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Part III
The Need For Global Efforts To Save
Biological Diversity

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Chapter 12

A Wildland and Woodland Vision for the New England Landscape: Local Conservation, Biodiversity and the Global Environment

David R. Foster and William Labich

Abstract Most arguments that start “think globally/act locally” struggle to forge a convincing connection between these two scales of action. However, for New England and most of the eastern United States there is a direct link between effective forest protection and management and the global environment. As a consequence of sub-continental reforestation and growth since the 19th Century, residents across this region have a second chance to determine the fate of their natural landscape. The forests that blanket this region are young and growing rapidly, storing globally important amounts of carbon and thereby thwarting global climate change. Protecting these forests and managing them to produce products and store additional carbon will bring immense benefits to local communities and the world. The *Wildlands and Woodlands* proposal to protect and manage 50% of southern New England in forests provides a mechanism for achieving such ambitious local and global goals.

12.1 Introduction

Think Globally and Act Locally. For New England and most of the eastern United States this well-worn adage has striking relevance in an era when global environmental change is driven by rising atmospheric concentrations of carbon dioxide, a major greenhouse gas. There are few areas of the globe where an accelerated conservation effort focused on protecting natural ecosystems and biodiversity can provide greater benefits to local communities and regional economies while also conveying huge rewards for the global environment. This opportunity for local action in the eastern United States to provide global benefits is the consequence of a regional history that in itself yields ecological and conservation insights from which all can profit. Preeminent among these lessons is recognition that efforts to protect biodiversity locally and globally will only succeed if they combine the preservation of wildland areas with the conservation of actively managed landscapes.

The background for New England’s conservation and environmental opportunity is rooted in the region’s remarkable historical transformation. Over a 300-year period the forested landscape was first cleared for agriculture and then abandoned from extensive farming and allowed to recover naturally back to expansive forest. New England and most states east of the Mississippi are now among the most heavily wooded regions of the United States. Forests blanket vast regions and, as they grow, they store immense quantities of carbon dioxide that significantly offset the increase of this greenhouse gas

01 in the atmosphere. These expansive forests, along with remaining farmland, provide
02 many more direct and indirect benefits to people and nature. These benefits range
03 from habitat for the large diversity of plant and animal species to providing myriad
04 aesthetic, recreational and economic benefits including the provision of clean water,
05 fresh air and wood products.

06 Currently, however, the natural infrastructure of New England and the eastern
07 United States is threatened by a second and permanent wave of deforestation, fueled
08 by sprawling home construction and commercial development. With the land and its
09 many natural ecosystems poised in the balance, local residents, landowners and poli-
10 cymakers have an opportunity to guide the region's future in directions that can retain
11 the forests and their diverse organisms, maintain the local quality of life, and yield
12 immense environmental benefits at local to global scales.

13 In many ways, history has provided New England and the eastern United States
14 with a quite unusual opportunity: a second chance to determine the fate of its land-
15 scape. The first time around, through the 17th to 19th centuries, European settlers
16 viewed the forests as an impediment to progress and cleared them regionally. Despite
17 its environmental severity, this episode was a "soft" deforestation as the resulting
18 pastures and fields readily reforested when farming declined. Now, however, we are
19 promoting a "hard" deforestation in which forests are converted into roads, subdivi-
20 sions, parking lots, and immense residential and commercial structures. Barring
21 cataclysm, or a quantum increase in the rate of forest protection, the current wave
22 of forest destruction will be relentless and permanent.

23 To understand how this vast region came to be balanced on an environmental tip-
24 ping point, where it is faced with such opportunities and threats, we need to delve into
25 both ecological history and science.

28 **12.2 The Re-Greening of the East: Lessons from a Great** 29 **Environmental Story**

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32 Writing in the *Atlantic Monthly* in 1995, author Bill McKibben characterized the pro-
33 cess of reforestation and recovery of the rural eastern landscape as "the great envi-
34 ronmental story of the United States, and in some ways of the whole world." After
35 all, from the ruins of wholesale forest destruction, environmental degradation and
36 onslaught on biodiversity in the 19th century emerged a thriving and remarkably intact
37 range of modern natural forest ecosystems that support the vast majority of native
38 species and processes. While this tale varies in important details from the cotton fields
39 of the Carolinas to the rolling pastures of New England, the broad sweep of changes
40 that occurred over the past four centuries is strikingly similar for most of the eastern
41 United States (Foster and Aber 2004).

42 Following European arrival, waves of settlers and their offspring spread across
43 the landscape clearing forest to live closely off the land in small communities based
44 largely on agriculture. As the population increased, forest cover declined progres-
45 sively; more people meant more needs to be met by additional farm land (Fig. 12.1).
46 The peak of this lifestyle and corresponding nadir of forest cover occurred in the
47 mid to late 19th century when, rather abruptly, the relationships between human

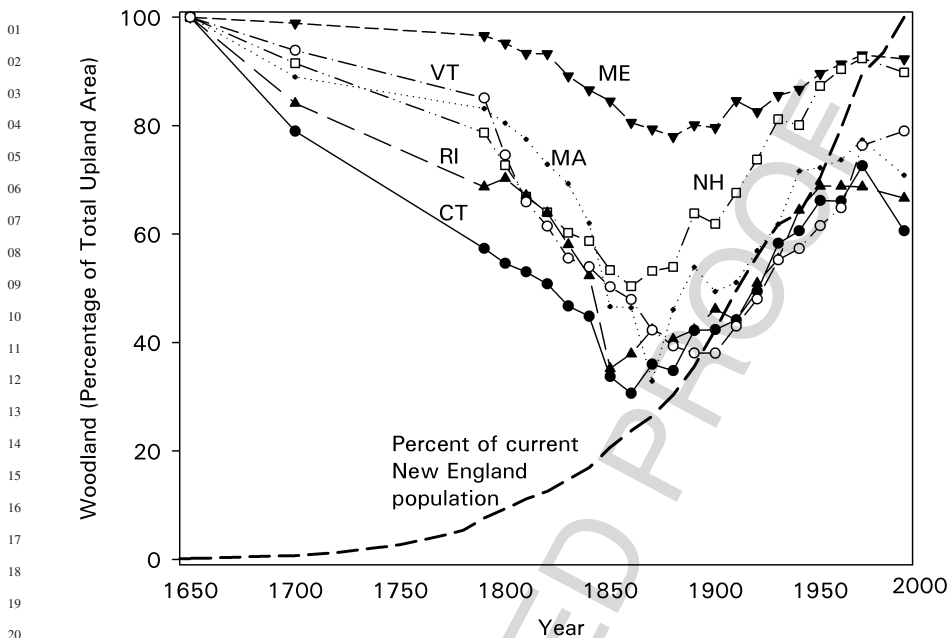


Fig. 12.1 Changes in the extent of forest cover in the New England states and the region's human population over the past 300 years. For the first half of the region's history deforestation was driven by the need of an expanding population to clear land for agriculture. Over the past century and a half the population has grown in concentrated urban and suburban settings, farming has declined, and farmland has reverted to forest cover. Note the second wave of deforestation in most states over the past few decades

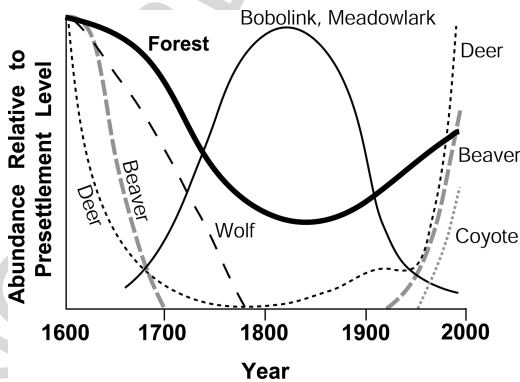
population, cleared land, and forests reversed completely (Hall et al. 2002). Since that time, while the New England and eastern population has continued to expand at increasing rates, forest cover has also increased. This counter-intuitive and quite remarkable pattern, in which a growing human population accommodates increasing natural forest cover, provides an important lesson. Many more people can inhabit a region if they are willing to alter their fundamental relationship with the land (Berlik et al. 2002, Foster 2001). Of course, it matters how they accomplish this.

For the first half of U.S. history the eastern population spread rather evenly across the landscape in a fairly homogeneous and dispersed pattern in small villages and towns. These people worked the land and derived their food, materials and most of their living directly from it. In the second half of this history major economic, technological and sociological changes transformed this relationship. Railroads and canals allowed farm and other products to be imported cheaply and abundantly from the expanding mid-western and western regions. Meanwhile, the industrial revolution drew the eastern rural population and newly arriving immigrants into urban centers and industrial towns. As farm populations declined and people concentrated in rapidly growing industrial centers along the major rivers and coast, farms and farmland were abandoned wholesale and trees began to spread across fields and pastures. Forest cover expanded greatly, but the size, age and maturity of the forests also increased. Coal,

01 additional sources of fuel, and distant wood products became widely available, and
 02 the human dependency on local forests declined (Foster 1998).

03 Many lessons emerge from this history. One important observation is the striking
 04 similarity in the history and pattern of changes across quite different states and land-
 05 scapes, from the rocky slopes of Vermont to the rolling hills of Connecticut to the
 06 piedmont of North Carolina. Parallel histories across such different climates, lands,
 07 forests, crops and cultures confirms that these trends were not driven by changes in
 08 the quality of the land or the local populations, but by extraregional, national and
 09 international economic and social forces. While individual landowners made their own
 10 decisions to clear, and cultivate or abandon their land, they were influenced by, and
 11 ultimately part of, broad societal processes.

12 Ecologically, this story provides numerous insights (Foster 1999, 2001). The first
 13 is one of resilience and recovery. From an individual farmer's fields to the broad
 14 sweep of the subcontinent, the process of reforestation led towards a restoration of
 15 natural conditions, processes and species. Quite inadvertently, the region's residents
 16 conducted an immense and unintentional experiment that confirmed the remarkable
 17 ability of forests and native plants and wildlife to recover after abusive treatment
 18 and environmental degradation (Foster 1999). Nature's resilience is declared in every
 19 beautiful New England scene in which remnant stonewall boundaries of ancient fields
 20 wind through mature forests of oak, maple and pine. Resilience is also heralded in
 21 the phenomenal recovery of native animals over the past 300 years (Fig. 12.2). Defor-
 22 estation and depredation were accompanied by a dramatic decline and extirpation of
 23 most of the larger mammals and native woodland and aquatic birds in the region.
 24 By the 1850s Henry Thoreau lamented that the muskrat was the largest native animal
 25 around Concord, Massachusetts. Thoreau openly despaired for the survival of
 26 forests and woodland plants. Remarkably, forest re-growth was accompanied by the
 27



41 **Fig. 12.2** Changes in major wildlife species over the past 300 years in New England as landscape
 42 conditions and human attitudes have changed. The species represent major categories of response: a
 43 few species were extirpated (e.g., wolf) or driven extinct (e.g., passenger pigeon), many were reduced
 44 to very low population densities and have rebounded naturally (e.g., deer, bear) or by active reintroduction
 45 (e.g., beaver, turkey) in the 20th century, and others have expanded from distant areas due to
 46 habitat change, reduced predation or environmental change (e.g., coyote, turkey vulture). Meanwhile,
 47 many animals and plants thrive in the open and highly disturbed conditions generated by land-use
 activity (e.g., bobolink and meadowlark)

01 immigration and reintroduction of many species that Thoreau never saw in southern
02 New England. Although wolves and cougar are still missing, New England has wit-
03 nessed a major resurgence of deer, bear, fisher, beaver, otter, and moose as well as
04 the arrival of species like possum and coyotes (Faison 2006). Although less apparent,
05 woodland plant species have also thrived while the plants and animals of open fields,
06 shrublands, and heavily cut woodlands have declined (Foster et al. 2002).

07 Finally, there is a lesson rooted in social science that has immense importance for
08 conservation and the ecological integrity of eastern forests and human communities.
09 As people became less dependent on their local landscape over the past 150 years,
10 the land did become wilder. However, the value of this landscape also diminished
11 in the eyes of most landowners and local residents as their livelihoods were no longer
12 directly connected to it. Unfortunately, when people no longer get their food, fiber, and
13 fuel from their local surroundings, when they no longer live and depend directly on the
14 land, it is easy for them to ignore it. It is also easy to overlook and take for granted the
15 less tangible but equally critical resources that come from an intact forested landscape,
16 such as water, clean air, and a healthy life. While for centuries our plant, animal, and
17 human populations have responded to local and regional changes driven by national
18 and global forces, we easily overlook the fact that our local surroundings are, indeed,
19 connected to the global environment (Anonymous 2007a, Berlik et al. 2002).

22 23 **12.3 Forests as Natural Infrastructure**

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25 The expansion and growth of the eastern forests was accompanied by a return of most
26 natural forest characteristics and processes (Foster et al. 2002). The big trees in these
27 new woods are surrounded by a diversity of native understory plants and animals.
28 Together these organisms and habitats comprise ecosystems that absorb carbon diox-
29 ide, release oxygen, filter the air, deliver water to streams and groundwater, and grow
30 and change over time in the face of seasonal dynamics, climate change, and natural and
31 human disturbances like windstorms, ice storms, insects, fire and timber harvesting.
32 While there are many ways to characterize the large number of human and natural
33 benefits that these forests deliver, including the popular term “ecosystems services,”
34 an alternative term that may be more easily grasped is “natural infrastructure.” Forests,
35 and other ecosystems, provide the basic infrastructure that supports all life (cf. Foster
36 et al. 2005). One rationale for the use of this term is that, in large measure, society
37 and its taxpayers value infrastructure. After all, we regularly invest in community
38 infrastructure to provide water, electricity, sewage treatment, transportation and road-
39 ways necessary to move easily around town and across the land. We also make major
40 investments in facilities that simply provide an attractive backdrop to our lives and
41 entertain us in our leisure. Nature provides even more complex and beneficial infras-
42 tructure, quite freely and incessantly. But to retain this natural infrastructure, forests
43 for example, we must recognize it, value it, and invest in it by first protecting it and
44 then caring for it.

45 While good examples of nature as recreational, environmental, or resource infras-
46 tructure are abundant, one compelling example comes from the western Massachusetts
47 backyard of the Harvard Forest. Here, the Quabbin Reservoir and its surrounding

01 tens of thousands of acres of forestland and streams provide drinking water for all of
02 metropolitan Boston and its surrounding communities, altogether 40% of the state's
03 population (Anonymous 2007b). In the creation of the Quabbin Reservoir, planners
04 had the foresight to purchase and protect about 85% of the largely forested watershed
05 (Golodetz and Foster 1997, Barten et al. 1998). Subsequently, private landowners
06 worked with State conservation agencies and non-profit land trusts to protect addi-
07 tional lands from development, thereby extending the conservation values associated
08 with the publicly-owned watershed forests. Today, with the Quabbin Reservation as a
09 center piece, the North Quabbin region of Massachusetts is one of the most densely
10 forested and well protected areas. More than 45% of the land in the 168,283-ha area
11 has been protected from development through the concerted efforts of more than
12 30 groups and hundreds of landowners in southern New England. Meanwhile, these
13 Quabbin forests form one of the most intensively harvested landscapes in the region,
14 providing wood products, jobs, and income while supporting a growing diversity of
15 native plant and animal life. The state lands are largely open to public use and pro-
16 vide among the most interesting hiking, birding, fishing and hunting opportunities in
17 southern New England.

18 The effectiveness of Quabbin's forested watershed at filtering and purifying the
19 water has allowed the state to receive an EPA waiver from the construction of a costly
20 water treatment and filtration plant. In construction costs alone this represents a sav-
21 ings of more than \$500 million, not to mention the avoided costs of personnel and
22 maintenance. By protecting forestland to provide these critical services, Massachusetts
23 taxpayers and ratepayers can forgo the expenses associated with trying to emulate
24 natural processes while deriving many additional benefits. Clearly, the Quabbin water-
25 shed forest is natural infrastructure that supports critical functions like water filtration,
26 and that sustains not only animal and plant species, but the well-being of a significant
27 portion of the state's population (Anonymous 2007b).

30 12.4 Local Woodlands and Eastern Forests 31 as Global Infrastructure 32

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34 There are many places worldwide that support much greater expanses of forest than the
35 eastern United States, including the tropics and the northern boreal region. However,
36 most of these regions are dominated by mature forests that are growing slowly and are
37 being rapidly degraded or deforested. While it is critical to reverse and hopefully end
38 this environmental deterioration, these forests are not accumulating carbon at rates
39 comparable to those by temperate forests. In contrast to the tropics, the vast forests
40 of eastern North America are young and rapidly growing stands newly established on
41 former fields or recovering from past logging or fires. As a consequence of their age
42 and history, these forests are aggressively absorbing carbon dioxide and storing it, in
43 growing trees, in dead wood and material on the ground, and in soils that have been
44 depleted of carbon through decades of intensive human activity (Fig. 12.3) (Barford
45 et al. 2001, Wofsy 2004, Hadley et al. 2008). This carbon accumulation occurs daily in
46 individual forests as the trees grow in diameter and height and as ancient dead trees fall
47 and molder on the ground. Carbon storage also occurs on a massive scale throughout

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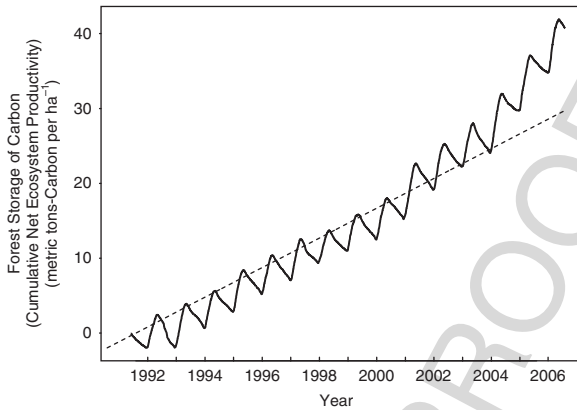


Fig. 12.3 The pattern of carbon dynamics in a 100-year-old New England oak forest shows a long-term trend of storage of carbon dioxide (upward trend) due to greater photosynthesis than respiration, but seasonal variation due to changes in the environment and tree biology. During the summer months the deciduous trees have leaves and take up carbon dioxide rapidly whereas during the fall and winter, when the trees are leafless, the forests release carbon dioxide through decomposition and respiration. The data come from a measurement tower located in the Harvard Forest. Note that over the past six years that the rate of carbon storage has actually gone up. Data from Bill Munger, Harvard University

Massachusetts and surrounding states because forests are the dominant land cover and their growth greatly exceeds the rate at which they are currently being harvested (Fig. 12.4; Berlik et al. 2002). Across all of New England and the eastern United States carbon is being accumulated relentlessly by forests at rates that are dependent on the growing season, rainfall, temperature, species of trees, and the local history of the land.

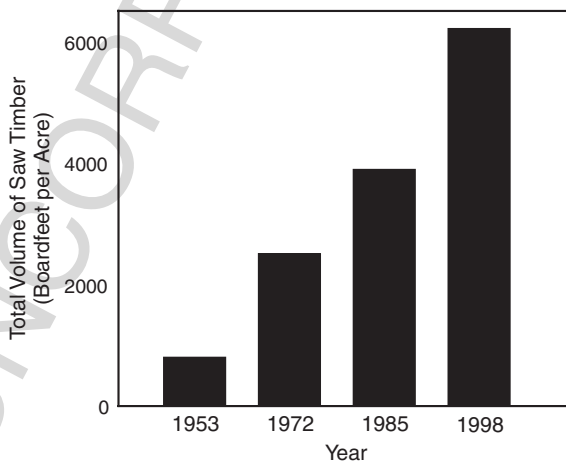


Fig. 12.4 Total volume of saw timber in Massachusetts from 1953 to 1998. Over the past fifty years the growth of forests has outstripped the rate of logging and has led to a progressive increase in the volume of timber across Massachusetts and the rest of the New England states

01 The estimates vary, but this continual absorption and storage of carbon by what
02 are termed “mid-latitude forests” in the eastern, mid-western and even western United
03 States is reducing the global increase in carbon dioxide by approximately 10–15%
04 (Steven Wofsy personal communication). Annually, the amount varies with climatic
05 fluctuations, but the cumulative effect of all of the rapidly growing forests like those
06 in New England, is that the observed increase in CO₂ in the atmosphere is sub-
07 stantially lower than the amount being injected by fossil fuels and other sources
08 (Wofsy 2001, 2004).

11 12.5 A Second Chance – The Opportunity and Need 12 for Forest Conservation

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15 The history of the eastern forest is not over, however. A potentially catastrophic trend
16 appears towards the end of the timeline of forest recovery in New England. For the
17 last few decades, and for the first time in over 150 years, New England and the eastern
18 United States have launched a second wave of deforestation. Estimates vary from 30
19 to 50 acres of forest destroyed daily across the southern New England states, but the
20 cause is clear and broadly known as “sprawl” (cf., MAS 2003, McDonald et al. 2006).
21 Across the eastern United States and indeed much of the country, suburbs are growing
22 and rural landscapes are increasingly attractive as destinations for primary residences,
23 second homes and industry. The consequence is that forestland and farmland is being
24 progressively converted to housing, commercial and industrial developments and sup-
25 porting roadways. In a region dominated by private landowners and a long tradition
26 of home-rule seasoned by uneven zoning regulations, land use decisions are loosely
27 coordinated geographically, even when well-regulated at the local scale (Kittredge
28 2004).

29 The results of forest conversion based on a pattern of sprawl are striking: *parceliza-*
30 *tion* of ownerships (i.e., individual forest parcels are declining in size), *fragmentation*
31 of large blocks of forestland into smaller areas, and *perforation* of individual for-
32 est blocks by scattered development. These processes have many consequences: they
33 reduce the overall extent of forest, they decrease the continuity among existing pro-
34 tected lands and among areas of natural vegetation, and they reduce the effectiveness
35 of natural processes and the easy movement of materials and organisms (McDonald
36 et al. 2006).

37 Relative to the grand challenge of global climate change, deforestation and sprawl
38 have major and enduring effects (Anonymous 2007a, Sampson et al. 2006). Con-
39 version of forest areas to other land uses has the immediate consequence of releasing
40 vast quantities of carbon dioxide as trees are cut, organic matter decomposes in the
41 open environment and soils are bulldozed and removed. Over the long term how-
42 ever, this conversion forever cripples or even eliminates the potential for the forest to
43 continue to store carbon. And, sprawl which forces people to travel great distances
44 between locations where they live, shop, and work, increases energy consumption and
45 greenhouse gas emissions. In contrast, communities that concentrate development and
46 surround their villages with farms for food and forests for clean air and water, wood
47 and wildlife, recreation and respite, can thrive in multiple ways.

01 Thus this region is faced by a challenge and an opportunity. The challenge for
 02 landowners and residents of New England and other eastern states is to thwart the
 03 unplanned loss of forest cover, halting the conversion of forest as a basis for their
 04 future survival and that of the environment, locally and globally (Kittredge 2005). The
 05 opportunity is to recognize the many values that forests provide human and natural
 06 communities and use this awareness to engage landowners, communities and society
 07 more actively in the conservation of the forest landscapes that have been neglected
 08 over the past century and a half (Finley and Kittredge 2006).

11 12.6 A Global Environment for the Management 12 of New England Forests

14 Beyond the rather straightforward argument that it is important for nature and for
 15 humans to protect eastern forests, there is a compelling environmental argument that
 16 most of these forests should be managed sustainably (Berlik et al. 2002). This may
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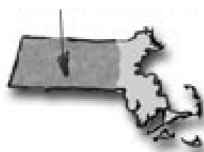
19 MA Forest Cover: 3 Million Acres



21 Forest Needed to Supply MA
 22 Consumption: Annual Growth
 23 15 Million Acres



25 Forest Harvested within MA:
 26 Annual Growth 0.3 Million Acres



38 **Fig. 12.5** The wood foot
 39 print of Massachusetts.
 40 Although the state supports
 41 3 million acres of forest it
 42 utilizes an amount of wood
 43 produced annually by
 44 approximately 15 million
 45 acres of forest. Meanwhile,
 46 the equivalent of wood
 47 growth on 300,000 acres is
 harvested annually

01 seem counterintuitive: protect forests *and* log them? Why? Because we are a resource
 02 consuming society, wood is a highly renewable resource (and also a carbon sink); the
 03 eastern United States currently imports most of its wood products and yet it could
 04 obtain many more locally. Moreover, environmental controls over forestry are much
 05 more stringent locally than in most source areas. Finally, there is the possibility that
 06 obtaining resources from our own backyard may make all of us more conscious of
 07 how they are obtained and how they are used.

08 Currently, in a state like Massachusetts only approximately 5% of wood products
 09 are produced locally; the rest come from places such as British Columbia, Malaysia,
 10 other tropical areas, Russia, and other parts of the United States (Fig. 12.5). Many
 11 come from old or virgin forests and sites that are much more vulnerable to degrada-
 12 tion from logging than temperate forests that have been logged repeatedly. In
 13 addition, few of these source regions have the regulatory structure and oversight by
 14 agencies, conservation organizations and landowners available in states like Massa-
 15 chusetts.

16 One study concluded that with increased recycling of materials, reduced con-
 17 sumption levels like those of Europe or Japan and increased management of local
 18 forests, that Massachusetts could meet more than 40% of its wood resource needs
 19 (Berlik et al. 2002). Increased focus on local sources of wood *might* make local
 20 consumers focus more on their value and management and on their own levels of
 21 resource use. And, it could reduce the pressure on wood production from distant
 22 lands where it can exert impacts that are unfelt at home. Management of our forests
 23 provides yet another way to act locally and exert a positive impact on the global
 24 environment.

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27 **12.7 The Wildlands and Woodlands Vision for New**
28 **England Forests**
29

30 In response to the challenges and opportunities outlined above, scientists associ-
 31 ated with the Harvard Forest and its Long Term Ecological Research (LTER) pro-
 32 gram proposed a vision for the future of the Massachusetts forest as a model for
 33 the rest of New England and much of the eastern United States (Foster et al. 2005,
 34 www.wildlandsandwoodlands.org). The Wildlands and Woodlands (W&W) proposal
 35 argues for a major new initiative of forest protection, preservation and management
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39 **Table 12.1** Synopsis of the Wildlands and Woodlands Vision

40 **Goal:** To conserve 50% of the land in forest permanently protected from development

41 *Wildland Reserves: 10% of the Protected Forest*

42 Wildland reserves will be large unmanaged lands (5,000 to 50,000 acres) situated largely on public
 43 land. Wildlands would be selected to accomplish five objectives:

44

- 45 ● to promote natural landscape-level processes, ecological patterns, and biodiversity across the
 46 region’s range of forest and environmental conditions
- 47 ● to protect water for water supply

Table 12.1 (continued)

-
- to protect, connect, and enhance existing old-growth forests
 - to provide opportunities for scientific study of natural processes and reference for the changes occurring in the larger area of managed forest, the Woodlands
 - to afford special educational, recreational, aesthetic, and spiritual benefits

Managed Woodlands: 90% of the Protected Forest

Woodlands will comprise most of the existing public forests and conservation land and most of the protected private forest land. Woodlands will accomplish four objectives

- to support biodiversity, reinforcing the Wildlands and providing habitat variation and supporting species assemblages not occurring on the reserves
- to enable sustainable resource production such as timber, wildlife, and clean water
- to provide the infrastructure or ecosystem services that sustain life and generate many direct and indirect economic benefits including productive soils, clean air and clean water
- to provide extensive recreational, educational, aesthetic, and spiritual experiences

Overall Objective

- to ensure that substantial areas of managed forest *and* reserves are protected in perpetuity to provide environmental, recreational, educational, economic and aesthetic benefits that the region and its citizens need
 - to provide for statewide distribution of forest conservation lands to accommodate the range of forest ecosystems, species, and values
 - to encourage leadership and involvement by local communities and landowners to enable flexibility in the design of forest conservation areas
 - to complement other initiatives to focus and promote development and economic growth
-

that is motivated by the importance of forests to local, regional and global environments, species and human populations. Specifically, W&W proposes the permanent protection of half of the entire state of Massachusetts in forest by adding 1.5 million acres to the State's existing protected land base of 1 million acres, for a total of 2.5 million acres (Table 12.1). It further proposes that 250,000 of these acres, or 10% of the protected forest area, should be large **Wildland** reserves embedded within 2.25 million acres (90% of protected forests) of managed **Woodlands** (Fig. 12.6). Together, the Wildland reserves and managed Woodlands will maintain and enhance the region's biodiversity while offering future generations many environmental services (natural infrastructure), recreational opportunities and economic benefits in a securely forested landscape. W&W recognizes that this framework for conservation will rely on a major expansion of the mutually reinforcing public/private collaborations that have been engaged in land conservation, landowner outreach, education and management for decades.

Fortunately, in Massachusetts and most of the eastern United States, there is no need for extensive new research or mapping to identify the important forest parcels to acquire. Thanks to the work of state agencies, organizations like The Nature Conservancy, Massachusetts Audubon Society and The Trustees of Reservations, and many dozens of land trusts and other conservation groups most of that necessary planning is complete.

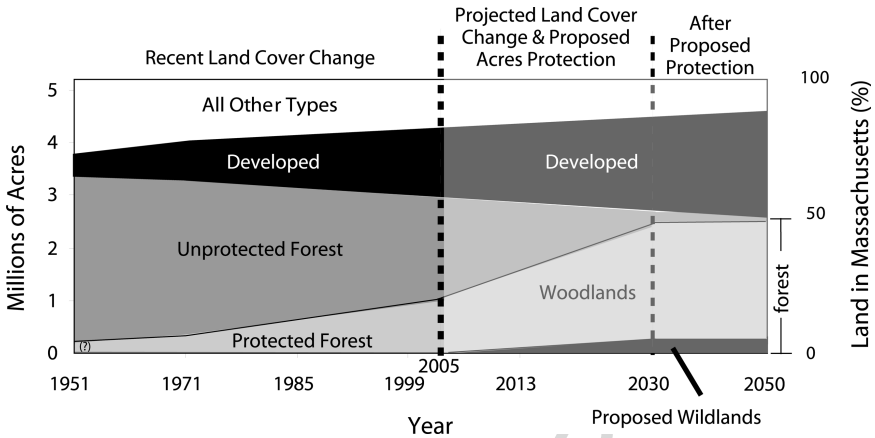
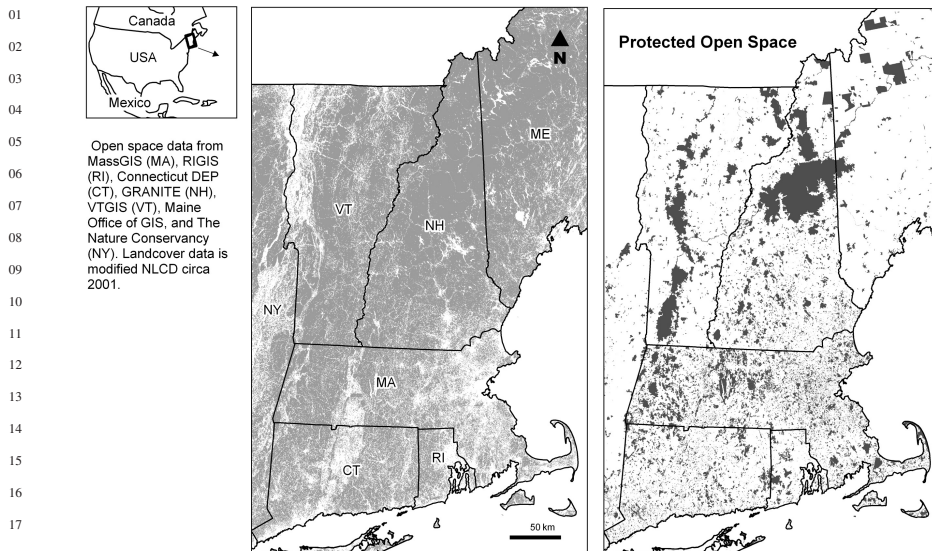


Fig. 12.6 The Wildland and Woodland proposal: change the rate of land protection and in the course of 25 years protect a full 50% of the landscape in forest cover that is largely managed as woodlands, with approximately 10% of the forest maintained in large Wildland reserves

12.8 Wildlands, Woodlands and Biodiversity in the Context of New England History

Although the Wildlands and Woodlands vision is not focused on biodiversity, the history and ecology of the region make the W&W approach an effective way to sustain and enhance the viability of native species. The history of New England and most of the globe requires that a combined approach, involving the preservation of wildlands and the conservation of well managed woodlands and other habitats, is employed for the protection of biodiversity.

The argument for preservation, the protection and management of expansive natural areas with a hands-off approach, is rather straightforward (Fig. 12.7). Allowing natural processes to dominate over large tracts of land, albeit influenced by the indirect consequences of past and ongoing human activity, will enable the development of a range of site conditions and habitats that were once common across the landscape but are now exceedingly rare. Due to three centuries of intense land use in the eastern United States, most forests are young and maturing, and few areas support immense old-growth trees and such structural characteristics as standing dead snags, large amounts of coarse woody debris, and uproot mounds (McLachlan et al. 2000). Most of our forests present the appearance of having been intensely managed. Forests left to grow under prevailing conditions will be dynamic due to natural aging and disturbances. Consequently, substantial landscape-level variation in forest conditions would develop across a large wildland reserve (cf. Foster et al. 2003). While there is little evidence that a large number of species are restricted to old-growth or wildland forests, there is no doubt that many native species do utilize such areas extensively and are well adapted to their natural dynamics. The added diversity of the sites and landscapes that would develop under a wildland scenario would thereby augment the region's species diversity. Reserves will also provide a critical "control" for assessing the consequences of the active management that occurs in woodlands across the region.



19 **Fig. 12.7** Maps of much of New England comparing the extent of forest cover (left) and the area of
20 natural open space that is legally protected from future development (right)

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22
23 Managed forests and landscapes are also critical for biodiversity. The history of
24 intensive land use across the region has favored a large number of species that thrive
25 in open and shrubby habitats, young successional forests, and a heterogeneous and
26 patchy landscape. Much of the wildlife and flora that people enjoy and are focused on
27 maintaining would actually decline if the bulk of the protected forests were allowed to
28 mature as wildland reserves (Foster and Motzkin 2003). Active management, includ-
29 ing mowing of fields to prevent reforestation, harvesting to generate young and open
30 woods and a patchy landscape structure, and burning of woodland and open habitats,
31 is necessary to maintain the existing biodiversity of the region. Thus the conservation
32 management of woodlands and other habitats serves many purposes, for both humans
33 and nature (Foster 2002).

34 The wildland and woodland approach combines the two major thrusts of the envi-
35 ronmental movement, preservation and conservation. This melded approach involves
36 management activities that are complementary and mutually supportive. It also promises
37 to generate habitat conditions across the landscape that will be best suited to maintain
38 and encourage the highest number of species and greatest diversity of habitats, ecosys-
39 tems and conditions. Promotion of biodiversity thereby is one of the many benefits of
40 this expansive effort to protect our forests and manage them well.

41
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43 **12.9 Woodland Councils: Resource and Catalyst**

44
45 There are substantial logistical and practical challenges confronting the execution
46 of this vision. Given the fact that most land in the eastern United States lies in
47 small private ownerships, one initial challenge is making thousands of individu-

als passionate about land protection and then engaging them in conservation deals (Kittredge 2005). Private landowners are an independent minded and diverse group who largely want to continue to own their land, which is often their major asset. Consequently, there is a need to protect considerable land from development through the purchase of development rights (establishment of conservation easements) on private holdings while meeting the financial needs of this group (Finley and Kittredge 2006). The Wildlands and Woodlands vision assumes that the majority of landowners will be sympathetic to the notion of protecting their land from development if they can receive fair compensation in return. It also assumes that effective outreach to this vast group of individuals and successful completion of the vision will only be possible through grass roots activity in which local communities and private landowners support the concept and effort. From this conviction and considerable experience supporting it, comes the notion of Woodland Councils or regional partnerships.

Protecting and managing sustainably 50% of the region's woodlands in thousands of intermingled ownerships is a daunting proposition. This goal cannot be accomplished by sweeping public acquisition or regulatory fiat. What is needed is a collaborative, bottom-up, and voluntary approach that provides structure and guidance for those who aspire to conserve and manage their forests as part of a coherent program (Table 12.2). Consequently, the W&W vision proposes that in regions lacking effective regional conservation collaborations that regional Woodland Councils be established to lend new energy and focus to this effort.

Most regional planning agencies provide communities with technical assistance in comprehensive land use planning and zoning, whereas watershed councils or associations help address water quality and quantity issues that relate to community development and non-point source pollution; neither focuses on the long-term conservation of forests. The importance of forests to our quality of life warrants the formation of regional groups devoted to forest protection and stewardship. While current programs such as Tree Farm, current-use tax programs and government underwritten free or cost-shared management activities have for decades reached out to a small segment of landowners, a much larger portion of the landowner population has been disinterested in these approaches (Finley and Kittredge 2006). Moreover, with hundreds of land trusts across a region like southern New England (Fig. 12.8), an improved structure could facilitate communication and coordination among the many groups already protecting and managing forests at the local level. Woodland Councils would help meet these needs by serving as an information *resource* and a project *catalyst*.

As an information *resource*, Woodland Councils might gather thorough information on a region's forests, compile maps and natural resource inventories, and provide landowners with access to current forest information in order to assist them with land protection and management in an ecologically coherent way. As project *catalysts*, Woodland Councils could work with individuals and organizations to identify lands for conservation, advance sustainable forestry practices and help interested individuals and organizations locate financial assistance to conserve and manage woodlands. In the long-term, they would provide timely assistance and up-to-date information to landowners and local communities, and help monitor the growing Woodland base.

Table 12.2 Strategies for Achieving the Wildlands and Woodlands Vision*State and Local Government*

- Evaluate existing public lands to designate a substantial portion as large Wildland reserves by altering their management objectives
- Propose and adopt statutory language for the establishment, monitoring and preservation of large reserves on public lands
- Establish a secure, dedicated and substantial source of state land protection funds to acquire land or buy conservation easements on priority forestlands
- Support a functional current-use property tax program to provide annual tax relief to private landowners, in return for maintaining land as open space
- Pass regulatory and funding initiatives to encourage smart growth, historic preservation and clustered development to slow forest loss and fragmentation

Non-profit Sector & Conservation Organizations

- Advocate for the funding and activities described above
- Purchase, hold, and/or monitor protected land and conservation easements
- Promote the vision of protecting half of the land base in a region
- Adopt the inter-connected approach of Wildlands and Woodlands
- Organize or join a regional partnership to connect with landowners and to identify land protection opportunities at the landscape scale
- Match the public investment with funds from private individuals and foundations to protect and manage Wildlands and Woodlands in perpetuity
- Work to improve, communicate and collaborate between diverse conservation and forest products organizations

Landowners & Other Interested Citizens

- Donate land to a land trust to protect as either Wildlands or Woodlands
- Donate a conservation easement to protect your land in perpetuity
- Learn about land management options and develop a plan for the sustained management and permanent protection of your land, whether for biodiversity, aesthetics, natural process, or natural resources
- Join or create a local Woodland Council
- Take an active role in land protection policy and funding

Woodland Councils would be structured to involve local people and, like some existing partnerships, could include representatives of conservation organizations, land trusts, other non-profits, town conservation commissions, state agencies, private land owners, forest industries, and interested citizens. The Councils might be housed within a watershed association, land trust, or conservation organization depending on the circumstances in each region. They could be organized geographically according to ecological divisions such as ecoregions or major watersheds. Eventually, Councils could cover a large region in an ecologically coherent fashion at a practical scale for working on woodland issues.

Several organizations across New England and North America are currently involved in the types of activities that are envisioned for Woodland Councils (see: www.wildland-sandwoodlands.org). This call to form Woodland Councils is not necessarily intended to create more organizations, rather it is meant to help more of these activities to flourish, and more informed forestry and land protection to occur in woodlands.

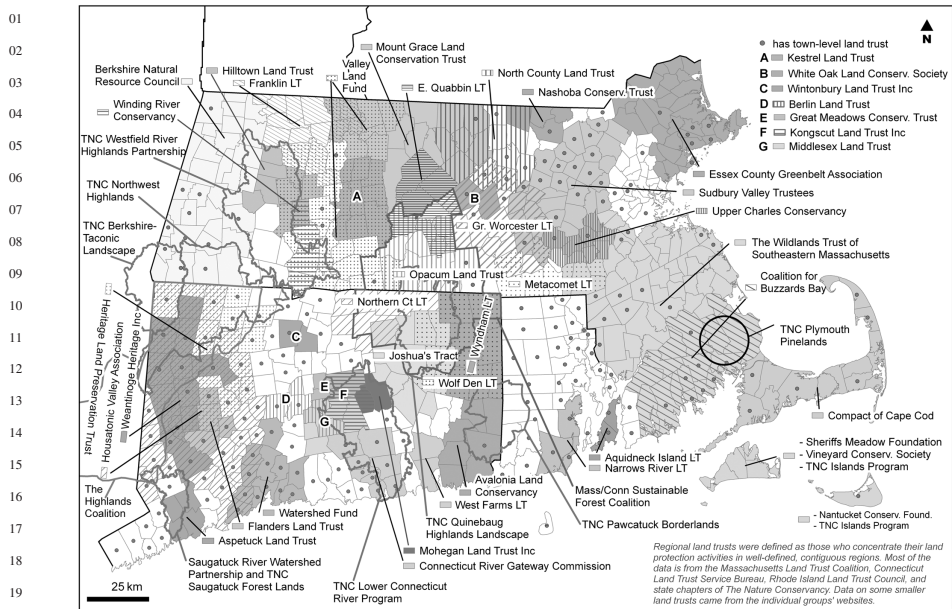


Fig. 12.8 The diversity and extent of land trust activity across southern New England. Each dot represents a local, town-based land trust whereas the shading indicates regional land trusts. Note: the map does not depict statewide conservation organizations such as the Massachusetts Audubon Society and the Trustees of Reservations, national groups such as The Nature Conservancy, or state and federal agencies. These and land trusts represent a huge resource in the effort to protect and conserve forests and other natural areas

12.10 Wildlands and Woodlands and the Outlook for Eastern Forests

32 When the first draft of the *Wildlands and Woodlands* report was completed in 2005, it
 33 was sent out for review to scientists, conservationists, and forest professionals regionally
 34 and nationally. Along with many positive and helpful comments came variations
 35 on a few pessimistic responses along with some pointed questions. One observation
 36 was that the timing for release of such a paper was atrocious: the Romney administration
 37 in Massachusetts was completely disinterested in conservation and had gutted state
 38 funding for land protection, while national political support for a new vision on
 39 land protection was deemed non-existent. Meanwhile, two major questions arose from
 40 the ranks of the already overworked conservation community: who would lead this
 41 unfunded effort and where would the money come from? From many quarters came
 42 skepticism that an adequate number of landowners were truly interested in protecting
 43 their land. And, perhaps most interesting and unexpected for the scientist authors,
 44 the strongest voice of concern regarding the entire effort came from their scientist
 45 peers. Many colleagues wrote to suggest that it was inappropriate for scientists to
 46 advocate for a particular conservation agenda, especially one as bold as protecting
 47 50% of the landscape in perpetuity. The role of the scientist, many argued, was to hand

01 off objective scientific results to policy makers, government leaders and conservation
02 advocates who would then apply it as they best saw fit.

03 The authors incorporated the helpful and critical comments into the manuscript,
04 responded to many questions and concerns as best as they could and published the
05 paper. Over time, the response by individuals, organizations, agencies and local com-
06 munities have helped them to address the skeptics and offer hope for the future.¹

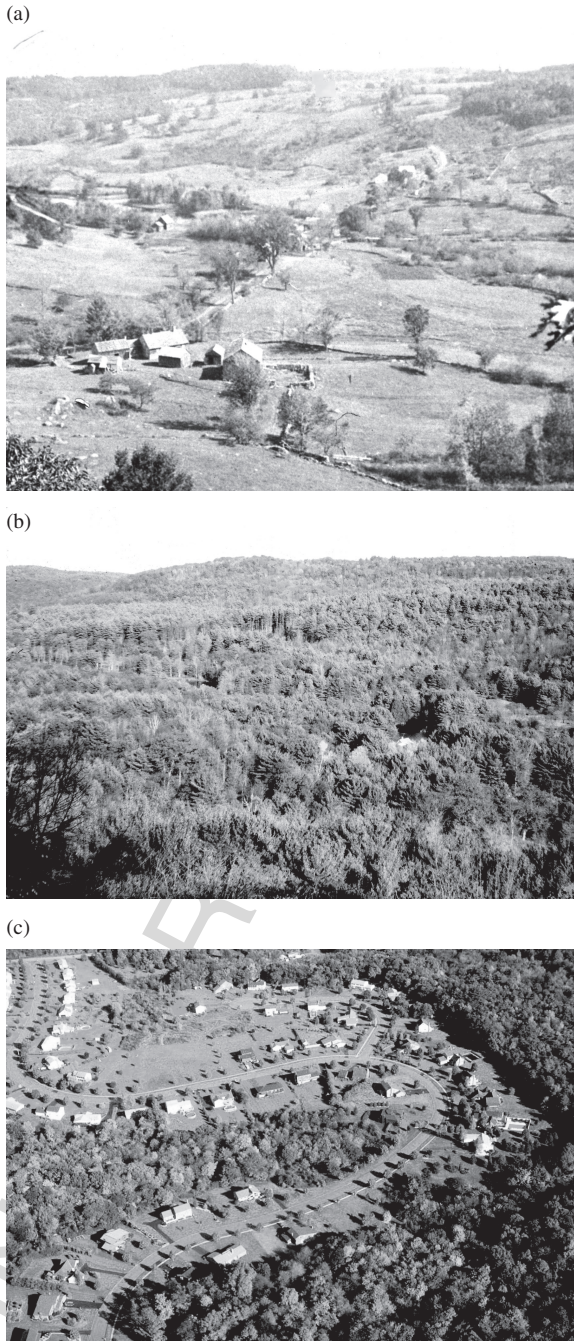
07 The authors' response to the comment that the timing for release of the paper
08 was atrocious was straightforward. *Wildlands and Woodlands* is not written for any
09 specific political moment: it is a vision for the future and forever. If this proposal is
10 compelling – that 50% of the land cover of Massachusetts and much of the eastern
11 United States should be permanently protected in woodlands managed for multiple
12 values and large wildlands set aside as reserves – then the W&W vision should be
13 circulated regardless of political or financial climate. Politicians come and go, and the
14 fiscal setting for funding conservation projects waxes and wanes. A time will certainly
15 come when new ideas are needed.

16 Meanwhile, regarding leadership, the authors observed that W&W will succeed
17 only to the extent that it motivates individual land owners, local communities, small
18 to large organizations, and public agencies. W&W calls for more than simple forest
19 protection; it requires a major shift in public thinking about conservation, stewardship
20 and land ethics. W&W cannot be a top-down or prescriptive effort, it must emerge
21 from the grassroots and engage communities, people and organizations that care for
22 the land, for nature and for quality of life. While success will require that this occurs,
23 only time will tell if the vision resonates with these groups (Fig. 12.9).

24 The response and activities since the release of the W&W vision have underscored
25 what a difference that two years and the efforts of many individuals and groups
26 *can* make. On a state and even national level, outdated thinking on conservation's
27 place in public policy and its role in our state's economic well-being are on their
28 way out. Meanwhile, support for land protection, forest stewardship and improving
29 local and global environments is rebounding. In Massachusetts, the administration
30 of Governor Duval Patrick is promoting a major bond bill to increase land protec-
31 tion and a joint House-Senate committee is supporting the establishment of a Study
32 Commission that would explore new alternatives for financing forest conservation.
33 The study commission was prompted by the leadership of two individuals – James
34 Levitt of the Harvard Kennedy School and Harvard Program on Conservation Inno-
35 vation and Kathy Lambert of Ecologic – in spearheading a conference convened to
36 discuss innovative sources of financing for large conservation programs like W&W.
37 The roundtable, which was convened at the Harvard Center for the Environment and
38 included national experts in conservation finance, produced a white paper setting out
39 numerous options that the study commission plans to examine in further detail (Levitt
40 and Fallon Lambert 2006).

41 Meanwhile, other local and regional support for W&W efforts has been diverse
42 and strong. Surveys confirm that the majority of landowners are indeed interested
43

45 ¹ The response to release and discussion of the Wildlands and Woodlands Report has been over-
46 whelmingly positive from the public, conservation organizations, government agencies and the media.
47 See *Outside Perspectives* at <http://www.wildlandsandwoodlands.org/>



43 **Fig. 12.9** Three contrasting views of the New England landscape. (a) The town of Petersham in the
44 late 1890s; (b) the same view in the late 1990s; and (c) a view of a landscape of forest and farm-
45 land that has been fragmented and perforated by housing development. The history of reforestation
46 provides an opportunity and a need to prevent further widespread development

01 in protecting their land (Kittredge 2005). In Massachusetts, hundreds of private
02 landowners have declared the desire to protect their forest lands in perpetuity from
03 development and nearly 50 are currently engaged in a novel aggregation project to
04 protect more than 20,000 acres, led by Keith Ross of LandVest and the New England
05 Natural Resources Center. Funding to explore innovative efforts such as aggregation,
06 new financing for land protection, Woodland Councils and other regional partnerships,
07 as well as outreach to landowners and small communities has come from private found-
08 dations and individuals as well as state and federal sources. This support has enabled
09 many land trusts and conservation organizations to add staff. This, in turn has provided
10 one answer to the concern over exactly who would provide the capacity to promote
11 W&W.

12 Substantial additional capacity has developed as a coalition of nearly 50 organi-
13 zations has come together in Massachusetts to form the Wildlands and Woodlands
14 Partnership. Convened initially by Ted Smith at the Kendall Foundation and Wayne
15 Klockner, director of The Massachusetts Nature Conservancy, the partnership meets
16 quarterly to exchange information and coordinate efforts in support of the W&W
17 vision. Meanwhile, Highstead, a Connecticut conservation organization and forest
18 reserve has hired a Regional Conservationist, Bill Labich, to promote W&W associ-
19 ated efforts across southern New England and to coordinate the Partnership. The intent
20 of this new position is to research and distribute effective approaches to landscape-
21 level land protection and conservation and to assist the efforts of emerging regional
22 partnerships and woodland councils.

23 Finally, the scientist authors of W&W are comfortable in their role of releasing
24 the W&W vision and discussing it broadly with fellow scientists, conservation pro-
25 fessionals, policy makers, and local audiences. The vision is built on a historical and
26 ecological understanding of the landscape of New England and the eastern United
27 States and uses this to frame one possible outcome for its future. However, it does,
28 quite arguably, represent personal opinion and take a subjective stance. But this group
29 of scientists can no more sit back watching the forested landscape disappear than they
30 can ignore and fail to speak out about global environmental problems. While it is not
31 appropriate for scientists to lead the W&W effort, the authors can continue to advance
32 conservation research, ecological studies, and educational efforts that will enhance
33 and utilize the protected wildlands and woodlands emerging across the region.

36 37 **12.11 Local and Global in Perspective**

38
39 The W&W vision for the forest's future, like the concrete that covers newly devel-
40 oped landscapes, is forever. If this vision prompts substantial forest protection and
41 conservation it will only be as a result of individuals and communities recognizing the
42 benefits that natural ecosystems, including forests, yield to daily life. But, the larger
43 benefit could come to local residents and the global community alike as the cumulative
44 impact of forest stands and individual actions plays out across the world stage. There
45 is hope that Massachusetts, New England and the eastern United States will seize the
46 second chance that history has provided and treat their forests differently this time
47 around.

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