire Audubon

New Hampshire Land Trust Coalition

New Hampshire Timberland Owners Association,

The Society for the Protection of New Hampshire Forests

Southeast Land Trust of New Hampshire

Statewide Program of Action to Conserve our Environment

COVER PHOTO

Shelburne Forest by Ryan Smith — Forest Society

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PREPARED BY

Jessica Sargent | Primrose Research Group

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SHELBURNE FOREST

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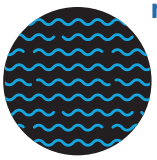
RYAN SMITH — FOREST SOCIETY


TOP OF THE HILL FARM

Executive Summary

New Hampshire's forests, farmlands, and waters provide diverse and extensive natural resources that form the fabric of the Granite State. For the purposes of this report, open space includes conservation and public lands (e.g., Mount Monadnock State Park, Randolph Community Forest, White Mountain National Forest, Mount Major), public drinking water supply sources, and private lands enrolled in the Current Use program, including working forests and farms like the farmland in the Connecticut and Merrimack river valleys. These open spaces provide a broad range of benefits, support a dynamic Granite State economy, and make key contributions to what makes our state special.

Open space can make communities healthier and more resilient by protecting drinking water, preventing and controlling floods, providing drought resistance, naturally moderating temperatures, sequestering carbon dioxide in trees, and improving air quality. Conserving land within a water supply watershed, aquifer, or wellhead protection area is a longstanding practice in New Hampshire to protect drinking water quality and quantity. As an example, land conservation in the Piscataqua–Salmon Falls watershed provided an estimated $40+ million in avoided treatment costs over 10 years.



Protecting natural resources supports a strong economy. Working lands create jobs and support businesses. **Forests** cover most of the state of New Hampshire and are the foundation of the forest-based economy. Forest conservation and the Current Use program help maintain forests as working lands. The forest sector contributes $2.5 billion, 12,800 jobs, and total wages of $696 million annually. **Farmland** conservation and the Current Use program help sustain the agriculture industry, secure the food supply, and provide economic stimulus to rural communities. Agriculture is responsible for $514 million of output; 7,940 jobs; and $181 million in labor income annually.

Open space supports a robust tourism and outdoor recreation economy. Outdoor recreation is very popular with both residents and visitors. The overall outdoor recreation economy accounts for $3.9 billion in value added annually, representing 3.4 percent of the State's GDP, and 32,000 jobs.[1] Hunting, fishing, and wildlife watching, which are a subset of outdoor recreation activities, garner participation by some 2.4 million residents and visitors annually who spend $5.2 billion on these activities.

ANNA FREDRICKS

APPLE HILL FARM.

Apple Hill Farm

The types, magnitudes, and longevity of the benefits open spaces provide depend on many factors, including the conservation mechanism (e.g., fee purchase, conservation easement, Current Use), landcover type (e.g., forest, wetland, pasture or cropland), management (e.g., agriculture, sustainable forestry, wildlands), public access, and amenities (e.g., parking lot, hiking trails, boat launch).

It is important to highlight that this report is a snapshot in time of many of the benefits open space currently provides in the Granite State. Despite New Hampshire's successes in maintaining open space, these benefits are not guaranteed in the future on lands that are not permanently protected. Indeed, New Hampshire is losing nearly 5,000 acres of forestland and the associated benefits to development annually.[2] Maintaining the current level of public benefits that open space lands provide will require consistent efforts by a range of conservation stakeholders at all levels to ensure that the State continues to reap the benefits of a healthy environment now and in the future.

Introduction

The many benefits that open space provides to New Hampshire are wide-ranging and meaningful. The partnership that commissioned this report on the value of open space is excited to share this updated study to highlight these benefits. While the post Covid-19 surge in outdoor recreation in New Hampshire brought the link between the land and economic growth into a clearer view, we also know the benefits are deep and multi-faceted.

We hope this report will give the reader a sense of how New Hampshire's forests, farms and natural lands contribute to New Hampshire's special quality of life and economy.

JERRY MONKMAN/ECOPHOTOGRAPHY

Great Bay Estuary

GREAT BAY ESTUARY

Defining Open Space in New Hampshire

When considering the benefits of open space, it is important to develop a common understanding of open space in New Hampshire, and how different levels of protection can impact these benefits. For the purposes of this report, open space includes public and private conservation lands as well as lands enrolled in Current Use.

Conservation and public lands include lands managed for conservation through ownership or restriction by local, state, or federal agencies, and/or non-profit land trusts. The GRANIT Conservation/Public Lands data layer identifies the following categories of lands:[3]

- **Permanent conservation land.**[4] Land permanently protected from development through legally enforceable conservation easement, deed restriction, or outright ownership by an organization or agency whose mission emphasizes protecting land in perpetuity, and where more than 50 percent of the area will remain undeveloped. Examples include tracts owned by land trusts; town lands or town forest formally assigned to the Conservation Commission or Town Forest Committee through a warrant article; and lands encumbered by a perpetual conservation easement.

- **Unofficial conservation land.**[5] Land not permanently protected through any legal mechanisms and owned by a public institution, public agency, or other organization whose mission may not be focused on conservation but whose clear intent is to keep the land for conservation, recreation, or educational purposes and in mostly natural land cover. Examples include lands with mostly natural land cover owned by academic institutions; town lands not permanently protected through legal mechanisms; and unprotected county farms.

- **Unprotected water supply land.**[6] Land owned or controlled by suppliers of public drinking water, but not permanently protected through any legal mechanisms. Includes all unprotected supplies owned by a municipality or a subdivision of a municipality, and all unprotected private water systems that serve 500 people or more.

- **Developed public land.**[7] Includes public land having or expected to have developed infrastructure on more than 50 percent of its area and no known institutional or legal requirements to prevent conversion of natural land cover to human uses. Examples include beaches, picnic areas, ball fields, boat ramps/parking, and municipal wellfields.

Lands enrolled in the Current Use program support working forests and farms, wildlife conservation, and outdoor recreation by encouraging the conservation of open land throughout the state.[8] Private lands enrolled in the program are assessed based on the income-producing capability of the land in its current use (i.e., undeveloped forest, farm, or

JERRY MONKMAN / ECOPHOTOGRAPHY

open space) and not the real estate market value, often referred to as ad valorem.[9] The ability to assess land at its current use rather than its highest potential use is enshrined the State Constitution and in state law in NH RSA 79-A for the purpose of maintaining open space.[10] A Land Use Tax Change is levied if the land use changes from open space to a nonqualifying use.

Current Use assessment is available to qualifying landowners who maintain their land as undeveloped forest, farm, or open space. Generally, the land must be 10 or more acres, and must be a forest, farm, or "unproductive" land.[11]

Hunting, fishing, hiking, nature observation, skiing, and snowshoeing are public activities that can take place on Current Use land. Landowners who open their land to all six of these activities may request the Recreational Discount — a 20 percent reduction in the Current Use assessment.[12]

When land is enrolled in Current Use, its enrollment is recorded at the Registry of Deeds. If the land is changed to a use that does not qualify for Current Use Assessment, a Land Use Change Tax of 10 percent of the full market value is assessed and paid to the Town in which the property lies.[13]

Undeveloped private lands generally consist of privately owned land that is undeveloped forest, farm, or open space not enrolled in Current Use.

Benefits of Open Space

Open space in New Hampshire not only provides natural goods and services such as fresh air, clean water, and flood control, it also contributes billions of dollars to the economy in jobs, sales for local businesses, tourism, and other revenue.

The types, magnitudes, and longevity of benefits provided by open spaces depend on many factors including the conservation mechanism, landcover type (e.g., forest, wetland, pasture, etc.), management (e.g., forestry, wildlands, farm, etc.), public accessibility, and amenities (e.g., parking lot, hiking trails, boat launch, etc.).

It is important to highlight that this report is a snapshot in time of many of the benefits currently provided by open space in New Hampshire. These benefits are not guaranteed in the future on lands that are not permanently protected. For example, New Hampshire is losing nearly 5,000 acres of forestland each year to development, and the associated benefits of open space with it.[14]

Protecting Water

New Hampshire has abundant freshwater resources with more than 1,000 lakes and 10,000 miles of rivers and streams that are part of the state's "nature economy."[15] Healthy, intact watersheds provide many benefits, including water filtration and storage, which are crucial to maintaining clean, safe drinking water and preventing and controlling flooding.[16]

HOPE JORDAN — NEW HAMPSHIRE AUDUBON

Abe Emerson Marsh

CASE STUDY

Thompson Forest and Pike Property

Durham and Lee, New Hampshire

The Thompson Forest and the Pike Property are located within a 400 acre contiguous block of conservation lands, and within a larger 5,740 acres block of conservation and public lands. These lands are essential to protect the drinking water supply for thousands of households in the Town of Durham and the University of New Hampshire (UNH).

Both properties are owned by the Town of Durham and have conservation easements that are held by the Southeast Land Trust of New Hampshire (SELT). The Thompson Forest was conserved in 2016, and the Pike Property was conserved in 2023. Both properties abut the Durham-UNH water system surface water intake on the Lamprey River. Water is removed from the Lamprey River and piped directly to the UNH Water Treatment Plant or to the Spruce Hole Aquifer as a source of artificial recharge for the Durham-UNH water system's well there. In addition, these parcels combined protect another 4,700 feet of frontage along the Lamprey River, a state and federally designated Wild and Scenic River.

Conserving the Thompson Forest and Pike property were of particular importance as they both sit in such close proximity to the drinking water intake pipe and pump station. Because undeveloped lands filter water and provide clean drinking water, this conservation effort within the larger block of conservation and public lands has the potential to save rate payers in capital improvements and annual operating costs associated with filtration infrastructure. By preventing land use change, conservation enables Durham to protect a critical water supply source for current and future residents and the university and keep water treatment affordable.

PIKE PROPERTY

JERRY MONKMAN/ ECOPHOTOGRAPHY

Other key water supply conservation efforts in the area include Oyster River Forest and the Whisnant property. In 2013, 176 acres of the Oyster River Forest was purchased by Durham and protected with a conservation easement held by the Natural Resources Conservation Service (NRCS). The forest is essential to protecting the Oyster River Reservoir and sits atop the Spruce Hole Aquifer, which is a critical part of Durham and the University of New Hampshire's water supply. In 2021, the Whisnants, who own land across the street from Thompson Forest, placed a conservation easement on their property held by NRCS. Their parcel has frontage along Packer's Falls Road, directly across from the Town's Spruce Hole Conservation Area.

Maintaining Drinking Water Quality

What happens on the land affects the quality of water that flows from it.[17] Protecting drinking water sources from development and degradation is an effective way to ensure high-quality drinking water is available for residents and visitors. Keeping New Hampshire's rivers, lakes, and groundwater free from pollution is much easier and much less expensive than building costly water treatment facilities. Protecting source water from contamination helps to reduce treatment costs and may prevent the need for complex treatment. In addition, when natural lands filter pollution, collect and store rainwater, and recharge aquifers, it reduces operational and treatment costs otherwise needed to make water safe to drink.

Just a bit more than half of the New Hampshire population get water from public water supplies.[18] The systems serving those residents are nearly equally distributed by the source of the water (groundwater, surface water, or both), as illustrated in Exhibit 1 below.[19]

EXHIBIT 1. New Hampshire Public Water Systems

Community Systems	# Systems	Population Served
Groundwater Only	633	310,382
Surface Water Only	22	302,790
Combined Surface and Groundwater	17	205,669
Purchased Surface Water	23	69,435
Purchased with Groundwater Sources	3	289

Source: New Hampshire Department of Environmental Services. 2024. Annual Compliance Report of Public Water System Violations January 1, 2023 – December 31, 2023.

Conserving land within a water supply watershed, aquifer, or wellhead protection area is a longstanding practice in New Hampshire to protect the quality and availability of source water.[20] Land conservation in the Piscataqua-Salmon Falls watershed was estimated to provide over $40 million in avoided water treatment costs over 10 years compared to increased development in the watershed.[21]

While the dollar value of water quality can be difficult to quantify because it is not bought and sold through formal markets, it does have a value to New Hampshire residents.[22] An analysis in the Exeter-Squamscott River watershed estimated that nearby residents would be willing to pay $39 to $54 per household per year for water quality improvements in the river and estuary.[23] This finding is reinforced by another study that found 68 percent of New Hampshire respondents would be willing to pay more for water services to improve the cleanliness of local waters.[24]

CASE STUDY

Salmon Falls River

Rochester, New Hampshire

Private conservation by landowners Zach and Joanne Pallas leveraged public conservation to protect more than 86 acres of high priority water supply lands and direct river frontage along the Salmon Falls River in Rochester.

In the 1970's, when the Pallas's purchased their 1771 built home, only 3 acres remained of the original parcel. Over the ensuing years they observed the development happening around them and took action, managing to reacquire an additional 30 acres of the original land. Their high-quality forest land was enrolled in the Current Use program in 1982.

Recently, when an adjacent property went on the market, they worked with the Southeast Land Trust of New Hampshire (SELT) to protect both parcels. In 2022, they donated a conservation easement on their 33-acre parcel to SELT. SELT leveraged the Pallas's gift to help protect the adjacent 59-acre parcel in partnership with the City of Rochester. The City agreed to purchase the land and donate a conservation easement to SELT. The total purchase price for the City's parcel was $418,225, of that $209,000 in funding came from the Drinking Water and Groundwater Trust Fund.

Combined these lands provide critical protection of the Salmon Falls River, an important drinking water supply source for several municipalities downstream including Somersworth, New Hampshire and Berwick, Maine. The Somersworth Water Works serves 12,000 residents and many commercial and industrial users, and the Berwick Water Department serves 2,500 residents.

PALLAS PROPERTY

SOUTHEAST LAND TRUST OF NEW HAMPSHIRE

While Rochester's water is currently drawn upstream of the properties, from the Berry River Watershed, these lands also protect an underlying aquifer that could someday be used by the City for future ground water supply. The City has installed three wells on the property to test for potential future drinking water supply opportunities. In addition, the Pallas' retained the right to sell water from their property to the City of Rochester.

The benefits of conservation extend beyond drinking water protection. This area is especially beloved by the local community, thanks to a network of trails that allow for walking, hunting, cross-country skiing, and snowshoeing, as well as access to the river for fishing. Despite the trails not being mapped and no formal access points the recreational trail system is popular and used daily throughout the year.

Preventing and Controlling Flooding

Flooding is the most expensive natural hazard in New Hampshire, with $200 million in total losses from 2000 to 2019.[25] Every county in New Hampshire had a disaster declaration during 2011-2021, and seven of them had more than five.[26] The most recent major disaster declaration was for severe storms and flooding in July 2024.[27] Wetlands (including lakes, ponds, rivers, streams, marshes, forested wetlands, floodplain wetlands, floodplain forests, and peatlands) are critical for flood control by storing and slowing runoff from storms, thereby reducing the frequency and magnitude of floods.[28] Although New Hampshire has lost fewer wetlands to filling and dredging than some neighboring states, landscape change poses a significant challenge to their protection. According to the Department of Environmental Services, studies have found that the economic value of a single wetland acre is $150,000 to $200,000, and the economic value of New Hampshire's remaining wetlands is $1.2 billion.[29] Protecting New Hampshire's wetlands and adjacent lands from alteration is crucial for preserving these values.

Creating Jobs and Sustaining Businesses That Rely on Working Lands

Open space provides the essential land base for the forest products and agricultural industries, which play an important role in the state's economy.

Buttressing the Forest Products Industry

Forests cover 4.72 million acres, or 82 percent of New Hampshire's area and provide the foundation for the forest sector of the State's economy.[30] Of those acres, 73 percent are privately owned, 18 percent are federally owned, and 10 percent are owned by state or local government. New Hampshire lost 127,000 acres of forest statewide from 1983 to 2017, largely as a result of conversions to developed uses. A 2017 study of forest loss in New England found that 'distance to nearest developed land' was the greatest predictor of forest conversion to low-density development, followed by 'distance to roads'.[31]

Forest land conservation and the Current Use program help maintain the forest products industry, which includes forestry, logging, primary and secondary solid wood products, wood furniture, pulp, paper, and paperboard mills, secondary paperboard, and other paper products. The sector employs 7,200 workers directly, with labor income of $363 million.[32] This sector generates a total value added of $651.6 million and output of $1.6 billion.[33] Multipliers capture the indirect and induced economic activity generated by the re-spending of income or sales revenues in a regional economy. When multipliers are considered, the forest projects industry provides 12,800 jobs indirectly, with $696 million in labor income, $1.2 billion in value-added, and $2.5 billion in output.[34]

CASE STUDY

Bellamy Reservoir

Madbury, New Hampshire

The 72 acres conservation easement by landowner David Olson helps protect the Bellamy Reservoir and provides quality drinking water for communities around the seacoast.

Olson is a firm believer that land is precious, they are not making any more of it. His love for his land and the creatures who dwell there are at the core of his decision to conserve his 72-acre property — the Bel Ami Farm — for ongoing public benefit. The land is nestled along the banks of the Bellamy River and Reservoir, and is home to abundant wildlife, a blueberry plantation, a cut-your-own Christmas tree farm, and forests with nearly 35 species of native trees.

BELLAMY RESERVOIR

JERRY MONKMAN/ ECOPHOTOGRAPHY

The first thing he did when he got the land in 1974 was to take down the gates and open access to the Bellamy Reservoir. He goes to the landing to the reservoir every day and tries to speak with everyone who accesses the reservoir from this point. No easy task considering that the property was accessed around 8,000 times last year for hunting, fishing, dog walking, bird watching, kayaking, and other low-impact uses. It's his goal to continue to allow low-impact uses.

And wildlife is abundant here. Ever the scientist, Dave tracks the biodiversity of his land. His detailed notes include whether creatures are nesting on the land or just passing through. It lists 108 species of birds, 22 large and small mammals, and 18 different amphibians and reptiles. The spotted turtle was most recently added to the list.

In 2018 Dave placed a conservation easement on his property through the combined efforts of the City of Portsmouth, Southeast Land Trust of New Hampshire (SELT), and the Town of Madbury. The protection of the Bellamy Reservoir is a high priority for Portsmouth because the Reservoir is the primary supply of the fresh water treated at the City's Madbury Water Treatment Facility and delivered to regional communities around the seacoast. Conserving land that surrounds or includes wetlands, rivers, streams and larger bodies of water like the Reservoir protects water resources from the pressures of development and helps the municipal water system provide quality drinking water.

One of the ongoing goals of this project is to be the keystone parcel for further land protection efforts in the Bellamy watershed. In 2020, the Portsmouth Department of Public Works Water Division partnered with SELT to purchase a conservation easement from Mary Ellen Duffy on approximately 107 acres adjacent to the Reservoir. In addition, SELT and the City of Portsmouth will complete an easement on an additional 44 acres abutting the Reservoir in 2025.

BEN HERNDON/TANDEMSTOCK.COM

Green Hills Preserve

Supplemental Sectors of the Forest Economy

CHRISTMAS TREES AND MAPLE SYRUP

Christmas trees and maple syrup are important forest/agricultural products frequently associated with the forestry sector. In 2022, there were 278 Christmas tree farms throughout New Hampshire, that sold $3.29 million of cut Christmas trees and associated evergreen products (e.g., wreaths); and 471 commercial maple syrup operations, that generated $9.93 million in sales.[35]

WOOD HEAT

New Hampshire has a long history of using wood for residential and non-residential heating.[36] The direct output for New Hampshire wood heat is estimated to be $24.3 million. Wood heat includes traditional heating such as firewood as well as more modern wood heating using wood chips and wood pellets.

CASE STUDY

Sustainable Forestry

Bennington, New Hampshire

The Current Use program enables forest landowners to produce high quality products by facilitating long term management strategies and intergenerational land transfers. The benefits of the Current Use program for forestry are exemplified by land- owner and manager Dennis McKenney.

McKenney owns a total of 100 acres of forest land in two pieces. He purchased the first of the two parcels well over 40 years ago and the second, which was already enrolled in the Current Use program, about 20 years later. In addition, he manages forest land for families, corporations, and municipalities, some of which is also in Current Use.

HEALD FOREST

WENDY WEISIGER — FOREST SOCIETY

His land is in active sustainable timber production. The most recent timber harvest was a couple of years ago and resulted in 20 truckloads of forest products. According to the New Hampshire Timberland Owners Association, a 32-ton load of forest products generates $864 per load in direct economic impact, $208 per load in indirect economic impact, $576 per load in induced economic impact, for a total economic output of $1,648.[37] Therefore, the timber harvest had an estimated contribution of $33,000 in economic output.

In addition to timber products the forestland provides a scenic backdrop and contributes to the overall rural community character. According to the New Hampshire Division of Travel and Tourism Development, in fall of 2022, 3.5 million visitors came to view the foliage and spent $1.7 billion. Making scenic views of forestlands a large contributor to the state's economy.

The local community is also able to enjoy the forest as McKenney's land is open to the public. Lots of people come to hike on his property and he allows hunting.

The long-term goal is to keep the land in the family and pass it down from one generation to the next. It would not be possible to buy the land for forestry at today's prices.

McKenney says, "there is a common misconception that people in Current Use are rich because anyone who has enough land qualifies but there are a lot more hardworking people that depend on Current Use for sustainable land management. And without Current Use they would be forced into an initial round of heavy forest harvest to pay the taxes, followed by breaking the land into pieces to sell off parcel by parcel just to pay the taxes."

JERRY MONKMAN/ ECOPHOTOGRAPHY

Morrill Farm Dairy

Sustaining Agriculture

Currently, 3,949 farms encompass 417,187 acres of land, including 105,297 acres of cropland, 24,246 acres of pastureland, 249,287 acres of woodland, and 38,357 acres of "other."[38] Over the last 20 years, New Hampshire has lost 28,000 acres of farmland but gained 586 farms as the average size of farms has decreased from 132 to 106 acres.[39] New Hampshire scored in the middle of all states for the conversion of agricultural land to urban and highly developed and low-density residential uses.[40] Another 35,600 acres could be lost by the year 2040 if development follows recent patterns.[41] This includes 12,300 acres of cropland, 7,200 acres of pastureland, and 16,100 acres of woodland associated with farms.

Farmland preservation and the Current Use program help sustain the agriculture industry, secure the food supply, and provide an economic stimulus to rural communities. Farmland preservation maintains farmland at a purchase price more in line with its returns than it could otherwise be purchased for. Farmland conservation helps to maintain affordable farmland to allow it to remain in agricultural use. It also ensures land will be available to grow food in the future. Current Use enables farmers/landowners to hold on to their land and not have to sell it due to a high tax burden. Current Use is one tool that enables farmers and landowners to do so, ensuring that land will be available to grow food in the future. In 2019, agriculture[42]:

- Directly supported 6,910 jobs with $120 million in labor income, and the industry created or supported 7,940 jobs with $181.3 million in labor income.
- Contributed $292.4 million in value added for a total economic output of $513.8 million.
- Generated $67.8 million in tax revenue, including $19 million in local and $11.5 million in state taxes revenue.

CASE STUDY

Sullivan Farm

Nashua, New Hampshire

A conservation easement by the Williams Family protected the oldest and last working farm in Nashua providing fresh fruits and vegetables and a haven for the community.

Kathy Williams and her family have owned the 52-acre Sullivan Farm since 1911. With its familiar red barn, the farm grows apples, blueberries, peaches, corn, and pumpkins. It offers the community pick-your-own orchards, annual agricultural events and activities, as well as walking trails. The Salvation Army holds a fall festival in early October at the farm with music, hayrides, and food vendors. It is a family-focused event that draws several hundred people. The Nashua Boys and Girls Club brings its members to the property to fish and just to let the kids explore the property. Outside of organized events people flock to the property. With several hundred people enjoying the farm on a sunny fall weekend. William notes that "some people come to the farm and will just sit in the parking lot and basically soak in the experience of visiting a farm that is so easily accessible to people living in Nashua."

SULLIVAN FARM

JERRY MONKMAN/ECOPHOTOGRAPHY

In 2019, the Williams family placed a conservation easement on the farm held by The Society for the Protection of New Hampshire's Forests. The conservation easement consists of agricultural lands, Coburn Pond, Lincoln Brook, wetlands and about 12 acres of forest. Agricultural land includes nearly three acres of cultivated cropland, about 16 acres of orchards, 1 acre of pasture and half an acre for flower beds and greenhouses. Coburn Pond (approximately 3 acres) provides a critically important source of water for irrigating crops. The forestland includes a stand of mature hardwoods, large red oak, sugar maple, hickory and white ash. Forested wetlands along Lincoln Brook and Coburn Pond provide storage and purification of drinking water, help remove carbon from the atmosphere, and mitigate periodic flooding, as well as provide a habitat for a number of wildlife species.

The conservation easement protects the property from being developed and will keep the land as a working farm. To this day Kathy gets calls from real estate agents and developers who want to buy and develop the property. Kathy is happy there is a conservation easement on it, even if that means she won't be able to get maximum value for it, if it were to be sold.

Agritourism has become popular in New Hampshire, with 52 percent of visitors engaging in some agritourism activity, such as apple picking, farmers' markets, and harvest festivals on their trip. These visitors spend an average of $171 per visit.[43] In 2019, agritourism:

- Directly supported 9,454 jobs with $218 million in labor income, and created or supported 11,062 jobs with $318.6 million in labor income.
- Contributed $415.8 million in value added for a total economic output of $720.6 million.
- Generated $66.5 million in tax revenue, including $1.7 million in local and $25.3 million in state tax revenue.

Sustaining Quality of Life

Open space improves quality of life for residents. Employees in today's economy consider more than salary when choosing where to work and reside. Access to natural areas enhances quality of life for workforce recruitment and retention. Research on local economic development has focused on quality of life and concerns about the natural, social, and cultural environment as well as on affordability. Open space contributes to local economic development by making communities more attractive to new residents.

Land conservation and affordable housing development can coexist. The key is smart development that provides high quality housing for families of all income levels with the lowest possible impact on natural resources. Smart development strategies include redevelopment, brownfield development, and cluster development that directs growth to developed areas, reduces the need for new infrastructure, limits sprawl, and minimizes fragmentation. It is also important to balance growth with providing open space for its many important benefits. Incorporating open space and resource protection as we increase density in appropriate places ensures that all residents enjoy the health, recreation, and economic benefits provided by open space.

Strengthening Economic Development

Open space benefits communities by enhancing quality of life and attracting talent, employers, and investment. The availability of high-quality open space, clean air and water, working forests and farms, and access to recreation opportunities are components of vibrant communities.[44] Many workers choose a job based on an area's quality of life, which is increased by the availability of open spaces. According to a survey from Stay Work Play, a nonprofit in the state that works to attract and retain younger residents, respondents aged 20 to 40 believe that New Hampshire is better than other places to live because of the outdoors and recreation.[45]

New Hampshire continues to grow, with a 1.8 percent population increase from 2020 to 2023, largely due to in-migration.[46] While there are many reasons people move to the Granite State, several of the most common are closely tied to outdoor recreation.[47] In 2024, U.S. News and World Reports named New Hampshire the #2 best state overall and #8 nationally for "Natural Environment."[48] The most recent State Comprehensive Outdoor Recreation Plan (SCORP) highlighted that while New Hampshire has a strong and diverse

CASE STUDY

Top of the Hill Farm

Wolfeboro, New Hampshire

The Current Use program helped the Fredrickson Family establish the Top of the Hill Farm, that specializes in beef cattle and has a thriving year-round farm store that features their naturally raised meats and local products from other New Hampshire farms.

Creating a self-sustaining farm operation has been a 20-year full family endeavor. In 2004, Alan and Carolyn bought the land that would become the Top of the Hill Farm with the goal of creating a farm they could retire to. Alan had grown up on a small farm with cattle south of Boston and wanted to recreate that way of life. When they found the right land, he sold his business in Massachusetts and the family transitioned to New Hampshire. For the first 10 years or so, he had a full-time job doing landscaping work on other farms for NRCS. It was not until about 4 years ago that he was able to transition to full time farming. Son Erik recently graduated from college and is working full time on the farm and is planning to take it over in the future. Both Carolyn and daughter Anna have full-time jobs and help out on the farm. Today the farm and store employ five people full time, including family.

TOP OF THE HILL FARM

ANNA FREDRICKSON

The farm store evolved similarly. In 2005, the Fredrickson's began selling their meats at farmers markets. In the off-season they set up a self-serve freezer in the garage. As their customer base and demand grew, they added more and more freezers to the garage. The demand for local products really took off in 2020. A planned shop for farm equipment expanded to the farm store at the front. But now they have outgrown even that space.

Approximately 100 acres of the 108 acres farm are enrolled in the Current Use program. The cattle operation relies on and supports another 150 acres of pastureland that the family leases for haying to provide feed for the livestock. The pastureland owners also utilize Current Use.

But for the Current Use program the Top of the Hill Farm would not be possible. Much like the name suggests the farm is at the top of the hill with views of Lake Wentworth, Lake Winnipesaukee, and Mount Washington. Developers are constantly approaching the family with offers. If the Current Use program did not exist and the family had to pay the property tax on the full market value of the land, they could not afford to farm it and would be forced to sell to those developers. The Current Use program is important to continuing the farm businesses, maintaining jobs, providing healthy local food, preserving the rural character of the community, and retaining open space for future generations.

economy, 80 percent of respondents identified recreation as a major economic driver in the state.[49]

Conserving land can also help local economies. A recent study of all major towns and cities in New England found that land conservation moderately increased local employment numbers and the labor force, without reducing new housing permits.[50] This was found to be especially true in rural areas.

Mitigating Costs of Municipal Services

In the past, many people thought of productive farms and forests as places that should be developed to increase the tax base and reduce property taxes.[51] In fact, fiscal impact analyses show a more complex picture.[52] Working lands pay more in taxes than the municipal services they receive. Numerous studies have shown that open space can pay its way in taxes, and in many cases has a beneficial impact on municipal budgets.[53] As New Hampshire grapples with meeting the growing need for housing of all types, the data show that ensuring an adequate balance between development and protection of open space is necessary to maintain our high quality of life and ensure that needs such as access to clean drinking water are protected.

Providing Ecosystem Services

Some of the key economic benefits of open space come in the form of natural goods and services, such as improving air quality, sequestering carbon, filtering water, and storing water against droughts and floods. This section describes some of the essential natural goods and services provided by New Hampshire's open space.

NEW HAMPSHIRE AUDUBON

BELLAMY RIVER

Improving Air Quality

Air pollution is a significant and expensive problem that impacts human health and damages the natural and built environment. Air pollutions affect human cardiovascular and respiratory systems, with broad consequences for health care costs and productivity.[54] In addition, acid rain, smog, and ozone increase the need to clean and repair buildings and other infrastructure.[55] The vegetation in open space plays a role in improving air quality, helping nearby areas avoid the costs associated with pollution.[56] Trees and shrubs have the ability to remove pollutants from the air. Leaves absorb gases such as nitrogen dioxide, sulfur dioxide, carbon monoxide, and ozone. Vegetation also removes particulate matter (PM), which includes small particles of dust, metals, chemicals, and acids, that adhere to plant surfaces. Breathing air pollutants, including fine particles and ozone, can lead to premature death, nonfatal heart attacks, aggravated asthma, and lost days of work and school.[57]

New Hampshire has the second highest level of tree cover in the United States at 82 percent.[58] New Hampshire trees were estimated to remove 115,500 tons of air pollution in 2010, with human health effects valued at $44.1 million.[59]

Sequestering and Storing Carbon

Forests sequester and store carbon, removing carbon dioxide emissions from the atmosphere.[60] In New Hampshire, forests offset 25 percent of the state's humanmade carbon dioxide emissions annually.[61] This holds true for actively and passively managed forests in New Hampshire. A 40-acre forest in New Hampshire is estimated to contain the same amount of carbon as 53,000 tanks of gasoline.[62] When forests are permanently cleared for development, they lose this ability to sequester and store carbon.

Naturally Moderating Temperature

Studies have shown that trees around residences keep homes cooler in the summer and warmer in the winter which reduces cooling and heating costs and improves human health and comfort.[63] The abundance of heat-absorbing pavement and lack of trees in urban areas result in elevated temperatures relative to the surrounding non-urban landscape a phenomenon known as Urban Heat Island (UHI). Less data is available on temperature elevations in low density residential areas, but streetside and backyard trees and limited pavement significantly reduce temperatures in suburban residential areas.

Trees are an effective means of offsetting the energy-intensive urban heat island effect.[64] A review of over 300 studies found that, on average, urban forests were 3.0° F cooler than urban unvegetated urban areas, and tree canopy shading can provide significant cooling.[65] Areas shaded by trees and other greenspace can be anywhere from 20 to 45 degrees cooler than the hottest unshaded areas. Green infrastructure, including urban parks and forests, can reduce the energy demand of nearby buildings by 10 percent.[66]

Beyond energy savings, heat reduction also provides important benefits to vulnerable populations.[67] Extreme heat causes a range of health problems, including heat exhaustion, heat stroke, even death. In New England, an estimated 2,302 deaths are attributable to heat

RYAN SMITH – FOREST SOCIETY

MORSE PRESERVE

annually.[68] Many of these premature deaths are preventable by simply increasing tree canopy cover.[69] This is especially important for households that lack access to air conditioning.

Helping Prepare for Climate Change

Climate change is expected to have many impacts to forests, farms, and habitats – as well as built infrastructure — across the state. Since the beginning of the 20th century, average temperatures in New Hampshire have risen more than 3°F, resulting in warmer winters with earlier ice-out dates and fewer nights below freezing.[70] Future winter warming is expected to have large effects on snowfall and snow cover. A decline in snowfall and an increase in rainfall could harm recreational industries such as skiing, snowboarding, and snowmobiling, and the local economies that depend on them.[71]

Total annual precipitation has been well above average since 2005.[72] Intense rainstorms are likely to occur more frequently, causing more flooding, as experienced in July 2024. Communities and businesses will need to make major investments to combat and accommodate rising temperatures and the increased frequency of flooding and severe storms.

At the same time, New Hampshire has experienced short term dry periods, with extreme drought in 2016 and 2020. Future summer drought conditions will strain water supplies. Farms may be harmed if more hot days and droughts reduce crop yields.[73]

Land use decisions have an impact on the magnitude of stormwater, flooding, and water quality. For example, in New England, lands managed as wildlands add key contributions, including water storage and flood control, to a resilient landscape.[74] A study investigating both runoff and water quality found that as runoff increases, pollutants such as suspended

solids, nitrogen, and phosphorus also increase.[75] Without land conservation, costly Best Management Practices (BMPs) may be required to reduce runoff and treat pollutants such as nutrients and sediment through biological, chemical, and physical processes.

Maintaining Wildlife Habitat

The New Hampshire Wildlife Action Plan identifies the greatest risks to wildlife and habitat.[76] Habitats with the greatest number of high-ranking threats were saltmarshes, warmwater rivers and streams, dunes, lowland spruce-fir forest, and vernal pools. Pollution was identified as the risk factor that most frequently impacts wildlife, followed by climate change and severe weather; natural system modifications; invasive and other problematic species, genes, and diseases;[77] and residential and commercial development. The Plan considers residential and commercial development the most challenging issue for most of New Hampshire's wildlife and habitats. Many habitats are rapidly disappearing or are fragmented by roads and dams and disrupted by human activities. One of the actions identified to help wildlife thrive is a network of permanently conserved lands that effectively connect the diversity of the state's wildlife and habitats.

Protecting rare species is not the only reason to conserve wildlife habitat. Outdoor and wildlife-associated recreation and tourism are significant contributors to the New Hampshire, as described in the Providing Public Access section below.

Providing Public Access

Publicly accessible open space supports New Hampshire's quality of life by encouraging recreational activities such as hunting, fishing, and wildlife watching, which form the backbone of the outdoor recreation economy and provide health benefits.

Enabling Recreational Use by New Hampshire Residents

Open space with public access enables and encourages recreational use by residents. The most recent State Comprehensive Outdoor Recreation Plan provides helpful context about the recreational use and needs of New Hampshire residents, highlights of which are included here.[78]

- Outdoor recreation is very popular with residents, with 90 percent participating in outdoor recreational activities annually.
- Recreational access close to home is widely available; 72 percent of residents indicate they can access an outdoor recreation area within 10 minutes of home.
- Local and state recreation areas are frequented the most; 80 percent of residents recreated within local and state recreation areas at least once in the past year.
- Publicly accessible private lands are also important; 65 percent recreated on publicly accessible private recreation areas at least once in the past year.
- The most popular activities are walking, running, and/or dog-walking, with more than two-thirds participating more than 11 times in the past year. Other popular and frequent outdoor recreation activities in are (in order): scenic driving, wildlife viewing and/or birdwatching,

night sky viewing, swimming, outdoor photography, visiting historic sites and/or nature centers, hiking and/or backpacking, picnicking, and non-motorized boating.

Recreational use has a measurable economic value. People are willing to pay for recreational access and the economic value is derived even if there is no user fee to recreate (e.g., entry fee). The benefit accrues to the user in one of two ways: by providing cost savings to individuals who were willing to pay to recreate but did not have to, or by providing travel cost savings to individuals who do not have to travel to access a substitute site. Following the U.S. Army Corps of Engineers' Unit Day Value methodology, it is possible to estimate recreation benefits by specific activity, assigning each activity a dollar value.[79] Oregon State University's Recreation Use Values Database includes values for more than 20 activities and is based on over 421 economic studies that estimated the use value of recreation activities in the United States and Canada from 1958 to 2015.[80] The estimated economic value of recreational activities available in New Hampshire ranges from $23 for backpacking to $224 for hunting (see Exhibit 2).

EXHIBIT 2. The Range in Estimated Values for Recreational Activities in New Hampshire

Activity	Value per Person per Day (2016$)
Backpacking	$23
Camping	$25
Freshwater Fishing	$25–128
Hiking	$91
Hunting	$54–244
Off-Highway Vehicle	$25
Picnicking	$41
Sightseeing	$36
Wildlife Viewing	$36–204
General Recreation	$57
Downhill Skiing	$25
Snowmobiling	$35

Source: A selection of activities based on the availability of New Hampshire studies since 2001. See the Recreation Use Values Database for a complete list http://recvaluation.forestry. oregonstate.edu/database.

New Hampshire can further improve efforts to ensure recreational access for all. The SCORP highlighted the importance of providing recreation areas that are more accessible and welcoming for everyone, and setting goals for the next five years to increase access for traditionally underserved sectors of the New Hampshire population.

CASE STUDY

Poverty Lane Orchards

Lebanon, New Hampshire

The Current Use program allowed Poverty Lane Orchards owners Steve Wood and Louisa Spencer to weather an apple market change, take risks, and establish the pioneering Farnum Hill Ciders.

Steve's father planted the original orchard in the early 1960s on former dairy farms. In 1973, Steve and Louisa returned to the orchard to run it. At that time the McIntosh apple was the most profitable. However, in the 1980s consumer preferences started to change and the market moved away from the McIntosh. Steve and Louisa considered getting out of the apple business altogether but decided to take a chance on cider apples. They planted the first commercial scale cider apple orchard in North America, in 1989, and continued to plant more cider apple trees in the 1990s. In 1995, they began selling Farnum Hill Cider. In a good year, the cidery produces 15,000 gallons of hard cider and employs 4 people full-time in addition to family, and 15 to 20 people during harvest season.

LASZLO HIDASI / UNSPLASH

While Poverty Lane Orchards is not a stereotypical retail orchard it has been a destination for generations of families visiting every fall for pick-your-own adventures, the farmstand, and tractor rides. Children have been learning about the property on school tours since the 1970s. Visitors can also enjoy designated walking loops.

The spirit of experimentation continues today. The orchard serves as an outdoor laboratory for land grant universities including the University of New Hampshire and University of Massachusetts for cutting edge research into integrated pest management, woody invasive species management, and forestry.

The land has been enrolled in the Current Use program since the beginning of the program (1973). Current Use allowed the family to take risks and evolve the business. Without Current Use, they would not have dreamed of replanting orchards, the risks were big enough on their own.

The family is committed to the land, at just under 1,000 acres of land over a lifetime, 75 acres of which is orchard. It is the foundation of everything else that they do. The land will soon be guided by a new generation, transferred to their sons to chart their own path. A future possible because of the Current Use program.

JERRY MONKMAN / ECOPHOTOGRAPHY

GREAT BAY ESTUARY

Supporting the Outdoor Recreation Economy

Open space supports a thriving tourism and outdoor recreation economy. The outdoor recreation tourism economy includes spending by visitors. Travelers to open space with public access, such as parks and trails, spend money that support local economies and jobs. In 2023, visitors to New Hampshire spent $7.5 billion including $668 million on the arts, entertainment, and recreation subcategory.[81] This spending supported 53,300 jobs and $2.3 billion in labor income.

The overall outdoor recreation economy includes spending by both residents and visitors. Outdoor recreation includes many activities, from traditional activities like hunting, fishing, camping, and hiking to more casual outdoor activities like gardening and outdoor festivals. The US Department of Commerce's Bureau of Economic Analysis (USBEA) defines outdoor recreation to include all recreational activities undertaken for pleasure that generally involve some level of intentional physical exertion and occur in nature-based environments outdoors. A visitor is defined as someone who travels at least 50 miles one way or stays overnight in paid accommodations. According to the USBEA, outdoor recreation accounted for $3.9 billion in value added, representing 3.4 percent of the State's GDP, and 32,000 jobs.[82]

Facilitating Hunting, Fishing, and Wildlife-Associated Recreation

Wildlife recreation continues to be a major economic force in New Hampshire. The 2022 National Survey of Fishing, Hunting and Wildlife-Associated Recreation estimates that 830,000 New Hampshire residents aged 16 and older participated in wildlife-associated

CASE STUDY

Randolph Community Forest

Randolph and Jefferson, New Hampshire

The Randolph Community Forest is the result of sustained and dedicated conservation efforts by a coalition of Randolph residents, officials, and nonprofit organizations over more than 20 years. The forest contributes to the timber- and outdoor recreation-based economies in the region.

Randolph Community Forest is a 12,100-acre tract of forested lands owned and managed by the Town of Randolph, including 1,106 acres in neighboring Jefferson. The Community Forest is part of a larger ongoing effort to connect the two units of the White Mountain National Forest and create an 800,000-acre block of contiguous conserved forestland. Contiguous habitat is crucial for ecosystem health, especially for wildlife that have large home ranges.

RANDOLPH COMMUNITY FOREST

JERRY AND MARCY MONKMAN/ECOPHOTOGRAPHY

The forest is managed for timber production. The town realized $19,600 in net revenues in 2005/2006 from harvesting, and management activities provided jobs for a three-person professional forestry team. Timber harvests have occurred approximately once every two years thereafter. Since 2016, the town has leased maple taps on roughly 750 acres of the forest, a project that keeps four to six people employed full-time. The maple project is expected to bring in more revenue to the town over 15 years than it would if the same section of the forest were managed for timber. As of 2020, approximately $250,000 was added to the community forest fund from timber harvesting and maple tap lease payments. Another $250,000 was added from gifts and grants, including donations to manage wildlife habitat. Timber and maple tap revenues are used to make payments to the town in lieu of taxes, resulting in no loss of the town's tax base, which prior to its protection received tax revenue.

Randolph Community Forest boasts dozens of miles of hiking trails that are maintained by the Randolph Mountain Club. There are opportunities for cross-country skiing, backcountry skiing, and snowshoeing. The Forest allows hunting and fishing. The Pond of Safety offers fishing for Eastern brook trout and hornpout. Limited trapping is allowed with a permit. Snowmobiling is popular on over 15 miles of trails maintained by three local clubs. The Community Forest provides critical connectivity in the region, connecting two sections of the White Mountain National Forest, which is an important recreational asset.

Source: The Trust for Public Land. 2021. Community Forests: A Path to Prosperity and Connection — A Case Study Approach to Understanding the Range of Economic Benefits Provided by Community Forests in the U.S. Prepared for the U.S. Forest Service.

recreation activities.[83] With many individuals participating in more than one activity, 161,000 fished, 49,000 hunted, and 824,000 watched wildlife.[84] Residents and non-residents spent $5.2 billion on wildlife associated recreation in New Hampshire during the calendar year. In 2022 in New Hampshire, residents and nonresidents:

- 2 million watched wildlife and spent $3.3 billion;
- 334,000 fished and spent $1.4 billion; and
- 85,000 hunted and spent $580 million.

Publicly accessible lands are critical to the continuation of these activities.

Health Care Cost Savings

Open space provides numerous health benefits. Recreational activities improve health and reduce health care spending. The Centers for Disease Control and Prevention (CDC) recognizes that physical activity helps improve overall health including weight management, improved brain health, improved functional mobility and reduces the risk for chronic diseases ranging from asthma to cancer.[85] As such, the CDC promotes physical activity guidelines, defining sufficient activity as at least 150 minutes of moderate-intensity activity or at least 75 minutes of vigorous-intensity activity per week, along with muscle-strengthening activities at least two days per week.[86]

Granite Staters clearly understand the connection between outdoor activity and health as demonstrated by the results of the resident's survey that was conducted as part of the recently approved SCORP[87]:

- 85 percent of respondents identified the improvement of overall health as an important benefit of outdoor recreation participation.
- 89 percent of respondents identified stress reduction as an important benefit of outdoor recreation participation.
- 84 percent of respondents agreed that participation in outdoor recreation helps them to appreciate life more.
- 78 percent of respondents agreed that participation in outdoor recreation helps them to be more satisfied with their lives.

Research indicates that people with access to the outdoors show long term health improvement. For example:

- Nature reduces symptoms of attention-deficit disorder[88] and post-traumatic stress disorder,[89] and improves mental health.[90] In 2022, New Hampshire ranked 13 of all states indicating a lower prevalence of mental illness and higher rates of access to care.[91]
- Access to green space can improve overall health and reduce obesity. When people have access to trails and parks, they exercise more.[92] Approximately 30 percent of New Hampshire adults have a body mass index that qualifies as obese, and that number is trending upward.[93]

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GREEN HILLS PRESERVE

- Spending just 20 minutes connecting with nature can help lower stress hormone levels.[94]
- Proximity to more green space is associated with reduced mortality and increased longevity.[95] For example, women living with a higher amount of greenness around their homes had a 12 percent lower rate of death from non-accidental causes compared to women living with the least amount of greenness.

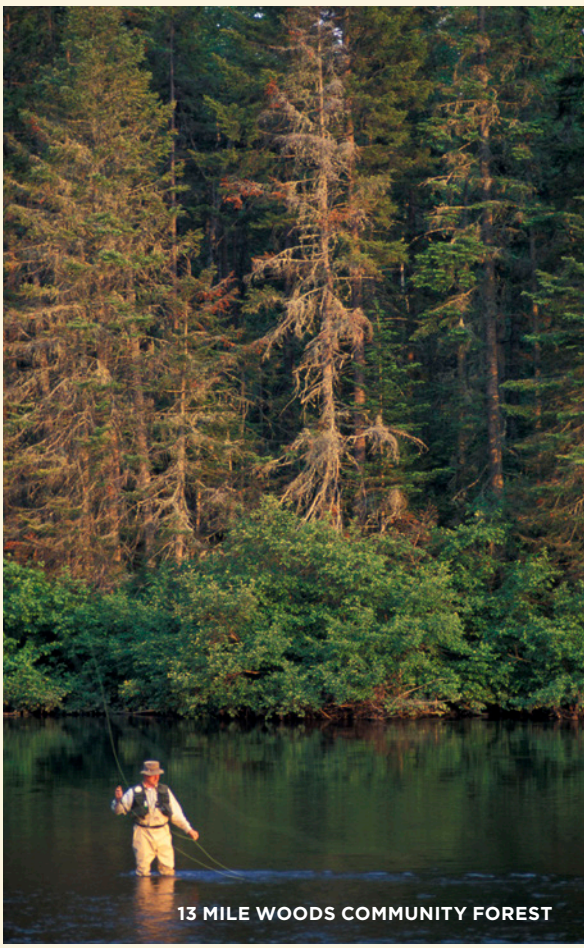
CASE STUDY

13 Mile Woods Community Forest

Errol, New Hampshire

The 13 Mile Woods Community Forest is a community investment that protects a way of life, safeguards the forest-based economy, and provides recreational opportunities for residents and tourists.

In 2005, the 13 Mile Woods Community Forest, also known as Errol Town Forest, was created by the residents of Errol. The town originally protected 5,269 acres, adding 1,839 acres in 2009, bringing the community forest to 7,108 acres.



13 MILE WOODS COMMUNITY FOREST

JERRY AND MARCY MONKMAN/ECOPHOTOGRAPHY

The Community Forest, and the adjacent Umbagog National Wildlife Refuge, provide an essential gateway entrance to the town. The 11-mile trail network within the Forest provides connections between a motorized recreational trail system and town amenities such as gas stations, restaurants, and lodging.

The Community Forest has nine miles of frontage on the Androscoggin River, and provides opportunities for hunting, fishing, cross-country skiing, and hiking. Snowmobiling, fishing, and hunting provide more than $2.2 million in visitor spending in the Errol area annually, and support 20 jobs.

The Community Forest is sustainably managed for timber. From 2005 to 2012, the Community Forest produced $1.7 million in net revenues and generated over $2 million in earnings in the logging sector supporting two local full-time equivalent jobs in forestry and logging and indirectly supporting 10 additional jobs in other sectors of forest products and manufacturing. From 2013 to 2022, sustainable timber management was estimated to result in over $1.07 million in revenue.

Sources: Reaves, Elizabeth and Marta Ceroni. 2013. Economic Impacts of the 13 Mile Woods Community Forest in Errol, New Hampshire. Prepared for the Community Forest Collaborative.

The Trust for Public Land. 2021. Community Forests: A Path to Prosperity and Connection — A Case Study Approach to Understanding the Range of Economic Benefits Provided by Community Forests in the U.S. Prepared for the U.S. Forest Service.

AMMONOOSUC RIVER FOREST

Conclusion

New Hampshire is fortunate to have diverse protected natural lands, forests, farmland, and waters, thanks to the efforts of a range of organizations and state leaders, private landowners, and strong public support. These open spaces provide a host of public benefits, support a dynamic economy, and are a key part of what makes our state unique.

Open space helps make communities healthier and more resilient by protecting drinking water and preventing and controlling floodwater. Land conservation is often the most cost-effective way to provide clean reliable drinking water.

Sustaining working farm and forest lands creates jobs and supports businesses. Forest conservation and the Current Use program help maintain forests as working lands. Farmland conservation and the Current Use program help sustain the agriculture industry, secure the food supply, and provide an economic stimulus to rural communities.

Publicly accessible open space supports the New Hampshire's outdoor way of life by encouraging recreational use by residents and visitors, forming the backbone of the outdoor recreation economy, maintaining hunting, fishing, and wildlife watching traditions, and providing health benefits.

Land conservation and affordable housing development are both important to the fabric of communities and are compatible land uses. The key is smart development that provides high quality housing for families of all income levels with the least impact on natural areas as possible.

With New Hampshire losing nearly 5,000 acres of forests, farms, and natural lands each year, it is critical to continue our efforts to protect these open spaces, to ensure we can enjoy the public benefits these lands provide, and to find new ways to meet needs such as housing while continuing to maintain our rich and diverse open spaces.

WILLIAM H. CHAMPLIN, JR. FOREST

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Endnotes

1 The Bureau of Economic Analysis defines an industry's value added as the market value it adds in production, or the difference between the price at which it sells its products and the cost of the inputs it purchases from other industries. Value added is a separate but related measurement to spending which is the amount spent by residents and visitors on related goods and services.

2 Based on acres of forest developed each year from 1990 to 2010.

Foster, David, Kathleen Fallon Lambert, David Kittredge, Brian Donahue, Clarisse Hart, William Labich, Spencer Meyer, Jonathan Thompson, Mary Buchanan, James Levitt, Robert Perschel, Keith Ross, Geordie Elkins, Cheryl Daigle, Brian Hall, Edward Faison, Anthony D'Amato, Richard Forman, Peter Del Tredici, Lloyd Irland, Betsy Colburn, David Orwig, John Aber, Alan Berger, Charles Driscoll, William Keeton, Robert Lilieholm, Neil Pederson, Aaron Ellison, Malcolm Hunter, and Timothy Fahey. 2017. Wildlands and Woodlands: Farmlands and Communities: Broadening the Vision for New England. Harvard University Press.

3 Earth Systems Research Center, University of New Hampshire. NH GRANIT Conservation/Public Lands GIS Layer Meta Data. Updated May 15, 2024. Available at https://www.nhgeodata.unh.edu/datasets/NHGRANIT::new-hampshire-conservation-public-lands/about

4 In 2024, 1,868,917 acres were identified as permanent conservation land. Ibid.

Within this total is the White Mountain National Forest at almost 800,000 acres. U.S. Department of Agriculture. White Mountain National Forest. https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5262234.pdf

5 In 2024, 90,340 acres were identified as unofficial conservation land. Earth Systems Research Center, University of New Hampshire, 2024.

6 In 2024, 21,163 acres were identified as unprotected water supply land. Ibid.

7 In 2024, 17,788 acres were identified as developed public land. Ibid.

8 Municipal and Property Division, Department of Revenue Administration, The State of New Hampshire. 2023 Current Use Report: Acres, Percentages, and Other Statistics. 2023.

9 Ad Valorem: According to value.

New Hampshire Assessing Standards Board. 2019. Reference Manual for Selectmen, Assessors, and Taxpayers. https://www.revenue.nh.gov/sites/g/files/ehbemt736/files/documents/assessing-reference-manual.pdf

10 NH RSA 79-A:1 states: It is hereby declared to be in the public interest to encourage the preservation of open space, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizens, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources. It is further declared to be in the public interest to prevent the loss of open space due to property taxation at values incompatible with open space usage. Open space land imposes few if any costs on local government and is therefore an economic benefit to its citizens. The means for encouraging preservation of open space authorized by this chapter is the assessment of land value for property taxation on the basis of current use. It is the intent of this chapter to encourage but not to require management practices on open space lands under current use assessment.

11 Unproductive land is by its nature is incapable of producing agricultural or forest products due to poor soil or site characteristics, including wetlands, or the location of which renders it inaccessible or impractical to harvest agricultural or forest products. Structures, buildings, driveways, and other improvements on the land do not qualify for Current Use.

12 In 2023, 1,527,094 acres were enrolled in Current Use without the recreation adjustment, and 1,475,512 acres were enrolled in Current Use with the recreation adjustment.

Note, there is overlap between the acres enrolled in Current Use and acres identified as permanent conservation land, therefore, the acres in these categories cannot be summed.

13 RSA 79-A:7

14 Foster, et al., 2017.

15 Rogers, Shannon and Alison Watts. 2019. Nature Economy: Values of Freshwater Recreation in NH. University of New Hampshire Cooperative Extension.

16 New Hampshire Department of Environmental Services. 2024. The Value of Public Water in New Hampshire. Fact Sheet. U.S. Environmental Protection Agency. 2012. The Economic Benefits of Protecting Healthy Watersheds. EPA 841-N-12-004.

17 New Hampshire Drinking Water & Groundwater Trust Fund. Source Water Protection Grant Program. https://www.dwgtf.des.nh.gov/funding-programs/source-water-protection-grant-program

18 New Hampshire Department of Environmental Services. Drinking Water. https://www.des.nh.gov/water/drinking-water

19 New Hampshire Department of Environmental Services. 2024. Annual Compliance Report of Public Water System Violations January 1, 2023 – December 31, 2023.

20 New Hampshire Department of Environmental Services. Source Water Protection. https://www.des.nh.gov/climate-and-sustainability/conservation-

mitigation-and-restoration/source-water-protection#:~:text=A%20majority%20of%20New%20Hampshire,Source%20Water%20Protection%20Grant%20Program).

21 Berg, Chelsea, Madeleine Mineau, and Shannon Rogers. 2016. Examining the ecosystem service of nutrient removal in a coastal watershed. Ecosystem Services, 20, 104–112.

22 Watts, Alison, Shannon Rogers, Jared Reynolds, and Paige McKibben. 2019. What Is Our Water Worth and What Does Our Water Cost? A Review of Economic Data on Water In New Hampshire. New Hampshire Lives on Water: A Public-Private Partnership.

23 Bauer, Dana Marie, and Robert Johnston. 2017. Buffer Options for the Bay: Economic Valuation of Water Quality Ecosystem Services in New Hampshire's Great Bay Watershed. George Perkins Marsh Institute, Clark University.

24 Rogers, Shannon, Chelsea Berg, and Jill Farrell. 2014. New Hampshire's Citizens Value and Use Water in Many Ways: A Preliminary Report of the New Hampshire Water and Watershed Survey—statewide perspectives with an oversample in the Piscataqua Region Watershed. https://www3.epa.gov/region1/npdes/schillerstation/pdfs/AR-408.pdf

25 Hazards and Vulnerability Research Institute. 2022. How Hazardous is Your State? https://public.tableau.com/app/profile/hvri/viz/Haz_Dash_New/FinalCompleteDashboard.

26 Rebuild by Design. Atlas of Accountability (2011-2023). https://rebuildbydesign.org/atlas-of-disaster/2/

27 Federal Emergency Management Agency, U.S. Department of Homeland Security. President Joseph R. Biden, Jr. Approves Major Disaster Declaration for New Hampshire. Press Release August 20, 2024.

28 New Hampshire Department of Environmental Services. Wetlands. https://www.des.nh.gov/water/wetlands

29 New Hampshire Department of Environmental Services. 2017-2023 New Hampshire Wetland Program Plan. https://www.epa.gov/sites/default/files/2017-07/documents/nhwetlandsplan-2017-23.pdf

30 U.S. Department of Agriculture, Forest Service. 2024. Forests of New Hampshire: FIA Annual Snapshot 2021, Resource Update FS-371. Washington, DC: U.S. Department of Agriculture, Forest Service. 4 p. https://doi.org/10.2737/FS-RU-371.

31 Thompson, Jonathan, Joshua Plisinski, Pontus Olofsson, Christopher Holden, and Matthew Duveneck. 2017. Forest Loss in New England: A Projection of Recent Trends. PLoS ONE 12(12). https://pmc.ncbi.nlm.nih.gov/articles/PMC5730125/pdf/pone.0189636.pdf

32 Public Sector Consultants and Andrew Fast. 2020. Forest Products Industries' Economic Contributions: New Hampshire. Lansing: Public Sector Consultants.

Employment is the number of full- and part-time jobs associated with an industry. Labor income is the dollar total of employee compensation and proprietor income; the latter is associated with self-employed individuals.

33 The sum of value added for all economic sectors within the region equals the total GRP. Output is the dollar measure of production within an area.

34 Public Sector Consultants and Andrew Fast. 2020.

35 U.S. Department of Agriculture National Agricultural Statistics Service, 2022 Census of Agriculture. https://www.nass.usda.gov/AgCensus/

36 Public Sector Consultants and Andrew Fast. 2020.

37 Lee, Daniel. 2012. Economic Contribution of the Logging Industry in New Hampshire. The Center for Rural Partnerships, Plymouth State University.

38 U.S. Department of Agriculture National Agricultural Statistics Service, 2022 Census of Agriculture. https://www.nass.usda.gov/AgCensus/

39 Ibid.

40 American Farmland Trust. 2020. Farms Under Threat. The State of the States Agricultural Land Conversion Highlight Summary New Hampshire. https://csp-fut.appspot.com/

41 Hunter, M., A. Sorensen, T. Nogeire-McRae, S. Beck, S. Shutts, R. Murphy. 2022. Farms Under Threat 2040: Choosing an Abundant Future. Washington, D.C.: American Farmland Trust.

42 SMARInsights. 2020. The Economic Impact of Agriculture New Hampshire 2019. For the New Hampshire Department of Business and Public Affairs.

43 Ibid.

44 University of New Hampshire Cooperative Extension. 2024. 10 Components of Vibrant Communities.

45 Stay Work Play New Hampshire. 2023. New Hampshire Quality of Life Survey.

46 University of New Hampshire Carsey School of Public Policy. 2024. Population Gains Continue in New Hampshire, but the Pace Varies. https://carsey.unh.edu/publication/population-gains-continue-new-hampshire-pace-varies

47 New Hampshire Department of Natural and Cultural Resources, Division of Parks and Recreation, 2024.

48 U.S. News and World Report. Best States Rankings. https://www.usnews.com/news/best-states/rankings

49 New Hampshire Department of Natural and Cultural Resources, Division of Parks and Recreation. New Hampshire Statewide Comprehensive Outdoor Recreation Plan 2024-2028. Approved by the National Park Service March 2024.

50 Sims, K., J. Thompson, S. Meyer, C. Nolte, and J. Plisinski. 2019. Assessing the local economic impacts of land protection. Conservation Biology. Volume 33. No. 5. 1035-1044.

51 Farmland Information Center. 2016. Cost of Community Services Studies. Partnership between

the U.S. Department of Agriculture Natural Resources Conservation Service and American Farmland Trust.

52 Harrison, Thane and Charlie French. 2019. An Introduction to Fiscal Impact Analysis. University of New Hampshire Extension.

53 American Farmland Trust found that across 151 communities nationwide (including 11 of the New Hampshire studies) residential development is a net fiscal loss for communities. That is, for every $1 in property tax revenues it generates, residential development requires $1.16 in services (median value), while working and open lands require $0.37 in services. A meta-analysis of 125 cost of community services studies across the country again found that residential land uses tend to have ratios greater than one, while commercial/industrial and agricultural/open-space land uses tend to have ratios less than one – meaning open space and commercial/industrial land more than pays for itself.

Farmland Information Center. 2016.

Kotchen, M. and S. Stacey. 2009. A Meta-Analysis of Cost of Community Services Studies. International Regional Science Review 32(3):376-399.

54 Kampa, M. and E. Castanas. 2007. Human Health Effects of Air Pollution. Environmental Pollution 151: 362–367; Currie, J. 2013. Pollution and Infant Health. Child Development Perspectives 7: 237–242.

55 Butlin, R. 1990. Effects of Air Pollutants on Buildings and Materials. Proceedings of the Royal Society of Edinburgh. Section B. Biological Sciences 97: 255–272; U.S. Environmental Protection Agency. 2007. The Plain English Guide to the Clean Air Act, EPA-456/K-07-001, Office of Air Quality Planning and Statistics.

56 Nowak, D., S. Hirabayashi, A. Bodine, and R. Hoehn. 2013. Modeled PM2.5 Removal by Trees in Ten U.S. Cities and Associated Health Effects," Environmental Pollution 178: 395–402.

57 U.S. Environmental Protection Agency. Benefits Mapping and Analysis Program: How BenMAP-CE Estimates the Health and Economic Effects of Air Pollution. https://www.epa.gov/benmap

58 Percent forest with water removed from the total area.

U.S. Department of Agriculture, Forest Service, 2024.

59 Pollutants include nitrogen dioxide (NO2), ozone (O3), sulfur dioxide (SO2), and particulate matter less than 2.5 microns (PM2.5) in aerodynamic diameter.

Nowak, David, Satoshi Hirabayashi, Allison Bodine, and Eric Greenfield. 2014. Tree and forest effects on air quality and human health in the United States. Environmental Health 193:119-129.

60 Foster, et al., 2017.

61 New Hampshire Climate Change Policy Task Force. 2009. The New Hampshire Climate Action Plan: A Plan for New Hampshire's Energy, Environmental, and Economic Development Future. New Hampshire Department of Environmental Protection.

62 Jevon, Fiona, Anthony D'Amato, Christopher Woodall, Kevin Evans, Matthew Ayers, and Jaclyn Hatala Matthes. 2019. Tree basal area and conifer abundance predict soil carbon stocks and concentrations in an actively managed forest of northern New Hampshire, USA. Forest Ecology and Management. 451(1)

63 Elmes, A., J. Rogan, C. Williams, S. Ratick, D. Nowak, and D. Martin. 2017. Effects of urban tree canopy loss on land surface temperature magnitude and timing. ISPRS Journal of Photogrammetry and Remote Sensing. 128

64 U.S. Environmental Protection Agency. Benefits of Trees and Vegetation.

65 Knight, Teri, Sian Price, Diana Bowler, Amy Hookway, Sian King, Ko Konno, and Raja Lorena Richter. 2021. How effective is 'greening' of urban areas in reducing human exposure to ground-level ozone concentrations, UV exposure and the 'urban heat island effect'? An updated systematic review. Environmental Evidence. 10:12.

66 Zhu, Sijie, Francesco Causone, Naiping Gao, Yu Ye, Xing Jin, Xin Zhou, Xing Shi. 2023. Numerical simulation to assess the impact of urban green infrastructure on building energy use: A review. Building and Environment. 228.

67 Pirani, Amanda. NH wasn't built for extreme heat. Experts say vulnerable people are paying the price. New Hampshire Bulletin. July 26, 2023. https://www.nhpr.org/climate-change/2023-07-26/nh-wasnt-built-for-extreme-heat-that-puts-vulnerable-people-at-even-more-risk

68 Weinberger, K. et al., 2020. Estimating the Number of Excess Deaths Attributable to Heat in 297 United States Counties. Environmental Epidemiology 4:3.

69 Kondo, M. et. al. 2020. Heat Impact Assessments of Philadelphia's 2025 Tree Canopy Cover Goals. Lancet Plant Health. 4. April 2020.

70 Runkle, J., K.E. Kunkel, D.R. Easterling, R. Frankson, B.C. Stewart, and J. Spaccio, 2022: New Hampshire State Climate Summary 2022. NOAA Technical Report NESDIS 150-NH. NOAA/NESDIS, Silver Spring, MD, 5 pp.

71 U.S. Environmental Protection Agency. 2016. What Climate Change Means for New Hampshire. EPA 430-F-16-031.

72 Runkle, J., K.E. Kunkel, D.R. Easterling, R. Frankson, B.C. Stewart, and J. Spaccio, 2022: New Hampshire State Climate Summary 2022. NOAA Technical Report NESDIS 150-NH. NOAA/NESDIS, Silver Spring, MD, 5 pp.

73 U.S. Environmental Protection Agency. 2016. What Climate Change Means for New Hampshire. EPA 430-F-16-031.

74 Foster, David, Emily E. Johnson, Brian R. Hall, Jonathan Leibowitz, Elizabeth H. Thompson, Brian Donahue, Edward K. Faison, Jamie Sayen, David Publicover, Nancy Sferra, Lloyd C. Irland, Jonathan R. Thompson, Robert Perschel, David A. Orwig, William

S. Keeton, Malcolm L. Hunter Jr., Susan A. Masino, and Lillian Howell. 2023. Wildlands in New England: Past, Present, and Future. Wildlands Woodlands Farmlands & Communities.

75 Alamdari, N., P. Claggett, D. Sample, Z. Easton, M. Nayeb Yazdi. 2022. Evaluating the joint effects of climate and land use change on runoff and pollutant loading in a rapidly developing watershed. Journal of Cleaner Production, 2022; 330: 129953 DOI: 10.1016/j.jclepro.2021.129953.

76 New Hampshire Fish and Game Department. 2015. New Hampshire Wildlife Action Plan: 2015 Revised Edition. Note, the Wildlife Action Plan is being updated in 2025.

77 Includes both native and non-native plants, animals, pathogens, microbes, and genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread and/or increase in abundance.

78 New Hampshire Department of Natural and Cultural Resources, Division of Parks and Recreation, 2024.

79 U.S. Army Corps of Engineers. Memorandum for Planning Community of Practice: Economic Guidance Memorandum, 24-02, Unit Day Values for Recreation for Fiscal Year 2024.

80 Oregon State University, Recreation Use Values Database. http://recvaluation.forestry. oregonstate.edu/database

81 Dean Runyan Associates. New Hampshire Travel Impact Online Tool. https://www.travelstats.com/qimpacts/newhampshire

82 Value-added (also known as gross regional product, or GRP) is the sum of labor income, other property income (e.g., rents and profits) and indirect business taxes (e.g., excise and sales taxes). It is the difference between an industry's total output and the cost of its intermediate inputs.

U.S. Bureau of Economic Analysis. Outdoor Recreation, U.S. and States 2023. https://www.bea.gov/data/special-topics/outdoor-recreation

83 Expenditure estimates accounted for all items invested by participants for the activities during the year, ranging from trip-related expenses such as fuel, lodging and food, to equipment and clothing, to vehicles or land purchased.

U.S. Fish and Wildlife Service. 2022 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. https://www.fws.gov/program/national-survey-fishing-hunting-and-wildlife-associated-recreation-fhwar

84 New Hampshire Fish and Game Department. National Survey of Fishing, Hunting, and Wildlife Associated Recreation State-Level Estimates Presentation. https://www.wildlife.nh.gov/sites/g/files/ehbemt746/files/inline-documents/sonh/fhwar-survey-presentation-for-commission-may-2024.pdf

85 Centers for Disease Control and Prevention. "Benefits of Physical Activity" https://www.cdc.gov/physical-activity-basics/benefits/?CDC_AAref_Val=https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm

86 Centers for Disease Control and Prevention, "How Much Physical Activity Do Adults Need?"

87 New Hampshire Department of Natural and Cultural Resources, Division of Parks and Recreation, 2024.

88 Kuo, F. and A. Faber Taylor. 2004. A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a National Study. American Journal of Public Health 94, no. 9 September 2004.

89 Anderson, C., M. Monroy, and D. Keltner. 2018. Awe in Nature Heals: Evidence from Military Veterans, At-Risk Youth, and College Students. Emotion 18, no. 8.

90 Alcock, I., M. White, B. Wheeler, L. Fleming, and M. Depledge. 2014. Longitudinal Effects on Mental Health of Moving to Greener and Less Green Urban Areas. Environmental Science and Technology 48, no. 2 (2014): 1247–1255; Astell-Burt, T. R. Mitchell, and T. Hartig. 2014. The Association Between Green Space and Mental Health Varies Across the Lifecourse. A Longitudinal Study. Journal Epidemiology and Community Health. 68, no. 6 June 2014; Kuo, M. 2015. How Might Contact with Nature Promote Human Health? Promising Mechanisms and a Possible Central Pathway. Frontiers in Psychology 6 2015: 1–8; Marselle, M., K. Irvine, and S. Warber, 2014. Examining Group Walks in Nature and Multiple Aspects of Well Being: A Large-Scale Study. Ecopsychology 6, no. 3 2014: 134–147; Sturm, R. and D. Cohen. 2014. Proximity to Urban Parks and Mental Health. Journal of Mental Health Policy and Economics 17, no. 1 2014: 19–24.

91 Mental Health America. Ranking the States 2022. https://mhanational.org/issues/2022/ranking-states

92 Wolch, J. et al., 2011. Childhood Obesity and Proximity to Urban Parks and Recreational Resources: A Longitudinal Cohort Study, Health & Place 17, no. 1; Ho, C.-H., Payne, L., Orsega-Smith, E., & Godbey, G. 2003. Parks, Recreation and Public Health. Parks & Recreation, 38(4), 18-27; Kim, B., Thomsen, M. R., Nayga, Jr., R. M., Fang, D., & Goudie, A. 2020. Move More, Gain Less: Effect of a Recreational Trail System on Childhood BMI. Contemp Econ Policy, 38(2), 270-288; Kim, J., Lee, S., & Ramos, W. 2021. Investigating the Relationship Between Accessibility of Green Space and Adult Obesity Rates: A Secondary Data Analysis in the United States. J Prev Med Public Health, 54(3), 208-217.

93 United Health Foundation. America's Health Rankings. https://www.americashealthrankings.org/explore/measures/Obesity/NH

94 Harvard Medical School, Harvard Health Publishing, Mind & Mood: A 20-Minute Nature Break Relieves Stress. https://www.health.harvard.edu/ mind-and-mood/a-20-minute-nature-break-relievesstress

95 James, P., J. Hart, R. Banay, and F. Laden. 2016. Exposure to Greenness and Mortality in a Nationwide Prospective Cohort Study of Women. Environmental Health Perspectives 124, no. 9 2016: 1344–1352.

Matt Leahy, Public Policy Director
Society for the Protection of New Hampshire Forests
54 Portsmouth Street ■ Concord, NH 03301
603-224-9945, ext. 355 ■ mleahy@forestsociety.org

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SELT Southeast Land Trust of New Hampshire
New Hampshire Land Trust Coalition
NH Audubon
NHTOA NH Timberland Owners Association Est. 1911
Since 1973 New Hampshire Current Use
New Hampshire Association of Conservation Commissions Serving New Hampshire's Communities Since 1970
The Nature Conservancy