

New England Forests: The Path to Sustainability

CHAPTER I • KEEP NEW ENGLAND FORESTED



A TECHNICAL REPORT BY NEW ENGLAND FORESTRY FOUNDATION

INTRODUCTION

This project documents both the existing value and potential of New England's working forest lands: Value – not only in terms of business opportunities, jobs and income – but also nonfinancial values, such as enhanced wildlife populations, recreation opportunities and a healthful environment. This project of the New England Forestry Foundation (NEFF) is aimed at enhancing the contribution the region's forests can make to sustainability, and is intended to complement other efforts aimed at not only conserving New England's forests, but also enhancing New England's agriculture and fisheries.

New England's forests have sustained the six-state region since colonial settlement. They have provided the wood for buildings, fuel to heat them, the fiber for papermaking, the lumber for ships, furniture, boxes and barrels and so much more. As Arizona is defined by its desert landscapes and Iowa by its farms, New England is defined by its forests. These forests provide a wide range of products beyond timber, including maple syrup; balsam fir tips for holiday decorations; paper birch bark for crafts; edibles such as berries, mushrooms and fiddleheads; and curatives made from medicinal plants. They are the home to diverse and abundant wildlife. They are the backdrop for hunting, fishing, hiking, skiing and camping. They also provide other important benefits that we take for granted, including clean air, potable water and carbon storage. In addition to tangible benefits that can be measured in board feet or cords, or miles of hiking trails, forests have been shown to be important to both physical and mental health.

Beyond their existing contributions, New England's forests have unrealized potential. For example, habitats for a wide variety of wildlife species could be enhanced by thoughtful forest management. Likewise, wood quantity could be increased and the quality improved through sustainable forest management. The virtues of improved forest management and buying locally produced goods are widely extolled, but what might that actually look like on the ground? More specifically, how could enhanced forest management make more locally produced forest products available to meet New Englander's own needs, as well as for export, improve the local and regional economies and provide the greatest social and environmental benefits?

The purpose of this project is to document that potential by analyzing what we know about how improved silviculture can enhance wildlife habitat, the quantity and quality of timber, recreational opportunities, and the environment. The best available data from the US Forest Service, state forestry agencies and universities was used to characterize this potential.

The technical reports produced for this project document the potential for:

- Mitigating climate change;
- Increasing timber production to support a more robust forest products industry;
- Restoring important wildlife habitat;
- Replacing fossil fuels with wood to produce thermal energy;
- Reducing greenhouse gas emissions, not only by substituting wood for other fuels, but also wood for other construction materials;
- Enhancing forest recreation opportunities and related tourism;

- Expanding production of nontimber forest products;
- Maintaining other forest values such as their role in providing clean air and potable water – taken for granted but not guaranteed;
- Enhancing the region’s economy by meeting more of our own needs with New England products and retaining more of the region’s wealth within the New England economy; and
- Other related topics.

These technical reports are viewed as “works in progress” because we invite each reader to bring their own contributions to this long term effort of protecting, managing and enhancing New England’s forests. The entire set may be viewed at www.newenglandforestry.org. If you have suggested improvements please contact the New England Forestry Foundation to share your thoughts. These technical reports were used as the background to prepare a summary – *New England Forests: The Path to Sustainability*, which was released on June 5, 2014.

If you are not familiar with NEFF's work please visit www.newenglandforestry.org. Not already a member? Please consider joining NEFF – <https://41820.thankyou4caring.org>.

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The New England Forestry Foundation is a recognized leader in conserving working forests, educating the public about forestry, and assisting landowners in the long-term protection and stewardship of their properties. For almost 70 years, we have demonstrated that well-managed working forests can provide landowners and the community with the prime ingredients for healthy living: clean air and water, sustainable production of an array of forest products, healthy forests for hiking and relaxation, a diversity of wildlife and habitats, periodic income, and renewable natural resources that help support rural economies.

Our Mission is to conserve New England’s working forests through conservation and ecologically sound management of privately owned forestlands in New England, throughout the Americas and beyond.

This mission encompasses:

- Educating landowners, foresters, forest products industries, and the general public about the benefits of forest stewardship and multi-generational forestland planning.
- Permanently protecting forests through gifts and acquisitions of land for the benefit of future generations.
- Actively managing Foundation lands as demonstration and educational forests.
- Conservation, through sustainable yield forestry, of a working landscape that supports economic welfare and quality of life.
- Supporting the development and implementation of forest policy and forest practices that encourage and sustain private ownership.

THE PATH TO SUSTAINABILITY



New England's forests have tremendous potential to provide economic, environmental, and social benefits to the citizens of the region. Right now, we're letting some of that potential slip away. Through 12 new research reports, New England Forestry Foundation has defined the benefits our region's forests could provide, and those benefits are summarized here along the Path to Sustainability, starting with the premise that we Keep New England Forested.

NEW ENGLAND FORESTRY FOUNDATION

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1. KEEP NEW ENGLAND FORESTED: Assessing the Current Conservation Status of New England's Forests

Prepared by Jerry A. Bley

Part of a larger project on the potential of New England's forest lands coordinated by R. Alec Giffen for the New England Forestry Foundation. Component parts including the following of the larger effort:

1. **KEEP NEW ENGLAND FORESTED: Assessing the Current Conservation Status of New England's Forests** by Jerry A Bley
2. **GIVE WILDLIFE HOMES: Potential of New England's Working Forests as Wildlife Habitat** by Jerry A. Bley
3. **PROVIDE MORE RECREATION: Forest Recreation Trends and Opportunities in New England: Implications for Recreationists, Outdoor Recreation Businesses, Forest Land Owners and Policy Makers** by Craig Ten Broeck and Aaron Paul
4. **PROTECT US FROM CLIMATE CHANGE** by R. Alec Giffen and Frank Lowenstein
5. **CLEAN AND COOL THE AIR: Forest Influence on Air Quality in New England: Present and Potential Value** by Aaron Paul
6. **PURIFY OUR WATER: The Potential for Clean Water from New England Forests** by Aaron Paul
7. **GROW MORE WOOD: The Potential of New England's Working Forests to Produce Wood** by R. Alec Giffen, Craig Ten Broeck and Lloyd Irland
8. **CREATE LOCAL JOBS: Vision for New England's Wood-Based Industries in 2060** by Innovative Natural Resource Solutions, LLC and The Irland Group
9. **CULTIVATE NEW BUSINESSES: New England's Nontimber Forest Products: Practices and Prospects** by Craig Ten Broeck
10. **PROVIDE MORE WOOD FOR BUILDINGS: The Greenhouse Gas Benefits of Substituting Wood for Other Construction Materials in New England** by Ann Gosline
11. **REDUCE USE OF FOREIGN OIL: The Potential for Wood to Displace Fossil Fuels in New England** by Innovative Natural Resource Solutions, LLC
12. **GROW AS MUCH AS WE USE: Production versus Consumption of Wood Products in New England** by Craig Ten Broeck

A. New England's Forests Today

In order to contemplate the future potential of New England's forests, it is essential to have a solid understanding of those forests as they exist today as well as a clear assessment of the conservation measures that have been taken. There is an increasing mountain of information that is being collected on the region's forests, much of it contained within Geographic Information Systems (GIS) managed by various public, non-profit and academic institutions. While offering great opportunities for research and analysis, it often can also create challenges of sorting through conflicting data, understanding how data has been characterized and what assumptions have been made, and recognizing where holes in the data may still remain. This challenge is compounded by the fact that different information may be collected in different states utilizing different protocols. In compiling the baseline information for this report, sources of data were selected that: 1) are generally well known and widely respected; and 2) provide generally consistent data across the region. Efforts have been made to ground-truth the data on a state-by-state basis to ensure that no significant abnormalities are present.

1) How Much Forest Exists Today in New England?

According to data provided by the US Census Bureau, the land area in New England (excluding all open surface water) totals just over 40 million acres (Department of Commerce. 2010). Of this land area, 32,179,294 acres are covered by forest, just over 80 percent of the region (USDA/USFS. 2011). Maine is the most forested state in the region (and the country) with just about 90% of its land in forest. The least forested of the New England states is Connecticut with approximately 55 percent of its land in forest cover.

Table 1. Forest land in New England

State	Total land area (in acres)*	Total forest area (in acres)**	Percentage of land in forest
Connecticut	3,098,880	1,711,749	55.2%
Maine	19,739,520	17,660,246	89.5%
Massachusetts	4,992,000	3,024,092	60.6%
New Hampshire	5,729,920	4,832,408	84.3%
Rhode Island	661,760	359,519	54.3%
Vermont	5,898,880	4,591,280	77.8%
TOTALS	40,120,960	32,179,294	80.2%

* US Census Bureau, State Area Measurements: 2010

** USDA/USFS Forest Inventory & Analysis (FIA); 2011

The percentage of forest cover hit a historic low in the late nineteenth century of around 55 percent when much of the landscape was cleared for farming (Foster, et al. 2010). At that time, Maine was the only New England state with the majority of its land base still in forest. As farmland was steadily abandoned through the first half of the twentieth century forest cover

increased throughout the region. In recent decades, that trend has begun to reverse with forest cover decreasing in all states as a result of expanded development.

2) **How Much of New England's Forest is Available for Timber Management?**

In considering the potential future forest management opportunities for New England, it is necessary to assess how much of the region's abundant forests are truly available for active management including timber harvesting. In answering this question, three factors are typically considered as follows:

- **Productivity:** As part of their Forest Inventory and Analysis (FIA), the US Forest Service sets a minimum productivity threshold for forest lands to be considered to be viable timberland as follows, "Forest land producing or capable of producing crops of industrial wood (more than 20 cubic feet (approximately ¼ cord) per acre per year." (USDA/USFS. 2011)
- **Lands withdrawn from timber production:** As presented in Table 2 below, lands in this category include both public and private lands which are subject to restrictions that prohibit or severely restrict the harvesting of trees and other activities that substantially modify the natural condition of the forest.
- **Parcels that are too small to be practically managed for timber production:** While certainly a topic open to debate, it is generally agreed that trying to sustainably and economically manage a woodlot less than 10 acres in size is typically infeasible due to the fact that the set up costs for a logging operation are generally too high unless the timber is large and exceptionally high quality.

Table 2. The potential working forest lands of New England (acres)

State	Total Forest*	Unproductive forest*	Forests which are withdrawn from timber management**	Parcels which are unworkably small*	Total forest land not generally available for timber management	Total forest land available for timber management	Percentage of forest land available for timber management
Connecticut	1,711,749	16,107	119,425	253,000	388,532	1,323,217	77.3%
Maine	17,660,246	174,566	770,800	396,000	1,341,366	16,318,880	92.4%
Massachusetts	3,024,092	45,164	188,651	562,000	795,815	2,228,277	73.7%
New Hampshire	4,832,408	35,369	603,215	222,000	860,584	3,971,824	82.2%
Rhode Island	359,519	2,100	31,172	98,000	131,272	228,247	63.5%
Vermont	4,591,280	17,541	260,681	190,000	468,222	4,123,058	89.8%
Region Total	32,179,294	290,847	1,973,944	1,721,000	3,985,791	28,193,503	87.6%

* USDA/USFS Forest Inventory & Analysis (FIA); 2011

** TNC Secured Lands of the Eastern United States – 2011 Version

For Maine: TNC Secured Lands of Maine - 2013 Version.

The acreage of lands withdrawn from timber management consists of two categories of lands; those which are permanently and legally restricted from timber management such as federal Wilderness Areas and those which have current restrictions and limitations that, if land management priorities were to significantly shift, could potentially be considered for forest management opportunities in the future. A good example of this is the White Mountain National Forest in New Hampshire and Maine. As indicated in the 2006 White Mountain National Forest Plan (see Table 3), only 138,570 acres (17 percent) of the 796,700-acre national forest is legally designated as wilderness or other classifications that permanently prohibit management timber harvesting. However, other administrative designations reduce the lands that are designated for timber production to 281,292 acres, just over one-third of the national forest. In the Green Mountain National Forest in Vermont, approximately 30% of the land base is designated for active timber management. Commercial forest management permitted as a secondary use on an additional 26% of the National Forest.

Looking New England-wide, of the almost two million acres considered to be in reserve status, just under half (47.5%) fall into the category of legal and permanent reserves, with the remaining reserve lands having somewhat less legal and permanent reserve status (The Nature Conservancy. 2013).

Table 3. White Mountain National Forest Plan, land allocations, 2006

Classification	Acres
Total National Forest System land	796,700
Non-forest and water	23,115
Legally withdrawn (Wilderness, Experimental Forests, Scenic Areas, RNAs)	138,570
Land not physically suited for timber production (low site index, regeneration not assured, etc.)	185,558
Inadequate inventory information (incomplete inventory)	21,189
Land not appropriate for timber production due to other resource management (campgrounds, AT, other unique areas, etc.)	147,709
Land suitable for timber management	281,292

3) How Much of New England’s Forest is Conserved?

Inherent in any effort to maximize the potential of New England’s forests is the need for conserving the forest land base so that it is not fragmented and converted to other uses. As used here, the term “conserved” means that the forest is under some form of public or non-profit conservation ownership or a permanent restriction that provides a high level of certainty that it will always remain as forest land. Many public and non-profit forest land conservation initiatives have been launched in New England states over the past two decades resulting in a major expansion of conserved lands. Keeping track of conserved lands in an accurate and consistent manner is a challenging enterprise. The primary source of data on conserved lands for this report was The Nature Conservancy’s GIS data base which provides consistent data across the six states utilizing the best available GIS data. An additional unique advantage of the TNC system is the fact that they have broken down conserved lands between those that are in a reserve (no-harvest

or severely restricted harvest) status and those which are available for multiple use. The TNC data base has its own limits, for example some conservation easements held by land trusts are not included due to confidentiality concerns. Where such limitations have been identified, the TNC data has been supplemented with other sources when possible..

Table 4 presents impressive figures on the level of forest land conservation which has occurred to date in the New England states. They encompass historic initiatives such as the passage of Weeks Act by Congress a century ago creating the White Mountain National to more recent endeavors such as the acquisition of landscape level working forest easements covering hundreds of thousands of acres in Northern New England.

Table 4. Conserved forest lands in New England (acres)

State	Federal lands	State lands	Land trust lands	Municipal and other conservation lands	Conservation easements held by public agencies	Conservation easements held by land trusts	Total
Connecticut	8,681	251,001	64,937	116,140	3,027	36,054	479,840
Maine	185,165	989,189	467,079	112,323	352,751	1,878,909	3,985,416
Massachusetts	58,124	334,332	128,731	334,332	124,937	80,345	1,060,801
New Hampshire	781,967	198,072	123,561	114,450	325,290	233,689	1,777,029
Rhode Island	2,175	56,752	18,052	25,707	19,681	9,919	132,286
Vermont	424,844	263,620	45,271	52,107	66,439	330,266	1,182,547
Regional Total	1,460,956	2,092,966	847,631	755,059	892,125	2,569,182	8,617,919

Sources: Primary source of data included in this table was The Nature Conservancy’s GIS data base: TNC Secured Lands of the Eastern United States – 2011 Version and for Maine: TNC Secured Lands of Maine - 2013 Version. TNC Information was supplemented by state SCORP reports and Land Trust Alliance Land Trust Census, 2010. See more detailed explanation of data and methodology at end of paper.

In total, over 8.6 million acres, over one-quarter of New England’s forests, are under some form of permanent protection by government agencies or non-profit organizations. Slightly more than 60% of the conserved forest lands have been protected by public agencies with the remainder conserved through the efforts of non-profit land trusts. Table 5 shows that permanent forest land conservation ranges from a low of 22.6% of all forest lands in Maine to a high of 36.8% in New Hampshire and Rhode Island. However, Maine, with its vast North Woods, leads all states in terms of conserved forest acreage accounting for almost half of the region’s protected forest. Table 5 also provides a breakdown of forest lands that have been permanently conserved through fee ownership versus conservation easements. Just about 60% are conserved as fee lands though acquisitions over the past two decades have tallied significantly more easement acreage than fee lands.

Table 5. Fee ownership of forest lands versus conservation easement

State	Total Forest	Acreage conserved in fee ownership	Percentage of forest conserved by fee ownership	Acreage conserved by conservation easement	Percentage of forest conserved by conservation easement	Total percentage of forest conserved
Connecticut	1,711,749	440,759	25.7%	39,081	2.3%	28.0%
Maine	17,660,246	1,753,756	9.9%	2,231,660	12.6%	22.6%
Massachusetts	3,024,092	855,519	28.3%	205,282	6.8%	35.1%
New Hampshire	4,832,408	1,218,050	25.2%	558,979	11.6%	36.8%
Rhode Island	359,519	102,686	28.6%	29,600	8.2%	36.8%
Vermont	4,591,280	785,842	17.1%	396,705	8.6%	25.8%
Region Total	32,179,294	5,156,612	16.0%	3,461,307	10.8%	26.8%

There is a great deal of both public and scientific discussion and debate over the appropriate balance between reserved lands which are largely managed to preserve natural processes and multiple use lands which allow for a range of management activities including timber production. Table 6 indicates substantial variation among the New England states when examining what proportion of their conserved forest lands are set aside as reserves. New Hampshire leads all New England states with over one-third of its conserved forest land in reserve status – largely a result of Wilderness Areas and other strictly regulated lands in the White Mountain National Forest. At the other end of the spectrum, both Maine and Massachusetts have less than one fifth of their conserved forest lands designated as reserves.

Reserves are created with a variety of methodologies and objectives. In some cases large reserves are created to provide remote recreation experiences and to allow natural ecological processes to function with minimal human intrusion. Smaller reserves are typically targeted to protect specific natural features such as important habitat, unique natural communities, geologic features, and scenic outdoor recreational areas. A vigorous discussion regarding how much of the New England landscape to set aside as reserves has been going on in both scientific and public policy circles for decades and continues today.

Table 6. Reserve versus multiple use forest land conservation

State	Total Forest	Forest acreage conserved as reserves*	Percentage of conserved forest land in reserves	Percentage of all forest conserved as reserves	Forest acreage conserved for multiple-use	Percentage of conserved forest land available for multiple-use	Percentage of total forest conserved for multiple-use
Connecticut	1,711,749	119,425	24.9%	7.0%	360,415	75.1%	21.1%
Maine	17,660,246	770,800	19.3%	4.4%	3,214,616	80.7%	18.2%
Massachusetts	3,024,092	188,651	17.8%	6.2%	872,150	82.2%	28.8%
New Hampshire	4,832,408	603,215	33.9%	12.5%	1,173,814	66.1%	24.3%
Rhode Island	359,519	31,172	23.6%	11.5%	101,114	76.4%	28.1%
Vermont	4,591,280	260,681	22.0%	5.7%	921,866	78.0%	20.1%
Region total	32,179,294	1,973,944	22.9%	6.1%	6,643,975	77.1%	20.6%

* Source of data for reserve land derived from The Nature Conservancy’s GIS data base: TNC Secured Lands of the Eastern United States – 2011 Version and for Maine: TNC Secured Lands of Maine - 2013 Version utilizing the total GAP Code #1 and #2 lands. Total acreage of reserved lands could be higher due to lands not included in TNC data base.

In addition to those forest lands under some form of permanent protection, there is substantial forest acreage around New England which, while not permanently conserved, does possess some level of protection -- most notably forest lands enrolled in state current use tax programs. Across the region, almost 60% of private forest lands are enrolled in tree growth or open space tax programs which tax the land at its current use value in exchange for a commitment to keep the land undeveloped (see Table 7). Penalties are imposed if the land is withdrawn from the programs. Every state has different eligibility requirements, with most requiring some form of forest management plan for tree growth tax programs. Other semi-protected forest lands include:

- Watershed lands owned by local and regional water districts for water supply protection (some have permanent covenants, some do not) – in Connecticut, water utilities own over 100,00 acres of forest land, about 20% of the watersheds encompassing public drinking water supplies;
- University forests such as the Dartmouth Forest (27,000 acres), Yale Forests (10,880 acres) and Harvard Forest (3,600 acres);
- Large military facilities like the Naval Survival School facility near Rangeley, Maine (12,500 acres);
- Tribal lands, most notably in Maine where the Penobscot Indian Nation and Passamaquoddy Tribe land holdings consist of about 232,000 acres of reservation, trust and fee lands, and smaller holdings by tribes in other New England states.

Table 7. Forest lands enrolled in state current use tax programs

State	Total forest acreage in private ownership*	Acres of forest enrolled in current use tax programs**	Percentage of private forest land enrolled in current use tax programs**
Connecticut	1,335,927	451,123	33.8%
Maine	16,373,569	11,098,479	67.8%
Massachusetts	2,297,304	291,600	12.7%
New Hampshire	3,737,919	2,598,531	69.5%
Rhode Island	274,885	33,548	12.2%
Vermont	3,850,709	1,750,000	45.4%
Regional Total	27,870,313	16,223,281	58.2%

* From combination of USDA/USFS FIA data and The Nature Conservancy GIS data base

** Includes both tree growth and open space current use tax programs. Data obtained from state agencies for most recent year available data. In some states, state totals are derived from municipal reports which are not always complete so totals may be under-reported. Lands under conservation easements are often enrolled in current use programs and are counted here.

B. Relevant Trends in Forest Land Conservation

1) Land conservation is high priority for New England states

There is plenty of data to substantiate that land conservation in general, and forest land conservation in particular, is a high priority for New England states. In particular, the last 15 years have shown tremendous investment in land and conservation easement acquisitions across the region as indicated in Table 8. Over one and a half billion dollars of public funding were allocated to purchase fee interest and conservation easements on over one and a half million acres (Trust for Public Land, 2013).

Table 8. Public investment in land conservation acquisitions since 1998

State	Period covered	Public dollars spent on land conservation	Acres conserved with public funding
Connecticut	1998-2008	\$471,355,726	75,333
Maine*	1998-2008	\$175,156,971	1,097,995
Massachusetts	1998-2011	\$677,457,274	147,753
New Hampshire	1998-2011	\$167,289,460	120,735
Rhode Island**	1998-2005	\$35,110,545	11,758
Vermont	1998-2005	\$48,869,072	93,666
Total		\$1,575,239,048	1,547,240

Source: Trust for Public Land - Conservation Almanac Database
www.conservationalmanac.org/secure/almanac/index.shtml

Public support for land conservation is routinely tested and measured at the ballot box when local and state bond issues are proposed to fund land acquisition programs. As indicated in Table 9, these measures overall have fared quite well both through up and down economic times. According to data collected by the Trust for Public Land since 1988, almost three-quarters of land conservation ballot issues have passed raising over 1.2 billion dollars.

Table 9. Results of state and local land conservation ballot measures since 1988

State	Number of ballot measures	Number of ballot measures approved	Conservation funds at stake	Conservation funds approved
Connecticut	102	90	\$279,932,050	\$257,788,050
Maine	19	17	\$115,150,000	\$109,150,000
Massachusetts	301	190	\$1,006,558,154	\$556,812,631
New Hampshire*	N/A	N/A	N/A	N/A
Rhode Island	60	58	\$326,222,760	\$318,777,760
Vermont	2	2	\$3,800,000	\$3,800,000
Total	484	357	\$1,731,662,964	\$1,246,328,441

* New Hampshire does not allow for statewide bond issues. Local bond information is not available on LandVote database.

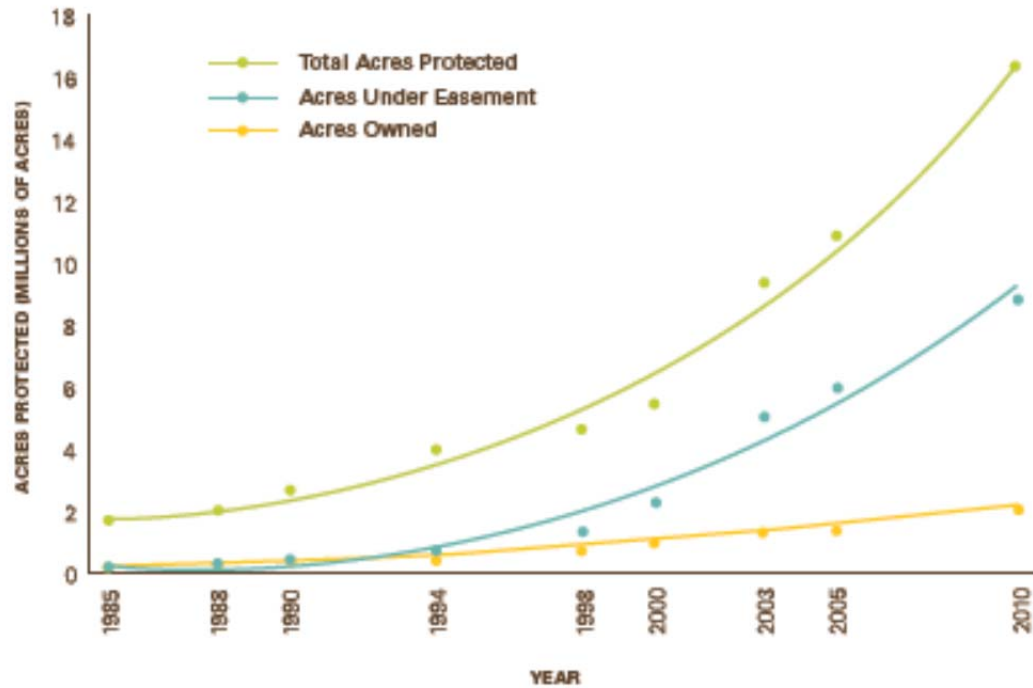
Source: Trust for Public Land - LandVote Database
<https://tpl.quickbase.com/db/bbqna2qct?a=dbpage&pageID=10>

2) Non-Profit Land Trusts Leading the Way

Historically, federal and state governments led the way on land conservation initiatives through creation of federal units such as the White Mountain and Green Mountain National Forests or systems of state parks and forests. However, beginning in the 1990's, the fledging land trust movement began to seize the initiative and become equal partners with their public partners in land conservation. Private philanthropic investment in land conservation increased to rival, and in some cases surpass, the investment of public dollars. For example, in 2001, the New England Forestry Foundation purchased the largest conservation easement in US history, encompassing over three-quarter of a million acres of forest land in Maine owned by the Pingree family, for \$28 million raised entirely from private sources including forty-four foundations and more than one thousand individuals.

Figure 1. Private land conservation by state and local land trusts

Private Land Conservation by State and Local Land Trusts

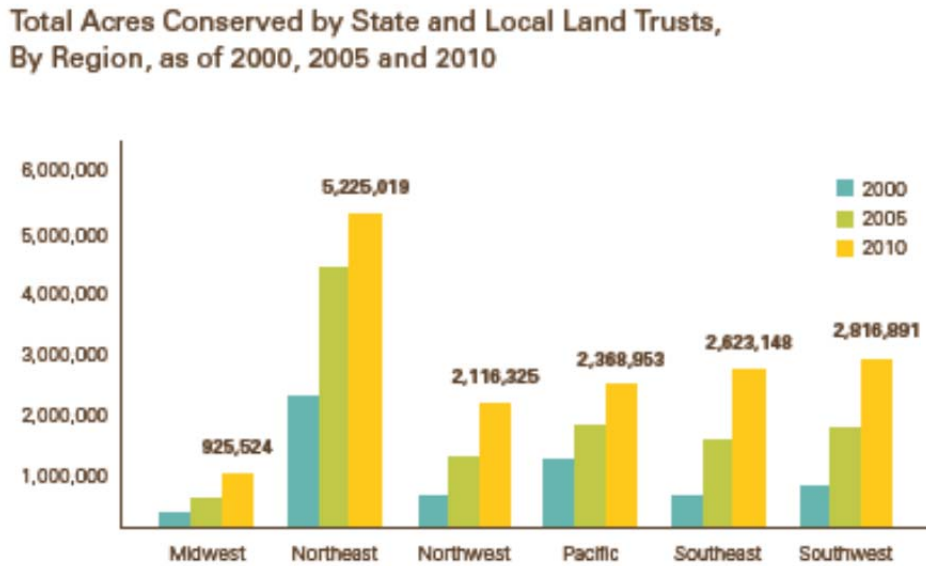


For state and local land trusts, acres protected by conservation easements account for 55% of all land conserved, while 13% of total land saved is owned by land trusts.

Source: Land Trust Alliance. 2010 Land Trust Census

Figure 1 illustrates the dramatic growth in state and local land trust activity nationwide over the past two decades, a trend line that shows no evidence of tailing off. Figure 2 demonstrates that the Northeast, and New England in particular, is leading the way.

Figure 2. Total acres conserved by state and local land trusts, by region, as of 2000, 2005 and 2010



Source: Land Trust Alliance. 2010 Land Trust Census.

3) Federal Land Conservation Program Still Important, but Challenging

Federal funding continues to be a mainstay for land conservation efforts, though unpredictable and unreliable as indicated

Federal funding continues to be a mainstay for land conservation efforts, though unpredictable and unreliable as indicated in Figure 3 which shows annual funding from 1965 – 2007 for the Land & Water Conservation Fund, the primary source of federal land acquisition funds. Earlier in this period, the federal government provided substantial funding to states for land conservation, but in recent years these programs have shrunk substantially.

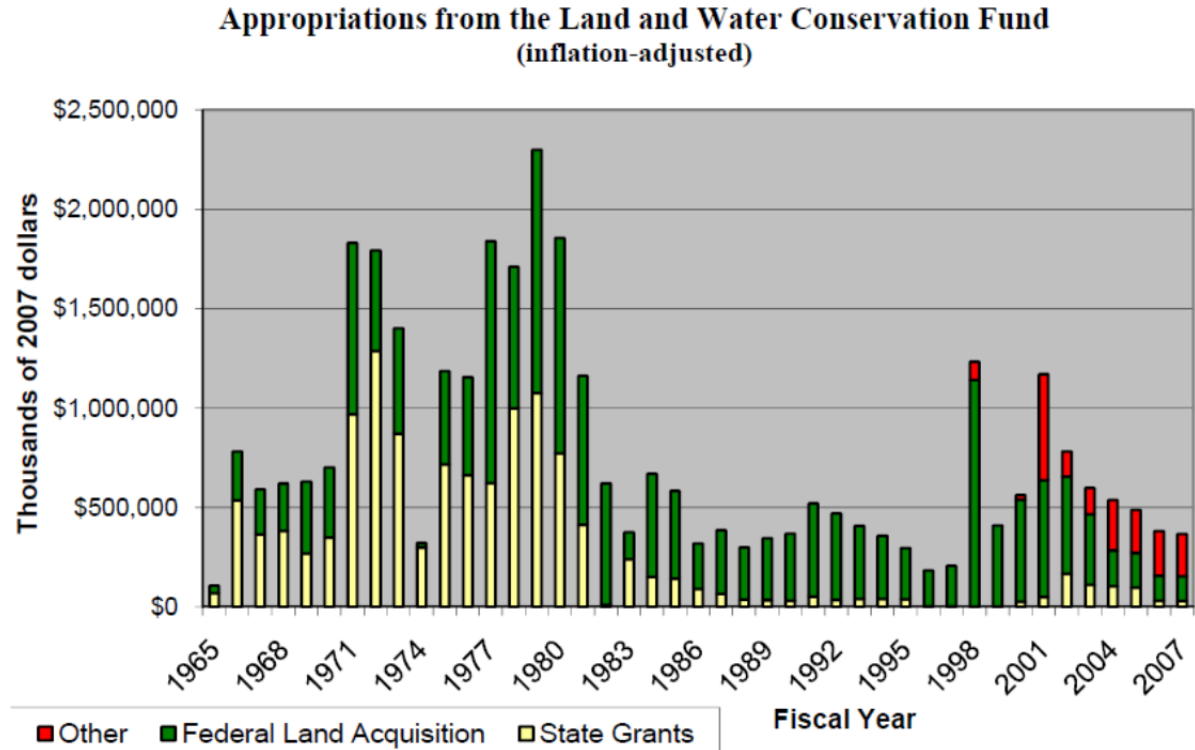
Other trends in federal land conservation funding include the following:

- Land conservation funding has increasingly been dispersed or created in a variety of federal programs including transportation, agriculture, defense, urban development and other programs.
- Like many other facets of the federal government, land conservation funding has gotten caught up in partisan debates and budgetary wrangling.
- The administrative requirements of federal land acquisition create substantial challenges to negotiating land conservation agreements with landowners and often necessitate the

involvement of experienced non-profit land conservation organizations to steer a project through the process.

- Increasingly, land conservation projects match or supplement federal funding with equal or greater amounts of state and private funding.

Figure 3. Appropriations from the Land and Water Conservation Fund



Source: Federal Funding for Conservation and Recreation: The Land and Water Conservation Fund. Walls. 2009.

C. Conclusions

New Englanders are passionate about the natural beauty and character of their communities and surrounding environs. This is reflected by a long history of stewardship of the region’s natural resources most notably its more than thirty-two million acres of forests. Unlike the western US, where the federal government owns vast expanses of land, New England’s forests remain largely in private ownership and are deeply integrated in the everyday lives of its residents, the local economy and opportunities for outdoor recreation.

The information provided in this report clearly demonstrates that the New England states have actively and successfully pursued conservation of forest lands both as working forests and as preserves. The emergence of the land trust movement over the past 40 years has provided grassroots energy and leadership to lead this effort in partnership with local, state and federal governments. Even in these days of scarce financial resources, forest conservation initiatives

remain strong. The task ahead is formidable as only about one in four acres of New England's forests has been permanently protected. To fully realize the potential for New England's forest for forest products, jobs, clean water, wildlife, and recreation will require continued conservation efforts to keep New England's forest as forests and to manage forest resources, both on public and private lands, in a sustainable and responsible manner.

D. References

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E. Description of Methodology and Data used for Conserved Lands Analysis

The primary source of data included in Table 4 was The Nature Conservancy's GIS data base: TNC Secured Lands of the Eastern United States – 2011 Version and for Maine: TNC Secured Lands of Maine - 2013 Version. This source was selected because: 1) it utilizes the best available GIS data from each state; 2) it provides a consistent system of analysis across the New England states; and 3) it utilizes a GAP analysis to determine the level of protection for each conserved parcel allowing for a determination of those forest parcels in a “reserve” status (no timber harvesting). To the greatest extent possible, efforts were made to extract out non-forest conserved lands. For example, TNC applied a land cover analysis to agricultural easements to determine what acreage under agricultural easements were farm woodlots not fields or pasture.

However, every data base, including TNC's, has its limitations, and efforts were taken to identify alternative data sources for those areas. In particular, GIS data bases (both TNC's and state data bases) are deficient in their coverage of municipal conservation lands (many haven't been mapped and entered into GIS systems) and conservation easements held by land trusts (due to confidentiality concerns for the private landowners). To address this, reliable non-GIS data sources were identified, most notably: 1) the Statewide Comprehensive Outdoor Recreation Plans (SCORP) prepared by each state for submission to the US Department of Interior under the Land and Water Conservation Fund program; and 2) the 2010 Land Trust Census prepared by the Land Trust Alliance based upon data submitted by the nation's land trusts. In those instances where these alternative sources indicated a higher number of conserved acres, these higher figures were utilized in the table.