Conservation Catalysts

# PART I

## Regional Conservation Initiatives

THROUGH VISIONARY INITIATIVES, conservation action around the world is beginning to coalesce across regional landscapes. Motivated by the need to address complex land and water problems at suitable scale and in ways that consider their socioeconomic contexts, these efforts can span from thousands to millions of acres in geographic extent. They often transcend borders and boundaries, giving rise to new forms of multijurisdictional, multistakeholder, and multipurpose collaboration.

The variety and sophistication of large landscape-scale conservation initiatives has grown considerably since the period of early efforts pioneered by environmental groups that were primarily concerned with safeguarding wildlife corridors and habitat networks. In many respects, today's regional conservation initiatives represent a new and unique breed of conservation action, crafted to address the interdisciplinary nature of the problems we face. Informed by modern science and the world's growing complexity, conservation action is now increasingly understood as a multidimensional project addressing intricately intertwined challenges.

The Wildlands and Woodlands Initiative described by David Foster of the Harvard Forest in Chapter 1 is just such an effort. Even its name signals that it is simultaneously trying to protect working woodlands alongside the prime wildlife habitats and few patches of old-growth forest that remain from Connecticut and Rhode Island in the southern part of the region to the expansive forests of Massachusetts, Vermont, New Hampshire, and Maine that extend to the north. Despite its complexity, the project has captured the imagination of citizens, policy makers, private foresters, and nonprofit conservation organizations across the region. The Wildlands and Woodlands Initiative has united a diverse set of stakeholders in the pursuit of a remarkable and ambitious vision—that some 70 percent of the region's landscape can be sustained as forest for many generations to come. The vision came from a group of university-based scientists that Foster convened in about 2004, and the group is still working together in a variety of ways a decade later.

An even more expansive and long-lived project, spanning the U.S.-Canada border from Montana to Alberta and British Columbia, is discussed in Gary Tabor's chapter on the Crown of the Continent. Across a catchment area of more than 19 million acres (more than 7.7 million hectares), a group that encompasses university researchers, tribal leaders, ranchers, and civic organizations as well as public officials from the federal, state, provincial, and local levels has united around a set of common objectives. They are working in concert to corral invasive species, provide measurably effective public education, keep migratory corridors open for such charismatic megafauna as grizzly bears and gray wolves, and promote sustainable tourism for anyone with sufficient sense of wonder to be awed by the view along Going-to-the-Sun Road in Glacier National Park on the U.S. side, or the spectacular lake vistas in Waterton Lakes National Park in Canada. The success of the Crown of the Continent Initiative has proven to be an important national and international model, studied by conservation practitioners from Kansas to Kenya.

The third chapter of this section, in concise, admirably modest prose, tells the story of how a research network organized by Karl Flessa at the University of Arizona served to catalyze a landmark project spanning the U.S.-Mexico border. The effort was a key factor in the recent initiative to bring back to life the desiccated Colorado River delta between the international border and the Sea of Cortez. While the author gives credit to others, the recent treaty amendment allocating new sources of water to the delta very likely would never have happened without the early work of Flessa and his collaborators. Here, however, credit will go where credit is due. The intellectual curiosity, the generosity of spirit, and the willingness to dream about effective conservation at a regional scale shown by committed groups of academics proved to be key factors in the endurance and vibrancy of the three efforts chronicled in this section, spanning the breadth and width of the North American continent.

# 1

# The Wildlands and Woodlands Initiative of the Harvard Forest, Harvard University

*David Foster, David Kittredge, Brian Donahue, Kathy Fallon Lambert, Clarisse Hart, and James Levitt*

In late 2003, scholars associated with Harvard University's Harvard Forest gathered to discuss a novel venture: writing a widely distributed argument for the preservation of large forest reserves in Massachusetts embedded in an expansive landscape of actively managed forests. Together, it was reasoned, these wild and harvested tracts would yield major benefits for humans and nature. Vigorous forest protection would complement efforts to protect farmland, advance smart growth in towns and cities, develop an energy efficient economy, increase the production of local resources, and conserve the region's biodiversity. One major impetus for the Harvard group's decision to publish their vision for the region's future was the belief that an independent academic voice grounded in science and history might galvanize conservation and aid advocates for sustainable use of land, resources, and energy.

Ten years later, the Wildlands and Woodlands effort has grown into a regional conservation force through release of the reports *Wildlands and Woodlands: A Vision for the Forests of Massachusetts* in 2005 and *Wildlands and Woodlands: A Vision for the New England Landscape* in 2010 (Foster et al. 2005, 2010) (figures 1.1 and 1.2). The vision's implementation is being championed regionally by an independent partner of the Harvard Forest—Highstead Foundation and its eight-member staff and nine-member board—and draws from the energy of countless conservation organizations, land trusts, state and federal agencies, landowners, and academics seeking to conserve the New England landscape.

Much has transpired in a decade. In Massachusetts, conservation directions have been reframed through a public Forest Futures Visioning Process for state-owned lands (Massachusetts Department of Conservation and Recreation 2010, Lambert 2012); the governor has promoted increased conservation funding through novel programs for

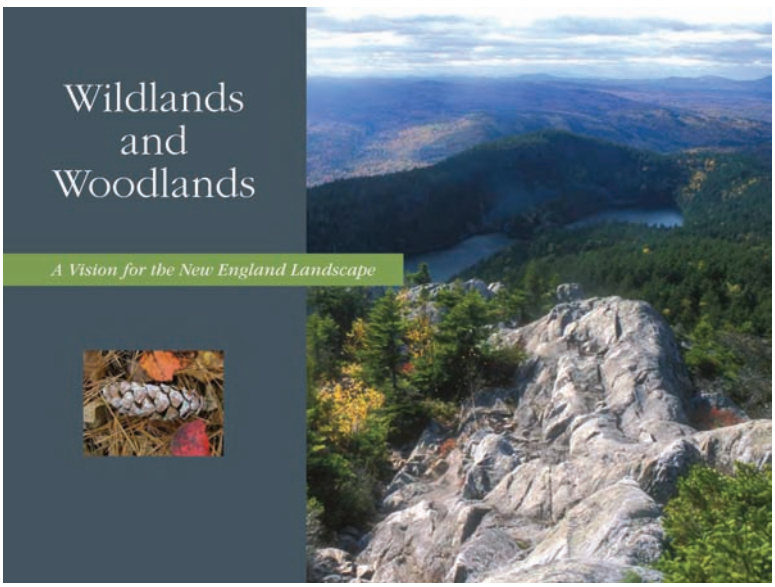
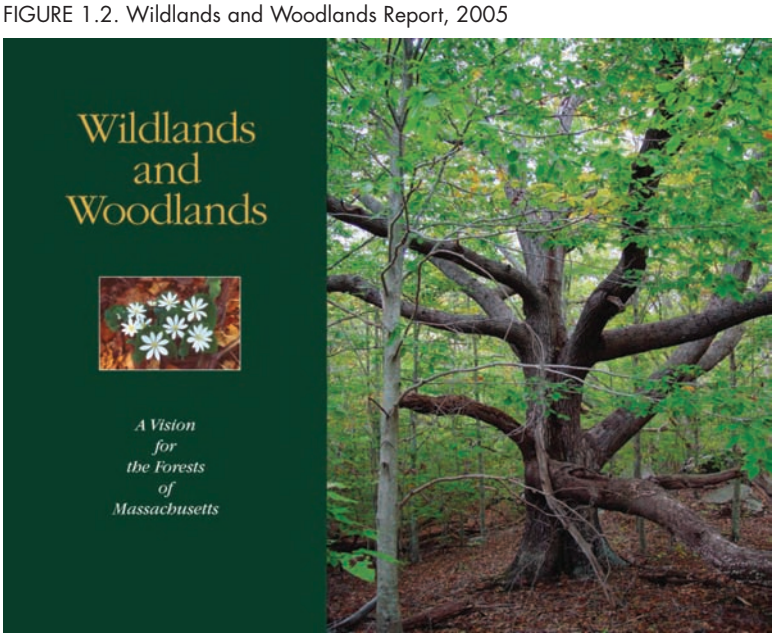



FIGURE 1.1. Wildlands and Woodlands Report, 2010

FIGURE 1.2. Wildlands and Woodlands Report, 2005



conservation easements and landscape-scale conservation that were informed by a legislative committee assisted by a W&W author (Levitt and Youngblood 2011); public–private partnerships are achieving record levels of land conservation; and ten large wildland reserves have been designated on state land. The model organization for collaborative conservation championed by W&W—the North Quabbin Regional Landscape Partnership (NQRLP) headed by the Mount Grace Land Conservation Trust—is a national leader in multilandowner U.S. Forest Service Forest Legacy projects, has helped conserve 30 percent of its 510,640-acre region, and plans on protecting an additional 150,000 acres (Leigh Youngblood, pers. comm.).

In New England, more than 38 Regional Conservation Partnerships of collaborating land trusts and agencies now cover more than 55 percent of the region (figure 1.3), and the New England Forest Policy Group—a regional collaborative convened after the release of the 2010 W&W report—is advancing major conservation initiatives (Wildlands and Woodlands 2013, Labich et al. 2013). Inspired by key W&W collaborator Henry Foster and his edited volume on New England conservation (Foster 2008), the New England Governors' Conference (NEGC) has issued a report calling for greatly increased regional conservation

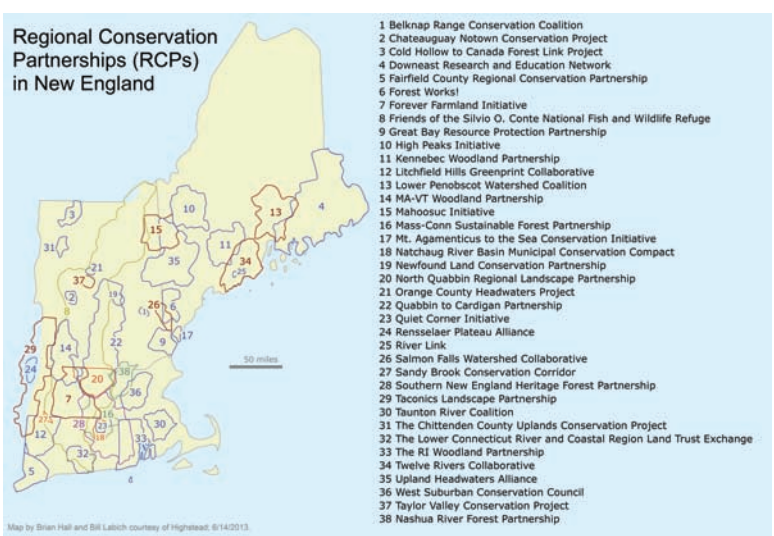



FIGURE 1.3. A map of 38 Regional Conservation Partnerships within New England, covering more than 55% of the region.
*Source: Highstead, Redding, CT.*

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of forests, farms, and waters (NEGC 2009). A recent assessment of long-term conservation trends in the three northern New England states documents tremendous recent progress in land protection and asserts that the W&W goals can be reached with a historically feasible increase in the pace of conservation (Meyer et al. 2014). And another W&W collaborator, Brian Donahue from Brandeis University, is lead author on a new report calling for the region to produce at least 50 percent of its food by the year 2060 (Donahue et al. 2014).

Over this time, W&W authors have continued integrating new insights from science into the on-the-ground work of conservation planning. Harvard Forest's recent report *Changes to the Land: Four Scenarios for the Future of the Massachusetts Landscape* evaluates the benefits of land protection, clustered development, and environmentally sound harvesting to climate mitigation, water quality, wildlife habitat, and related ecosystem services; it was released with strong media coverage and support of conservation, policy, and agency stakeholders (Thompson et al. 2014). With funding from the National Science Foundation (NSF) and private foundations, colleagues from all six states are joining Harvard Forest scientists to form the Science and Policy Exchange, a consortium that will evaluate future land use and climate change scenarios for the entire New England region, among other projects. As Wildlands and Woodlands has grown beyond the scope of standard academic enterprises, the synergies developing among academics, professionals, decision makers, landowners, and other conservation stakeholders have been beneficial to all.

In this chapter we explore the origins of W&W; factors fueling its positive reception and early traction; challenges and opportunities that confront its ambitious goals; and the clear benefits to conservation and academia that have emerged through this effort.

## DEEP ORIGINS: BRIEF BACKGROUND ON CONSERVATION RESEARCH AND EDUCATION AT THE HARVARD FOREST

The roots of the Wildlands and Woodlands effort begin with the founding of the Harvard Forest in 1907 and draw from an even longer history of conservation thought. As the first professor in the School of Forestry at Harvard University, Richard Fisher was charged by Dean Nathaniel

Southgate Shaler, a national leader in conservation (Livingstone 1980, 2003), to establish an institutional home in rural New England where faculty, students, and staff would be immersed in studies on the natural and cultural landscape. With university and alumni support, Fisher purchased 2,000 acres of farm woodlots, fields, and successional white pine in the central Massachusetts town of Petersham, including a colonial farmhouse that served as dormitory, classrooms, offices, and laboratory (Fisher Memorial Committee 1935). By the time of his death in 1934, Fisher had trained a number of future conservationists, including Benton MacKaye, Bob Marshall, and Neil Hosley, and had increased the land base to 2,500 acres through strategic acquisitions. He had also established three enduring traditions: (1) a mission to conduct research and provide training, education, and demonstrations of good stewardship; (2) an approach to forest management based on an understanding of the historical and ecological processes that had shaped the land; and (3) an emphasis on learning from nature that encouraged the permanent conservation of the Pisgah old-growth forest in southern New Hampshire and the establishment of forest reserves at the Harvard Forest for ecological studies to guide the active management of surrounding woodlands (Fisher 1933; cf. Foster and Aber 2004; Foster 2014).

The core elements of Fisher's approach remain intact. The Harvard Forest has grown to 3,750 acres through collaborations with landowners, land trusts, and state and federal agencies. The forest's educational and research mission engages more than one hundred scientists and graduate students nationwide with support from endowments and federal grants, including the NSF-funded Long-Term Ecological Research (LTER) program, the National Ecological Observation Network (NEON), the Smithsonian Institution's Global Environmental Observatory (SIGEO), and the Climate Change Research program of the Department of Energy. The educational mission embraces graduate students, a large summer undergraduate research program, and a Schoolyard LTER program that reaches teachers and 5,000 K–12 students in 50 schools. Distinctive among academic ecology programs in constituting a separate "campus" of its governing institution, the forest has 40 full-time staff, including faculty, senior scientists, and students. Fisher's work with private landowners, silvicultural experiments, and local, state, and national forest policy continued into the 1980s with leadership by Al Cline, Steve Spurr, Hugh

Raup, and Ernie Gould. Since then, conservation, management, and policy efforts have expanded with the appointment of David Kittredge as forest policy analyst, Henry Foster as associate, and Brian Donahue as environmental historian, as well as the creation of the new Program on Conservation Innovation, headed by James Levitt, and the Science and Policy Integration Project, directed by Kathy Fallon Lambert.

## RECENT HISTORY: INSPIRATION BY INNOVATIVE STUDENTS

The modern origins of the Harvard Forest's vision to conserve 70 percent of New England lies partly in the catalyzing impact of student theses by two undergraduates.

*Regional Visions and Partnerships.* Alisa Golodetz sought a senior thesis topic at an opportune time. The evening before her initial visit to the Harvard Forest in 1992, David Foster had attended his first board meeting at the Mount Grace Land Conservation Trust (MGLCT), a young regional organization with a growing reputation. He had left the meeting, chaired by Mount Grace founder Keith Ross, concerned that the group lacked a regional map of conservation lands to use in prioritizing its efforts. When Golodetz arrived the following day seeking a project that combined conservation, training, and practical application, he responded by asking if she would like to produce such a map as the centerpiece of an evaluation of conservation patterns and trends. The product of her efforts still covers the Harvard Forest's central hallway: U.S. Geological Survey topographic maps on which 239 parcels of conservation land, totaling more than 153,000 acres or 37 percent of the then-415,486-acre Mount Grace region, are color-coded by conservation status and landowner. Golodetz's thesis records the date and motivation of every land transaction since 1900 and reveals a disconcertingly haphazard, but historically understandable, pattern of conservation. Her aspiration to have an impact was achieved: once digitized, the map became a key tool in planning and grant applications by Mount Grace and its emergence as a nationally recognized regional land trust. Meanwhile, her published work helped trigger the formation of the North Quabbin Regional Landscape Partnership.

Golodetz's paper in *Conservation Biology* (Golodetz and Foster 1997) advanced actionable conclusions:

> Although the haphazard historical approach to land protection has produced unique and important conservation opportunities, enhanced development and the real threat of landscape fragmentation and parcelization suggests that a comprehensive vision and conservation plan for the North Quabbin Region is now needed (p. 234).
>
> Increased collaboration and exchange of information among groups is necessary if a comprehensive management strategy is to be developed (p. 234).
>
> [To achieve] a balance of economic and conservation goals . . . local involvement in landscape-level planning is critical (p. 234).

The paper called for a broad vision grounded in local action and partnership among the region's 28 conservation entities. Remarkably, the groups responded. The resulting North Quabbin Regional Landscape Partnership and MGLCT, its lead organization, have advanced several major conservation projects (Nudel 2003):

- Tully Initiative (104 parcels, 9,100 acres
- Quabbin Corridor Forest Legacy Project (20 parcels, 2,100 acres)
- Metacomet–Monadnock Forest Legacy Project (15 parcels, 1,875 acres)
- Quabbin to Wachusett (Q2W) Forest Legacy Project (23 parcels, 3,000 acres).

Fittingly, the Q2W project advances a proposal promoted two decades earlier by University of Massachusetts professor Jack Ahearn (1995) that informed Golodetz's work.

For academics at the Harvard Forest accustomed to a muted scholarly response to science publications, the reception of Golodetz's work was transformative. We learned that strong, salient research can translate into action when stakeholders are engaged and results are delivered with concrete recommendations. We also recognized that regional coordination enhances conservation by helping to bridge the gap between local landowners and regional vision.

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*The Illusion of Preservation.* In 1999, Mary Berlik's senior thesis explored a question posed in David Foster's ecology course: in suburbanizing landscapes like southern New England, could increased conservation benefits come from more active harvesting of forests? The question was motivated by the hypothesis that greater connection of residents to local forests might lead to recognition of the finite nature of these resources, reduction in their consumption, and increased interest in forest conservation. While suburbanites often oppose harvesting in the belief that they are conserving nature, global lands that produce wood for consumption in New England are often severely mismanaged. Could both local and global environmental benefits be realized through increased harvesting of our own woods?

Berlik reached out extensively to forest economists and planners nationwide for information, forging connections that would benefit W&W years later. Ideas germane to the W&W project emerged in her thesis—that a regional and global perspective could motivate local action, that local wood production could stimulate forest conservation, and that conservation and preservation must be balanced.

> There is great need for broad-scale conservation of all remaining forests followed by regional planning and strategic selection of areas for intensive management, wildland protection, diverse recreation, and other attributes (p. 1565).

> We now have the opportunity to cut trees locally, in a heavily forested and ecologically resilient landscape, in order to reduce the impact on often more fragile and globally threatened forests (p. 1565).

When published in a leading international journal, Berlik's work (Berlik et al. 2002) entered national forestry discussions and became a local rallying point for foresters and conservationists. From Berlik, as from Golodetz, we learned that engagement with practitioners and real-world issues can enrich research and lead to tangible results.

## THE PROCESS: ACADEMICS CONVENE

The group that coalesced to write the 2005 W&W report shared three traits: academic association with the Harvard Forest; personal commit-

ment to and experience with land conservation; and belief that an academically based vision for the region could yield new and useful perspectives on conservation. The authors convened over many months, rapidly embracing the balanced approach of widespread forest management on expansive woodlands adjoining and enclosing large wildlands. The writing was invigorating, with give-and-take, compromise, and new thinking injected by authors, colleagues, kibitzers, and more than one hundred scientists and professionals who reviewed drafts through the process.

The resulting vision (Foster et al. 2005) argues for a major initiative in forest conservation and preservation based on the importance of forests to local, regional, and global environments and human populations. The 2005 Massachusetts report proposes the permanent protection of forests covering half of the state, rising from 1 million acres in 2005 to 2.5 million acres by 2060. The report argues that, although passively managed wildlands and actively managed woodlands could conceivably be competing goals, they provide a full range of benefits if carefully combined. The substantial increase in conserved land is expected to occur predominantly through easements from willing landowners paired with strategic conservation acquisitions and economic incentives for conservation. The report highlights the importance of private landowners (85% of land is privately held) and the expansion of the public–private collaborations that have aided land conservation, landowner outreach, and management for decades.

One collaborative mechanism proposed to advance land protection and forest stewardship was the woodland council, an informal group of organizations, agencies, town representatives, and landowners that define a region of shared interest and cooperation. Patterned after the successful North Quabbin Regional Landscape Partnership in Harvard Forest's backyard, the woodland council model was immediately championed by Keith Ross (LandVest) in western Massachusetts and along the border with Connecticut (Ross 2010). Ross also advocated for conservation aggregation projects in which the parcels from many landowners are bundled into a single land protection project, thereby reducing transaction costs and creating a more attractive effort for funding. As the need for larger-scale conservation efforts was recognized, the role of collaborations greatly expanded through the efforts of Highstead and its regional conservationist Bill Labich and conservation director Emily Bateson (Labich 2013). In the process, Regional Conservation

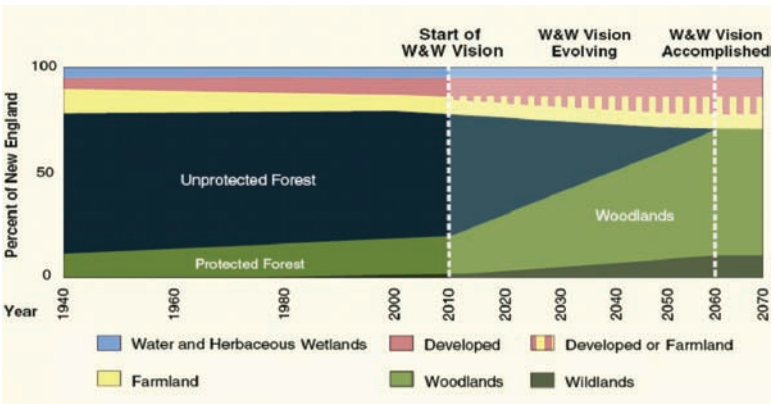


FIGURE 1.4. Proposed Allocation of Land Conserved Under the W&W Vision.
*Source: W&W.*

Partnerships (RCPs) replaced the original woodland council nomenclature, and a thriving, though loosely coordinated, regional network of RCPs emerged.

Encouraged by the response in Massachusetts and across the region, the authors engaged academic colleagues from other states to release the New England–wide W&W report in 2010 (Foster et al. 2010). For this larger, more heavily forested region, the second report advocated a more ambitious land protection goal of 70 percent, with a similar balance of actively managed woodlands and large wildlands (figure 1.4).

## THE PROCESS: STAKEHOLDER ENGAGEMENT AND PUBLIC OUTREACH

The authors' regard for models of effective collaboration between scientists and policy makers—such as the Science Links program of the Hubbard Brook Research Foundation (HBRF; Driscoll et al. 2011)—led to an investment of considerable time and resources in communications spearheaded by Kathy Fallon Lambert, former director of HBRF, and Clarisse Hart, outreach manager at the Harvard Forest. To aid this effort, the draft of the 2010 report was circulated to academics, conservationists, land managers, funders, and landowners for review; dozens of discussions were held with agency staff and conservation organizations; meetings were organized with newspaper editorial boards; and a polished report and communications strategy were developed. As a result of

this groundwork, the report was improved, stakeholders joined in planning its release, and momentum built rapidly thereafter. Among the notable effects of the report's publication were the following:

- Members of the conservation and funding community embraced the concept as a statewide and regional campaign with potential national importance. Critical momentum was built through organizational meetings convened by the Kendall Foundation, The Trustees of Reservations, The Nature Conservancy, Massachusetts Audubon, Fine Family Foundation, Blue Hills Foundation, and other groups;
- Endorsements from leading regional newspapers (e.g., *The Boston Globe* and *The Providence Journal*) and coverage by national media (e.g., *The Wall Street Journal*, *The New York Times*, MSNBC, *Forbes*);
- Interest from outside the region (Save The Redwood League, Pacific Forest Trust, Ecological Society of America, Wormsloe Plantation and Foundation) that confirmed the sense of broader applicability;
- Independent collaborators (e.g., Keith Ross, C. H. W. Foster, Perry Hagenstein, Kathy Lambert, Jim Levitt) and organizations (Highstead, New England Natural Resources Center, New England Forestry Foundation) lent critical expertise and joined with authors in a steering group to chart a path forward;
- Highstead Foundation reoriented its mission to support W&W, develop relevant staffing (regional conservationist, conservation director, communications manager, operations manager, administrative assistant, internships, two senior fellows), advance the Regional Conservation Partnership effort, and coordinate the W&W partnership of organizations and the New England Forest Policy Group;
- Authors engaged audiences throughout New England and beyond, and;
- Harvard Forest collaborators launched new research endeavors to address science and policy questions emerging from the expanded scope of W&W.

Questions and criticisms did arise. One observation made in 2004–2005 was that our timing was atrocious. The Romney administration in Massachusetts had gutted state land protection funding, and the Bush

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administration at the federal level was cutting conservation funding. Our response was that this is a vision for preservation of the land in perpetuity that should circulate now for advancement when the environment is right. Questions arose from the beleaguered conservation community: who will lead this effort, and where will the money come from? Our response: the vision will only succeed if it attracts landowner and grassroots support. Fortunately, dozens of conservation groups agreed to advance the effort. Jim Levitt and Kathy Lambert tackled the funding question through a conservation finance roundtable and white paper, and a state legislative study committee proposed numerous avenues that were subsequently followed (cf. Levitt and Youngblood 2011, Buglione et al. 2013). Many readers questioned whether enough private landowners would want to protect their land; Dave Kittredge's research on landowner attitudes and motivations (e.g., Kittredge 2009, Rickenbach and Kittredge 2009, Van Fleet et al. 2012) and the land trust community unequivocally confirmed that most do. An influential libertarian argued that the vision undermined private rights and increased public control of land. That voice quieted considerably after she accepted public funds for a conservation easement on her land, the largest land protection deal (3,486 acres, $8.8 million) in state history (Ebbert 2011). A few scientific peers suggested that it was inappropriate for academics to advocate for a conservation vision. We dismissed that concern following a heartfelt discussion; we felt too strongly to stop.

The strong positive response to the release was gratifying. A *Boston Globe* editorial of May 29, 2005, provided a succinct description and forceful endorsement of the vision:

> Harvard University's Harvard Forest research and education center called for a public–private effort to protect woodlands in Massachusetts better. Its goals include designation of 250,000 acres of mostly state-owned forest land as "wildland" reserves, with no logging; the protection of 2.25 million private and public woodland acres—about half the state—for recreation, sustainable timbering, and wildlife habitat; and the establishment of regional woodland councils that could assist land owners and organizations in the management of forest land. [This is] . . . . an ambitious vision, but it should

> guide public policies even if it cannot be realized quickly . . . Maintaining woodlands is an effort that must engage everyone from small land owners to town-meeting voters considering zoning issues to state officials setting bond-issue priorities. Without this engagement, asphalt will win (Boston Globe 2005).

Key conservation leaders organized a half-dozen meetings with statewide groups to evaluate the vision and create a horizontal partnership to mobilize action. Notes from one early meeting state that the 40 to 50 participants were at "near, but not complete consensus" concerning the vision's feasibility and that Wes Ward, an eminent conservation leader from The Trustees of Reservations, challenged the assembled group with these words: "If we come up with an approach to this that is eminently feasible, financially doable, and marketable to wide audiences—is there anyone here who thinks their organization would have reluctance in signing on to supporting this vision?" No hands were raised.

The early meetings brought strategic thinking and momentum. Missing or weak elements were highlighted for additional research: early participants pointed to the need for greater attention to farmland and freshwater systems, economic and community development plans, financing for land protection, and a partnership model for W&W. A process emerged for moving forward: a short-term work plan was formulated that found buy-in from all organizations; meetings of a statewide partnership were convened by a neutral partner (a rotating conservation leader and, by 2006, Highstead's regional conservationist Bill Labich); and subgroups were created on finance and policy, communications and coordination, land protection, woodland councils, mapping, and science. The meetings built cohesion and highlighted W&W as a rallying point for independent groups with different missions: many organizations and individuals could see their own interests in the vision, but all could coalesce around the need to protect more land.

Two sage natural resource professionals (Henry Foster and Perry Hagenstein; Foster and Foster 1999, Foster et al. 2004) joined this group and worked with Ross, Lambert, and Levitt and authors Kittredge, Donahue, and Foster to coordinate the behind-the-scenes effort, using their nonprofit New England Natural Resources Center (NENRC) to solicit and receive funding.

In this formative period, which occurred during the first term of Governor Deval Patrick's administration (2006–2010), the Commonwealth of Massachusetts moved from a skeptical sideline player to active participant in W&W, promoting policies and funding that aligned well with mutual goals. Robert O'Connor, forest and land policy director for the Executive Office of Energy & Environmental Affairs, joined many meetings and offered strong support for W&W, as evidenced by his letter of December 1, 2005, that accompanied a proposal for funding to a private foundation:

> The Woodlands and Wildlands forest vision involves a balance between working forests and forest reserves. This is a critical concept as it will help build support, understanding, and cooperation among groups that have traditionally been at odds—forest industry, professional foresters, and conservation organizations. The Wildlands and Woodlands vision also includes the formation of local woodland councils [RCPs]. This is an innovative concept that will link the large forest vision to the local level and build support and cooperation for sustainable forestry and the conservation of private forest land (Robert O' Connor, pers. comm.).

In 2006, the Commissioner of the Department of Conservation and Recreation (DCR) invited a W&W author to chair an agency visioning process to chart broad management goals for its 308,000 acres of forest lands. The Harvard Forest hosted the inaugural meeting of the visioning process, where a session by authors Jim Levitt and David Foster set forth major issues in forest history, ecology, and policy. The state Forest Futures Visioning Process regularly referenced W&W and led to DCR lands being designated as reserves, managed woodlands, and parks (Massachusetts DCR 2010, Lambert 2012).

Early proponents of W&W emerged from unlikely places. The Save the Redwood League invited Foster to join a three-day board retreat to share ideas viewed as relevant to the league's shift from a historically protectionist stance to one also embracing restoration and active management of redwood forests. The event revealed a notable historical connection: in 1903, Harvard Forest founder R. T. Fisher wrote the first scientific evaluation of redwood forests and their management (Fisher et al. 1903). On the Georgia coast, Foster was hosted by the 13th-generation

owner of the Wormsloe Plantation, where he spoke to 40 plantation owners and friends. Anticipating resistance to the W&W goal of expansive land protection, he instead witnessed deep passion for the land and a desire for enhanced conservation in the face of the relentless sprawl affecting the southeast. From San Francisco, Laurie Wayburn, president of the Pacific Forest Trust, lent strong support: "[W&W] is a visionary way of recognizing the inevitability of development but not the uncontrollability of where and how this development takes place" (Sullivan 2009).

Media exposure lent momentum and broadened interest beyond conservation circles. Reporter Jim Sterba (2005) wrote a front page *Wall Street Journal* piece on forest management and conservation in suburban Massachusetts that referenced the work of W&W collaborators, including Berlik, Kittredge, and Foster's paper "The Illusion of Preservation" and Brian Donahue's suburban forest stewardship projects. "The Working Forest," a *New York Times Magazine* piece by writer Robert Sullivan, explored the surprising boldness and impact of the vision: "Wildlands and Woodlands, or W&W, has been moving through conservation circles like an aggressive invasive species . . . As opposed to a lot of papers that fall like trees in a forest, this one has ended up being a blueprint" (Sullivan 2009). In the 2010 Green Issue of the *Boston Globe Magazine*, Tom Horton captured the arguments and prognosis for W&W:

> While its ambitions are large and deeply green, the report envisions anything but a "lock it up" approach. It calls for stepped-up use of most forests, including timbering. And it depends on hundreds of thousands of private landowners . . . [who] account for more than half of New England forests. The report also focuses new attention on forests as "green infrastructure," supplying billions of dollars' worth of services to the region, from protecting clean water to absorbing the carbon that would exacerbate climate change.
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> In Massachusetts, local land trusts are already broadening their forestland protection ambitions. The Patrick administration has pledged to spend $50 million a year from environmental bonds for more land protection. Between 1999 and 2005, the state actually protected substantially more

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> open space than it lost, about 110,000 acres versus 47,600 claimed by development, according to Mass Audubon's recent "Losing Ground" study. Even so, it will take 85 years to meet the 50-year goals of the Wildlands and Woodlands report, the Audubon study concludes (Horton 2010).

In September 2010, the growing impact of the W&W vision was formally recognized with the Charles Eliot Award from The Trustees of Reservations, the world's oldest regional land trust and a national leader in natural and cultural conservation. The statement by Trustees president Andrew Kendall accompanying the award read in part:

> Wildlands and Woodlands . . . has raised consciousness among policy-makers and the public at large, stimulated strong grassroots activism . . . and contributed to important, ecologically informed changes in forest policy in Massachusetts.

## PROVIDING AMMUNITION FOR OTHERS TO USE

The intent of the W&W reports was to advance the land protection success of existing organizations and agencies rather than to build a stand-alone W&W enterprise, and it has been gratifying to see W&W employed in this way. In her organization's newsletter *Forest Notes*, Jane Difley, president of the Society for the Protection of New Hampshire Forests (SPNHF), hailed W&W as she applied its arguments to reignite SPNHF's equally bold and visionary New Hampshire Everlasting Campaign. The New England Forestry Foundation (NEFF) recognized the congruence of W&W with its own messages on forest conservation and stewardship and, under the leadership of executive directors Lynn Lyford and Bob Perschel, has emerged as a champion of W&W. NEFF has featured W&W in its newsletter, embraced its goals, advocated for RCPs, cosponsored a major conference with SPNHF to celebrate and advance the New England vision, and developed its Heart of New England campaign to promote forestry and increase the pace of forest conservation. Across the conservation spectrum, the Northeast Wilderness Trust strongly echoed W&W arguments for large reserves that support landscape-scale natural processes. Many other groups—Vermont Land Trust, Kennebec Land Trust, Mount Grace Land Conservation Trust,

East Quabbin Land Trust, Rensselaer Plateau Alliance, and Kestrel Land Trust—have used the W&W report and goals to advance their own missions.

W&W has also inspired private landowners to redouble their effort at land protection and management. Under George Lovejoy's leadership, the Blue Hills Foundation in southeastern New Hampshire has protected more than 5,000 acres of actively managed forests and 100 acres of farm fields, and has designated a 1,200-acre wildland reserve. In northeastern Vermont, the Jerry Lund Mountain Trust has conserved 650 acres of managed forest with the Vermont Land Trust and has partnered with the state of Vermont to protect the entire watershed of Levi Pond in reserves that total more than 300 acres. Further south, Highstead Foundation and the Harvard Forest have committed to managing their own lands as a combination of wildlands and woodlands.

## REASONS FOR SUCCESS

Although it is still early in the 50-year W&W effort, we can see that early traction has resulted from many factors both anticipated and unforeseen.

### Framing of the Message

The W&W authors employed arguments for aggressive land protection that resonate with a broad audience across and beyond New England.

*(1) Regional history provides a model of the second chance for conservation.* The history of deforestation and reforestation in the northeastern United States is a compelling environmental narrative (McKibben 1995) that offers a second chance to determine the fate of the region's forests. Recent forest declines from haphazard development in every New England state adds urgency to conservation (figure 1.5). Applying the historical narrative, W&W authors distinguish between earlier "soft" deforestation for agriculture and modern "hard" deforestation for buildings and roads.

*(2) Conservation as investment in natural infrastructure.* The W&W reports emphasize broad societal values and argue for a financial investment in conservation equivalent to great public works efforts. Employing the phrase *natural infrastructure*, the authors outline the billions of

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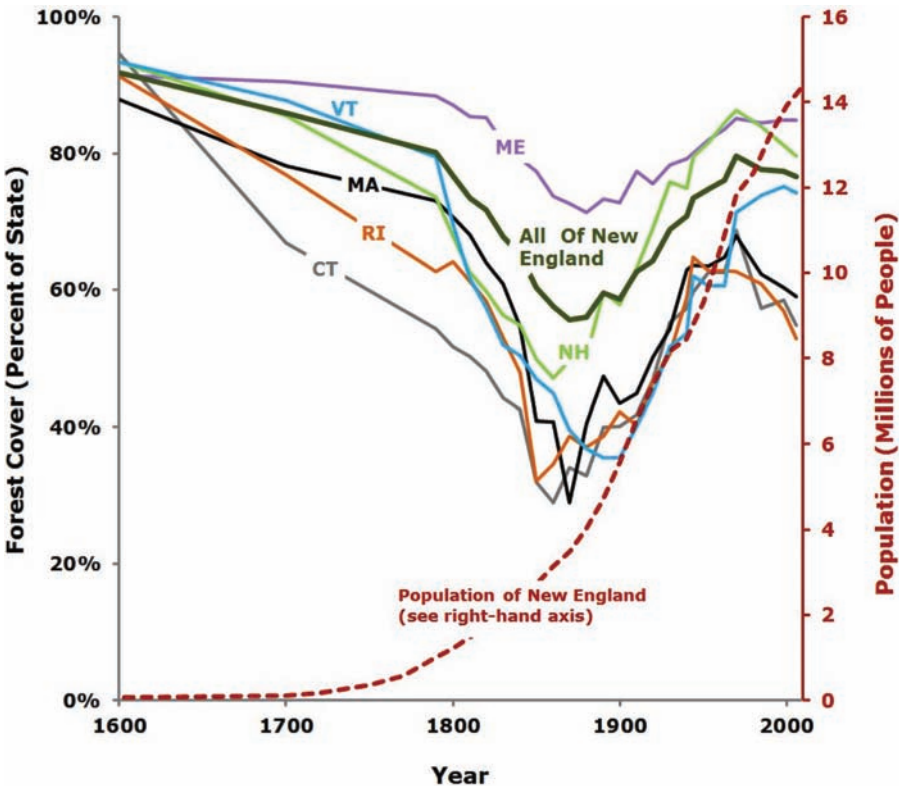


FIGURE 1.5. The historical recovery of forests and recent trend of deforestation motivate widespread conservation in New England.

dollars provided by forests in ecosystem resources and services such as clean water, wildlife, renewable wood products, natural climate buffering, forest jobs, tourism, and recreation.

*(3) Wildlands and woodlands as mutually supporting and established conservation goals.* While late 20th-century conflicts highlighted tensions between the conservation of resources and the preservation of nature, early conservation visionaries such as Henry Thoreau, Aldo Leopold, and Teddy Roosevelt embraced the approaches as complementary. *All* forests yield many shared benefits simply by being forests. Actively managed woodlands provide wood resources, while wildlands offer contrasting habitat characteristics and human experiences. At the Harvard Forest, Richard Fisher advanced forest management regionally and na-

tionally while leading the successful effort to protect one of the great virgin forests in New England—the Pisgah Forest in Winchester, New Hampshire. His approach to silviculture based on natural processes, called "ecological forestry" (Spurr and Cline 1942), presaged approaches considered innovative today. Bob Marshall fulfilled his own lifetime dream of becoming a forester by working on a forest harvesting study with Fisher and yet went on to found the Wilderness Society. Like the W&W authors, Marshall recognized that wilderness can only thrive when surrounded by well-managed forests that are generating valuable benefits for society (Foster 2014). Both have value; both are needed.

*(4) Advancing the good work of others.* W&W openly acknowledged its debt to the work of many scholars and organizations and sought to support other groups' efforts through the regionally supportive conservation enterprises led by Highstead (e.g., the Regional Conservation Partnership Network, the New England Forest Policy Group, and the Stewardship Science project). The fact that W&W is a vision rather than a prescriptive plan reinforces this message.

*(5) Effective communications.* The response to W&W has highlighted the value of broad engagement, outreach, and communications, including the following specific measures:

(a) Prerelease engagement for the 2005 and 2010 Wildlands and Woodlands reports
- Fundraising from private foundations
- Media training for coauthors and presentations of embargoed content at conferences and to local stakeholders
- Website with papers, updates, links to organizations, media outreach, and highlights
- Press release collaboration with NGOs, the National Science Foundation, and university communications offices

(b) Press outreach
- Live press webinar featuring authors and stakeholder respondents
- Press releases to national, state, and local media lists with author contacts
- 42 national stories and 66 regional stories (25% unique features, 75% AP)

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- Positive editorials in every New England state; 31 blog entries; 8 alumni highlights; 9 radio spots, 1 video spot; 9 NGO newsletter features

(c) Public release events
- Academic keynote hosted by Kennedy School of Government at Harvard University; 150 invited guests from academia, NGOs, and agencies; keynote by Theodore Roosevelt IV
- Public/NGO conference with more than 250 attendees from the public and private sectors, plenary speakers, and four afternoon workshops
- Author presentations at 30 regional and national conferences

(d) Ongoing activities
- Regular digital outreach through websites, e-newsletters, and social media
- Annual print updates
- Robust work in conservation, policy, and science (e.g., New England Forest Policy Group, RCP Network, Changes to the Land, and Stewardship Science) to introduce more individuals, organizations, policymakers, and agencies to the vision

### Engaging Strong, Credible, and Salient Science

Despite its strong base in ecological and historical research, W&W is not mired in scientific details and debate: it engages science to advance the vision rather than for science's sake. Nonetheless, as W&W grew, new research was pursued to address questions and uncertainties raised by the reports. These investigations have ranged from examining the motivations and decision-making processes of private landowners (Rickenbach and Kittredge 2009, LeVert et al. 2009, Van Fleet et al. 2012, Kittredge et al. 2013) and assessing the impacts of climate change and land use history on regional forest conditions (Thompson et al. 2011) to evaluating the effectiveness of regional conservation partnerships (Labich et al. 2013). Subsequent work evaluating four plausible land-use and climate futures for the region (*Changes to the Land*; Thompson et al. 2014) showed that benefits to wildlife, climate mitigation, clean water, timber harvesting, and resiliency to environmental change increase as land conservation is paralleled by concentrated development and improved timber harvesting practices.

## Seeking Critical Institutional Support: The Partnership with Highstead

Although conservation advances gain public notice with major milestones—the completion of big land protection deals, receipt of large grants, or passage of new legislation—the business of conservation is a never-ending daily enterprise. Landowners must be engaged, deals need to be brokered, conservation partnerships must be forged and develop expertise and resources, the groundwork must be laid for new policies, and organizational efforts must be sustained. Consequently, moving W&W from a vision to a growing movement required resources and the persistent energy of an independent "honest broker," a conservation entity with credibility that could work seamlessly with the academic authors and bring new capacity to its efforts. Initially that role was served by the partnership of Massachusetts conservation groups working with the Kendall Foundation. Subsequently, the New England Natural Resources Center stepped in, aided with foundation funding. But the critical step towards a solid W&W trajectory occurred when the founder of the Highstead Foundation chose to make advancing W&W one of its central missions.

A critical ally with independent resources, Highstead brought many strengths: a commitment to science and academic traditions, dedication to the conservation of nature and its resources, a seasoned and insightful board, and willingness to collaborate with the Harvard Forest and other W&W partners while strategically adding talented staff to fill critical roles as required by the growing regional enterprise. No public agency or conservation group could fill the niche of an independent and committed champion of a regional conservation vision. And no academic institution could work at the interface of advocacy, public–private partnerships, and fundraising in the manner needed to advance the W&W vision. As a small, nimble, and innovative nonprofit, Highstead has been able to fill these essential roles while keeping the day-to-day and long-term focus squarely on the W&W goal of conserving the New England landscape. The result is an effective collaboration between an academic institution and a small nonprofit that has grown the Wildlands and Woodlands enterprise while providing the young foundation with a regional and national role that matched its own aspirations.

## THE ROLE OF THE ACADEMIC INSTITUTION

Critical to the success of W&W has been its academic origins, which signal a measure of independence from the typical champions of conservation causes, lend credibility to the effort, and allow many different groups and perspectives to join in the initiative. Harvard University has played an ongoing role in hosting key discussions, workshops, and public lectures in support of the launch of the New England vision and in providing outreach to students, alumni, faculty, and the larger community.

The Harvard Forest has also played multiple roles. Through its participation in the NSF-funded LTER program, it contributes scientific insight, conducts key regional analyses, and works at the interface of scholarship and societal need. Institutionally, the Forest maintains strong relationships with diverse constituencies at local, state, regional, and national levels, and its open-door policy to visitors, meetings, and conferences has served a broad user group for decades. As an academic setting, the Forest epitomizes neutral space where groups can share ideas freely; as a reserve, the Forest is a living laboratory in which real-world practices can be designed and tested. The Forest is actively engaged in forest harvesting, cattle grazing, reserve designation, and land acquisition and protection, following a land management plan that is congruent with *wildlands*, *woodlands*, and *farmlands* thinking.

At the same time, we must work to counter the image of ivory tower–bound scholars preaching from a well-endowed nonprofit base. Land management and conservation activities at the Harvard Forest are a crucial part of the W&W mission, and W&W authors themselves own land that they pay taxes on, manage, conserve, and care for while devoting energy to local boards and organizations and epitomizing W&W values.

Given our experience, we see a clear and growing role for colleges and universities in catalyzing conservation. We believe these efforts may be strongest when the following factors are in place:

- The efforts align with the mission, history, and strengths of the academic entity.
- The university leads by example and serves as a model for the ideas it promotes.

- The work is attuned to, but independent from, regional conservation interests.
- The university communicates with a range of stakeholder and interest groups.
- There is a partnering entity to fill roles outside the purview of academia.

At a Harvard Forest workshop in January 2014, W&W authors began exploring the potential for a collaborative of academic institutions advancing conservation, tentatively titled ALPINE (Academics for Land Protection In New England).

## THE BENEFITS TO THE ACADEMIC INSTITUTION

Over the years, some skeptical academics have asked what the Harvard Forest and Harvard University gain by releasing and advancing the W&W vision. Initially, we also had misgivings concerning how this activity would be received throughout the university. But we have been delighted by the benefits that have come to our research and educational endeavors, to our engagement across the university, and to the larger mission.

### Increased University Engagement

Increased visibility of the Harvard Forest throughout and beyond the university has come through internal and external media, participation in related administrative and academic activities, the active process of finalizing land protection deals with university deans and attorneys, and collaborations with university museums. The latter has included a new permanent exhibit at the Harvard Museum of Natural History titled "New England Forests" and programming of public lectures and gatherings with donors and alumni groups. W&W, like the physical operation of the Harvard Forest—accounting for our 3,750-acre carbon sink, heating efficiently with wood biomass, erecting solar arrays, and significantly reducing greenhouse gas (GHG) emissions—is consistent with the environmental themes and goals of President Drew Faust's Green Initiative. Academic offerings available at both the Forest and in Cambridge include an expanding number of courses on conservation, conservation policy, land use, and climate change.

### Enhanced Research

The most surprising outcome of the W&W initiative has been new directions and strengths in Harvard Forest research. The report's discussion of the concept of natural infrastructure has initiated study of the processes underlying specific ecosystem services, including the carbon dynamics of forest development and the role of forested watersheds in mitigating flooding and producing clean water for human consumption. W&W has become integral to the new LTER theme of New Science, Synthesis, Scholarship, and Strategic Vision for Society.

Another activity galvanized by W&W has been long-sought collaboration through the Science–Policy Exchange (SPE) among major ecological research institutions in the northeast: Harvard Forest, Hubbard Brook, the Cary Institute of Ecosystem Studies, the Ecosystems Center at the Marine Biological Laboratory in Woods Hole, the University of New Hampshire, and Syracuse University. SPE currently addresses climate change, land use, water, and energy.

### Enhanced Conservation/Partner Engagement

Locally, we are advancing land protection to buffer the boundaries of the Harvard Forest, diversify our research opportunities, and safeguard the quality of our science and viability of our research and educational mission. We have assisted abutting landowners in placing conservation easements on their land and acquired land and buildings through a two-step process in which the land is pre-acquired by a local land trust (e.g., Mount Grace Land Conservation Trust or East Quabbin Land Trust), a conservation easement is placed on it using state and private funding, and the conserved property is acquired by Harvard. This process reduces costs, ensures that the lands are conserved in perpetuity, and has facilitated the placement of conservation restrictions on our existing property.

## CONCLUSION

After a decade in action, W&W has accomplished much, but completing the central challenge of conserving the region's forests and farmlands remains (Meyer et al. 2014). The effort has led to effective partnerships to advance this effort and has brought solid rewards to all participants. Importantly, it has highlighted the significant role that academic insti-

tutions can play in catalyzing conservation as well as the benefits that can return to academia through such work.

## ACKNOWLEDGMENTS

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