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MEETING THE CONSERVATION CHALLENGE IN NEW ENGLAND

David Foster

On a global scale, the land area of New England is insignificant. Even when focused on the Americas, most outsiders dismiss the region as an extension of the eastern megapolis, a postindustrial, urbanized landscape, where second-growth forests pale by comparison to the stature and majesty of their counterparts in the western United States and South America. Much to the surprise of most visitors to the region, however, the impression of omnipresent cities and suburbs is readily replaced by extensive forests that dominate this surprisingly wooded land. New England is an environmental paradox.

Some of the densest population in the country is found in these six states, yet this area also remains the most heavily forested region. These forests are the result of a remarkable ecological story of devastation and rebirth paralleled by an equally important story of the human enterprise and conservation innovation that have been applied to protect this varied landscape. These two stories offer broadly applicable insights. Meanwhile, New England forests offer many benefits and important lessons, locally and globally.

The recovery of the New England forest from near devastation is part of a much larger story of the eastern United States, a century-long process of subcontinental reforestation and regrowth that noted environmental writer Bill McKibben has called "the great environmental story of the U.S." (McKibben 1995). While this recovery was certainly due to human activity, it also happened quite accidentally as a byproduct of larger economic forces and cultural changes that had little to do with active conservation.

For more than 10,000 years after the ice melted from its surface, New England was a sparsely settled, forested land. While native people derived abundant resources from the waters, wetlands, and woodlands, the forests were shaped predominantly by natural forces and dominated by unbroken expanses of ancient trees. This changed abruptly 400 years ago, with the arrival of agrarian settlers from Europe. As the new population grew and expanded across the

land, the forests, from hilltop to valley bottom, were progressively converted to productive farms and woodlands. Alexis de Tocqueville traveled the United States in the 1830s and was captivated by the landscape pattern, which was as distinctive as the social and economic characteristics he described in his landmark writing.

Except for the most rugged mountains and the unsettled northern part of Maine, the New England region was evenly settled in a unique system of townships governed by their residents' local rule. The industrious nature of the people noted by de Tocqueville and other travelers such as Yale University's president Timothy Dwight produced a wave of deforestation so great that Henry Thoreau, their contemporary, could only despair, "Thank God, they cannot cut down the clouds" (D. Foster 2001, 90). Of course, woodlands provided essential resources—fuel; timber; energy for transportation; and materials for household, farm, and industrial goods—so the remaining woodlots were cut heavily and frequently. As Thoreau noted in the cold winter of 1852, "You can walk in the woods in no direction but you hear the sound of the axe" (D. Foster 2001, 90).

Before he died in 1862, however, Henry Thoreau witnessed an ironic phenomenon of cultural change and decline that would save the land from this onslaught and human domination and lead to the expansion of forests across fields, meadows, and pastures. The cause was the decline of agriculture and the progressive neglect and eventual abandonment of farmlands and, later, farmsteads. Thoreau termed the process of forest establishment, growth, and change that he witnessed "the succession of forest trees" (Thoreau 1860). These human and ecological processes spread across New England and, indeed, the entire eastern United States. Driven fundamentally by geography, technology, and economics, they were manifested through a complete reorganization of the regional landscape and its human population.

The opening of productive farmlands in the Midwest and West and transportation via the expanding rail system brought New England farmers face to face with new competition, which led to initial contraction and the gradual shift in focus to perishable items, such as milk, hay, and vegetables, which were needed in growing eastern cities. Industry, centered on streams and rail

lines, led to concentrations of growing populations of residents and new immigrants in mill villages, the formation of urban centers, and a depopulation of rural areas.

As agriculture shifted westward and farms were tended less in the eastern part of the country, trees quite naturally increased across the land, first occupying marginal lands that had been neglected, then extending across the bulk of the landscape as entire farms were abandoned. As a consequence today, in most states east of the Mississippi River, the landscape is much more heavily wooded than it was a century ago. In New England, the reforestation has been extreme, leading to more than a doubling of forest area in little more than a century. The result is a rural landscape in which natural forest conditions and processes are increasing and the signs of former human activity—stone fences, small dams, rock house foundations, and ancient roads and rail beds—have become features of our woodlands.

In the mid-nineteenth century, Thoreau, George B. Emerson, and a few other writers and social commentators raised increasingly loud protests over the destruction and degradation of forests. Despite some early attempts to plant trees and pass local ordinances to protect forests, their calls were largely ignored and had little immediate consequence. The recovery of the forests was not marshaled by legions of conservationists; rather it was the indirect and quite unintended consequence of a wholesale shift in regional and national economy and behavior.

Today, the New England landscape, and indeed the broader eastern forest and much of the United States, is under renewed assault from a second wave of deforestation. In contrast to the indifference that met Thoreau, however, the magnitude and effectiveness of the conservation response to this modern crisis is stunning, as it well needs to be to address the scale of the challenge. While it remains unclear whether our current conservation response will be capable of preserving the remarkable expanse of forest that history brought to this region, the size and quality of the effort offer many lessons for conservation more broadly. It also testifies to the remarkable capacity for conservation—social, human, and financial—that has developed in the century and a half since Thoreau, and that can now be mustered to defend critical natural capital.

THE CURRENT THREAT TO NEW ENGLAND FORESTS AND THE RESPONSE

The second wave of deforestation and environmental degradation that is spreading across the eastern United States presently is qualitatively distinct from and driven by very different social and economic forces than the first wave. This new process is the conversion, fragmentation, and parcelization of forestlands and land ownerships. Its scale and impact are so great that a colleague recently wrote for a leading forestry journal an editorial entitled "The Fire in the East" in which he compared the urgency in addressing it to the national focus that has been given to wildfires across the drier western part of the country (Kittredge 2009).

Unlike the western United States, with its expansive federal lands controlled by the Department of Agriculture and its Forest Service, the Bureau of Land Management, the Defense Department, and the National Park Service, the eastern region is predominantly owned privately by individuals, companies, and organizations. With the forest industry in decline and real estate values increasing, over time these forestlands and farmlands have increasingly been divided into smaller parcels (or parcelized) and converted to residential and vacation housing or use by industry and commerce (that is, developed). This has led to fragmenting and decreasing the value and effectiveness of both natural and agrarian landscapes. Fragmentation and parcelization decrease habitat value for native organisms, reduce human access to open space, greatly challenge effective stewardship, and undermine the many ecosystem services that nature provides. In contrast to the eighteenth- and nineteenth-century agrarian wave of deforestation, which had harsh consequences but was substantially reversible, this new activity is much more permanent. The hard surfaces of pavement and structures that humans are creating today will defy all but the most cataclysmic forces.

While most residents have ignored this process and its consequences, and many political entities have given higher priority to economic development than conservation, diverse groups have recognized and acted aggressively to address these issues.

With a recent perspective that links forest conservation with energy, the environment, climate change, and the economy, the new attention and emerging response to both sprawl and forest impacts are promising. At a national level, the U.S. Forest Service has recognized deforestation as a national priority, releasing a well-documented project called "Forests on the Edge," which

estimates that nationwide 2,500 acres of forest, rangeland, and farmland are lost daily to development.

Many New England states and organizations have released strong scientific assessments of the problem and carefully crafted conservation plans for the future protection of lands and nature. Among them is New Hampshire Everlasting (Society for the Protection of New Hampshire Forests), which seeks to conserve one million acres of forest. Massachusetts-based projects include the Statewide Land Conservation Plan (Executive Office of Energy and Environmental Affairs); the Massachusetts Natural Heritage and Endangered Species Program's BioMap; and the *Losing Ground* series from the Massachusetts Audubon Society.

Presently, New England's conservation community and population are demonstrating great potential for turning these diverse assessments into positive action for land protection and long-term stewardship. Such action is exemplified by the strong response to a recent proposal for Massachusetts, which currently is about 60 percent forested. In 2005, a group of scientists primarily associated with the Harvard Forest issued a report entitled *Wildlands and Woodlands: A Vision for the Forests of Massachusetts* (D. Foster et al. 2005, known as the W&W report). It called for protection of more than 50 percent of the state in forest, either as actively managed woodlands or wildland reserves, which would be allowed to develop under prevailing natural processes. Early in 2010, this group will release a parallel vision for all of New England, in which more than 70 percent of the region will remain permanently forested; farmland and wetlands are protected from development; and new housing, commercial, and industrial activities are focused in and immediately around currently developed areas (D. Foster et al. 2010).

These W&W visions are not based solely on the usual conservation biology rationale of biodiversity and nature conservation. Instead, they are grounded in thinking that focuses more squarely on the role of the forest as a natural infrastructure that supports people, communities, *and* nature, and on conservation of that infrastructure as a critical economic process. These two visions argue that most land protection in the twenty-first century will occur through the actions of private landowners, who place permanent conservation restrictions on their land. In turn, individual landowners will be engaged and supported through the involvement of communities

and existing local, regional, and national conservation organizations and entities, also called woodland councils, working collaboratively in regional partnerships.

While they may indeed seem visionary, they have not been dismissed as fanciful but have generated serious consideration, strong backing, and substantial engagement by a diverse group of individuals, organizations, and entities.

- Major editorial boards, including those of the *Boston Globe* and *Providence Journal*, have endorsed them.
- They have been covered in national news and business media, such as the *New York Times* and *Wall Street Journal*.
- The Wildlands and Woodlands Partnership was formed. Initially inspired by support from the Kendall Foundation, The Nature Conservancy, and The Trustees of Reservations, this partnership now comprises 75 organizations from four New England states. It has policy, stewardship, implementation, and outreach committees and a coordinator funded by a private foundation.
- Seven woodland councils, from southern Connecticut to central New Hampshire and bridging three state boundaries, were instituted. Made up of numerous organizations and agencies, from local to national in scope, these councils seek to advance outreach to landowners and assist in stewardship and, especially, land protection.
- Two large land protection efforts that advance W&W goals at statewide and New England-wide scales have emerged. Sponsored by the New England Natural Resources Center and New England Forestry Foundation, they seek to aggregate tens or hundreds of parcels and landowners into fewer larger projects in order to reduce expenses, increase the rate of land protection, and attract major funding.
- The Harvard University Center for the Environment hosted the Woodlands and Wildlands Conservation Finance Roundtable (WWCFR) in 2006. National leaders in conservation finance gathered to evaluate possible mechanisms for funding conservation on the scale of W&W (Levitt and Fallon Lambert 2006).
- A public/private/nonprofit/academic commission on conservation finance was established through a law passed by the Massachusetts legislature in January 2009. An outgrowth of the WWCFR, the commission will identify and provide necessary detail regarding the

implementation of important emerging methods of forest conservation finance that may be employed effectively in Massachusetts. The commission's activity will be underwritten in part by grants from the Massachusetts Environmental Trust and a private foundation.

The response to the new regional and national crisis, and the positive steps taken to advance the W&W goals, are indicative of New England's solid, well-established capacity for conservation. It also underscores the role that New Englanders have come to play in conservation innovation at national and international scales. So, what has happened since the passionate conservation pleas of Thoreau and his contemporaries that makes the response so different today?

Soon after the arrival of Europeans in New England, conservation measures began with restrictions on hunting, fire, and timber use and the establishment of the first public park, or commons, through self-imposed taxation. Thus, New England has a long history of environmental awareness and conservation of natural resources and land—wildlife and fish, forests, wetlands, coastal lands, and water. The intensity of this focus, the development of private-based efforts, and the pace of actual protection of land and resources, however, did not pick up until the late-nineteenth century. As described in *Twentieth-Century New England Land Conservation*, which addresses each of the six states, much of this effort, and certainly the institutional and legal framework for most of the activity, is centered in the last one hundred years (C. Foster 2008). The book's subtitle, *A Heritage of Civic Engagement*, underscores the critical roles private individuals, communities, and organizations have played in advancing this new wave of conservation. They have formed the essential partnership with state and, to a lesser degree, federal agencies.

As the conservation history in Thoreau's home state of Massachusetts illustrates, this regional activity is characterized by a variety of factors (box 2.1). Individual leadership in thought and action has been key, with such luminaries as John Phillips (founding member and longtime president of the Massachusetts Fish and Game Association); Harris Reynolds (founder of the New England Forestry Foundation); Harriet Lawrence Hemenway and Minna Hall (cofounders of the Massachusetts Audubon Society); Charles Eliot (founder of The Trustees of Public Reservations); Allen Morgan (president of Mass Audubon in the mid-twentieth century and an

important champion of land trusts throughout the state); Charles H. W. Foster (first Secretary of the Environment for the Commonwealth of Massachusetts); and many others.

Additional important aspects of this regional activity include the early formation and critical role of private organizations and community- or town-based efforts, strong public-private collaborations, continual innovation in the approaches to conservation advancement and financing; and the important, supportive role of public funding for major conservation. By the twenty-first century, as outgrowths of these activities, the state and region had developed a substantial infrastructure of existing conservation lands and a capacity for advancing new conservation agendas to address current and emerging issues. All of these initiatives are based on a diverse collection of private groups and public entities and the avid involvement of private citizens and landowners.

2.1 | NOTABLE CONSERVATION LANDMARKS IN MASSACHUSETTS

- 1634** Freemen of Boston vote to impose a tax upon themselves to raise funds to acquire land to establish a cow pasture and military training field called the "common field." Boston Common is North America's first and oldest protected open space created in the context of a democratic process.
- 1640** Boston town meeting establishes regulations on use of Boston Common.
- 1650** Plimoth and Massachusetts Bay Colonies' ordinances regulate forest harvests.
- 1660s** Boston Common used recreationally as a promenade policed by town constables.
- 1694** Statewide ban on deer hunting imposed.
- 1792** Massachusetts Society Promoting Agriculture is legislatively chartered; signed by Governor John Hancock and chaired by Samuel Adams.
- 1799** Citizens of Boston rally to prevent construction of a gun house on Boston Common. They publish broadside posted around town declaring Common to be "Palladium of the People" that offers citizens "incalculable benefits."
- 1836** Boston Public Garden, first of its kind in the nation, is established adjacent to Boston Common.

- 1846** In *A Report on the Trees and Shrubs Growing Naturally in the Forests of Massachusetts*, George B. Emerson decries rampant cutting and deforestation, extols good management, and identifies many values of forests.
- 1860** Henry David Thoreau talks on "The Succession of Forest Trees," describing forest establishment on farmland.
- 1865** State Fish & Wildlife Agency—the first such agency in the United States—originates.
- 1873** Massachusetts Fish & Game Association (MFGA), oldest incorporated conservation organization in the U.S., is founded.
- 1876** Founding of Appalachian Mountain Club shifts focus from exploration and recreation to conservation.
- 1891** The Trustees of Public Reservations (now The Trustees of Reservations, or TTOR), the world's first regional land trust, is established.
- 1896** Massachusetts Audubon Society, the world's oldest existing Audubon Society, is created in Boston.
- 1898** Establishment of Massachusetts Forestry Association (which becomes Massachusetts Forest and Park Association [MFPA] in 1933). It becomes dominant early force in land protection.
- 1898** Mount Greylock, in the Berkshire Mountains in western Massachusetts, is first reservation in what will become eighth-largest state forest and park system in the U.S.
- 1930** MFGA hosts first New England Game Conference, which is a model for North American Wildlife and Natural Resources Conference.
- 1935** MFPA legislative petition receives 23,000 signatures to purchase 500,000 acres in state forests and parks.
- 1939** Quabbin Reservoir completed following state acquisition of 120,000 acres (~75 percent of watershed) to provide water to metropolitan Boston and 40 percent of state. It is one of four unfiltered, large water systems in U.S.
- 1940** Harris Reynolds leads effort to found New England Forestry Foundation.
- 1947** Great Meadows National Wildlife Refuge established.

- 1957** Authorization of town conservation commissions, which provide local control through more than one thousand volunteer members. Municipal conservation commission movement expanded throughout the Northeast.
- 1959** State parks expanded with \$ 100 million expenditure.
- 1966** Boston-based Conservation Law Foundation, one of first public interest law firms, pursues environmental advocacy across New England.
- 1973** Agricultural Preservation Restriction legislation allows development rights to be sold, ensuring farmers' permanent land protection and economic support.
- 1982** Land Trust Exchange, sponsored by Lincoln Institute, leads to formation of Land Trust Alliance.
- 1998** North Quabbin Regional Land Conservation Partnership established in response to undergraduate thesis documenting haphazard nature of land protection in central New England (Golodetz and Foster 1997).
- 1999** Governor Cellucci and Environmental Affairs Secretary Durand set land protection goal of 200,000 acres, which leads to largest bond bill in history (\$743 million).
- 2000** Massachusetts Land Trust Coalition established, with more than 100 land trusts and 100,000 individuals as members.
- 2000** Tully Initiative, led by Mount Grace Land Conservation Trust, protects 10,000 acres over two years.
- 2005** *Wildlands and Woodlands* report calls for permanent conservation of 50 percent of state in forest.
- 2006** Quabbin Corridor Forest Legacy project is first multiple-parcel landscape effort in Forest Legacy Program of the USDA Forest Service.
- 2008** New England Natural Resources Center initiates forest aggregation project to place conservation restrictions on 14,300 acres.

FUTURE PROSPECTS AND A SECOND CHANCE

Despite their remarkable history of conservation leadership and success, New England forests and landscapes face major threats today. While numerous concerns exist—ranging from the introduction of invasive species and pollution impacts (ozone, acid rain, etc.) to the global problem of climate change—the most immediate threat remains a very old one: the ongoing

conversion of forests to other land uses. The societal derivation of a range of resources and ecosystem services from its land, the land's capacity to harbor a diversity of organisms and ecological processes, and its ability—by itself and through effective stewardship—to mitigate and adapt to the environmental stresses, disturbances, and changes imposed on it all depend on the maintenance of the natural infrastructure represented by forests, wetlands, streams, and lakes.

While the biological, human, and institutional capacities exist to address these challenges, among the greatest needs are financial resources. In the past, New England has proven to be adept at advancing major financing tools to promote conservation. Public funds have been allocated for:

- land protection for government efforts, such as the Massachusetts Metropolitan Parks Commission;
- major purchases of state forests and parks and, recently, for publicly supported bond bills for both fee acquisition and conservation easements;
- private donations of easements on critical lands; and
- bundling many parcels into coherent projects at the landscape or regional scale.

Through this ability to define new sources of funds, which directly reflect the high value that the citizens of New England place on their natural heritage and infrastructure, we will be able to respond effectively to current challenges. Thus, the present focus on sharing, developing, and advancing thinking about conservation finance lies at the heart of our ability to create a future that supports nature and people.

In many ways, New England has been given a second chance to determine the fate of its forests. In the seventeenth and eighteenth centuries, settlers cut and cleared the expansive woodlands. Over the past 150 years, these forests have regrown, but once again are under assault by even more massive forces. The outcome this time relies on the conservation allies that have roused themselves on behalf of the forests and land.

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