CONSERVING THE COMMON WEALTH – THE FORESTS OF MASSACHUSETTS IN THE 21ST CENTURY

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The forests of Massachusetts are a vital source of our common wealth. Clean water, clean air, wildlife and biological diversity, forest products ranging from fine hardwoods to maple syrup, recreational opportunities for people of all ages, incomes, and interests, and a diverse, beautiful landscape are all derived from the forests of Massachusetts. The annual value of these goods and services has been conservatively estimated at $5,000 to $10,000 per acre. This is a familiar litany for people whose life and work is directly connected to the forest …but what about the other 6,000,000 or more residents of Massachusetts? Do they exhibit a clear understanding and awareness of these benefits and values? Do individual, corporate, and community actions show that we value forests? Unfortunately, the answer to these questions is no.

The lack of awareness and understanding of forest benefits and values is significant because, at least in the United States, when coupled with population growth (and increased demand for natural resources) it leads directly to the loss of forests. It also generates new environmental problems and economic liabilities. In Massachusetts, and throughout the U.S., we are unknowingly squandering our inheritance and our children's legacy…one building lot at a time (Stein et al. 2005).

The loss of forests has far-reaching implications. For example, when the conversion of forests to residential and commercial use in a municipal watershed causes nonpoint source pollution and water quality degradation, the inevitable increase in water treatment costs siphons financial resources away from schools, health care, public safety, and other essential services. Even with enhanced water treatment, the chronic degradation of source water quality may still threaten public health (e.g., disinfection by-products, chlorine resistant pathogens, etc.)

If people knew that their faucet was connected to a forest and, as a result, their health was connected to forest health, would they support forest conservation? The answer is a resounding yes. A long-term survey by the Trust for Public Land and the Land Trust Alliance has tracked the frequency and success of land conservation ballot measures across the U.S. (Table 1). Interviews, surveys, and focus groups show that maintaining or enhancing water quality, wildlife habitat, and recreational opportunities strongly motivate individuals and communities to conserve forests, wetlands, farms, and other open space.

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Table 1: A summary of public support for conservation finance ballot measures in the U.S. (43 of 50 states). Source: www.tpl.org

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Ballot Measures</th>
<th>Number of Ballot Measures Passed</th>
<th>Total Funds Approved ($Billions)</th>
<th>Land Conservation Funds Approved ($Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>85</td>
<td>68 (80%)</td>
<td>$5.3</td>
<td>$1.1</td>
</tr>
<tr>
<td>1997</td>
<td>70</td>
<td>58 (83%)</td>
<td>$2.4</td>
<td>$.6</td>
</tr>
<tr>
<td>1998</td>
<td>192</td>
<td>145 (76%)</td>
<td>$7.4</td>
<td>$6.5</td>
</tr>
<tr>
<td>1999</td>
<td>104</td>
<td>94 (90%)</td>
<td>$2.5</td>
<td>$2.2</td>
</tr>
<tr>
<td>2000</td>
<td>210</td>
<td>176 (84%)</td>
<td>$11.7</td>
<td>$4.4</td>
</tr>
<tr>
<td>2001</td>
<td>198</td>
<td>138 (70%)</td>
<td>$1.9</td>
<td>$1.6</td>
</tr>
<tr>
<td>2002</td>
<td>190</td>
<td>140 (74%)</td>
<td>$8.7</td>
<td>$5.4</td>
</tr>
<tr>
<td>2003</td>
<td>133</td>
<td>99 (74%)</td>
<td>$1.7</td>
<td>$1.2</td>
</tr>
<tr>
<td>2004</td>
<td>218</td>
<td>163 (75%)</td>
<td>$26.2</td>
<td>$4.1</td>
</tr>
<tr>
<td>TOTALS:</td>
<td>1,400</td>
<td>1,081 (77%)</td>
<td>$67.8</td>
<td>$27.3</td>
</tr>
</tbody>
</table>

Is the lack of awareness of the forest values and benefits by the public and political leaders a new problem or phenomenon? Of course not. In 1949, Aldo Leopold wrote…

"Despite nearly a century of propaganda, conservation still proceeds at a snail's pace; progress still largely consists of letterhead pieties and convention oratory. On the back forty we still slip two steps backward for each forward stride. The usual answer to this dilemma is 'more conservation education.' No one will debate this, but is it certain that only the volume of education needs stepping up? Is something lacking in the content as well?"

As a corollary to Leopold's frustration and concerns, James Schlesinger, the first energy secretary, said of Americans in 1977 ..."We have only two modes—complacency and panic."

The Massachusetts Forestry Committee has an opportunity [responsibility] to favorably influence the volume, the content, and the effectiveness of the forest conservation message. In addition to our discussions about forest sustainability, management and regulatory issues (e.g., high grading, forester licensing, outreach to private landowners, etc.), I believe that we should address the issue that trumps all others – forest conversion. As Lloyd Irland puts it …"What good is sustainability without a forest?"

In 1963, President Kennedy wrote of the need to "... foster a critical sense of what is permanent and meaningful amid the mass of superficial and transient questions which make up the day-to-day clamor." We have an opportunity to build on many recent efforts to raise awareness, propose alternatives, and generate debate (e.g., Irland 1999; Steele 1999; Foster et al.
The Massachusetts Executive Office of Environmental Affairs (EOEA) has engaged communities across the state in master planning, build-out analyses, historic preservation, watershed protection, and other activities that focus attention on forest conservation.

A cursory study of history shows that by the time a community or society reaches "panic mode" the reliable and cost-effective alternatives are no longer available. The Massachusetts Forestry Committee should think strategically about how we can clear away the fog of complacency and enhance the awareness and understanding of the true cost of forest loss. Federal (Congressional delegations, EPA, etc.), State (Senators, Legislators, Departments of Public Health, Environmental Protection, Economic Development, Tourism, etc.) and local officials (e.g., Planning and Zoning, Inland Wetlands, and Conservation Commissions) are especially important audiences. As table 1 shows, at least indirectly, the way to the average American's heart and mind is through their wallet, at least as far as the essential, long-term benefits of forest conservation are concerned. When it becomes clear that forests are an irreplaceable asset and forest conservation is a "pennies on the dollar" investment by comparison with increased cost of public services, loss of other revenue, and reduced quality of life—individuals and communities will act.

Those who do not know their history …

When George Perkins Marsh published his seminal book, "Man and Nature" in 1864, it became "the wellspring of the Conservation Movement" (Lowenthal 2003). It took decades, however, before concerted efforts at forest conservation began in the early-1900s. In the late-1800s and early-1900s, the connection between deforestation, exploitive logging, and other uses that the land could not support—let alone sustain—was made painfully clear by fires, floods, droughts, sedimentation, the extirpation of fish and wildlife, and a blighted landscape. The fledgling profession of forestry was charged with the restoration and renewal of the landscape. The results of changes in policy and practice were nothing short of spectacular. Farm abandonment and the natural regeneration of forests contributed to the rapid and dramatic restoration of forest cover (Figure 1) (Foster and O'Keefe 2000).

Note that forest cover in Massachusetts peaked in about 1970 and, once again, began to decline. But, in comparison to conditions in the early-1900s, is the rate of forest loss in Massachusetts in 2005 really that bad? If so, why isn't this perception or opinion more commonly held? I believe that there are several, inter-related reasons. First, the subtle, widely scattered nature of forest conversion (one house lot at a time) makes the problem much more difficult to discern than the battered cutover land and eroding farm fields of the early-1900s. The process is gradual and, therefore, less obvious and jarring. Second, forests are often replaced by lawns with ornamental trees and shrubs leaving many people to suppose that conditions have been "improved" [sic]. Third, the nature of this ecological disturbance is chronic not acute. Years of incremental change are required to generate obvious problems and by then we have largely forgotten what the undisturbed reference condition was like. Our intuitive sense of a "normal" or equilibrium condition has been slowly lost along with the forest. We dutifully treat the symptoms—degraded water quality, unstable stream channels, invasive plants, nuisance wildlife—but largely fail to avoid the root causes on the forest land that remains.
It may be difficult to appreciate the cumulative effect of forest conversion over short periods of time and at small spatial scales yet the overall patterns and trends—as well as the ecological and economic consequences—are irrefutable. It is safe to say that a long absence from Massachusetts, a graph of forest cover versus time (Figure 1), or a time series of maps showing forest land and developed areas from ~1950 to 2005 would yield a very different reaction from the same thoughtful person than a forest loss on a few new building lots in their town. As Marsh observed in 1847, "Every middle-aged man who revisits his birthplace after a few years absence looks upon another landscape than that which formed the theatre of his youthful toils and pleasures."2 Ironically, the success of our predecessors in forest conservation, the natural increase in the physical stature of trees and forests, and the importation of most of the natural resources (e.g., ~95% of the forest products) that we consume has generated what Berlick, Kittredge, and Foster (2002) have aptly called "the illusion of preservation."

Census data for Massachusetts clearly shows where we are headed without changes in our values and attitudes about forests (Figure 2). Note the [still] increasing proportion of "rural" residents after 1940. I have intentionally selected the color green to represent urban residents and red to represent rural residents, contrary to the usual conventions on maps and charts. In a 2004 New Yorker article, entitled “Green Manhattan: Why New York is the Greenest City in the U.S.”, David Owen makes a convincing and thought-provoking case for his deliberately provocative title. He argues that, instead of being represented as red, blighted areas on maps, it should be appreciated that densely populated urban areas help society to avoid sprawl, forest conversion, increased per capita energy use, and all their unwanted byproducts (water and air pollution, habitat destruction, loss of recreational opportunities, the visual blight of strip

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2 Address delivered before the Agricultural Society of Rutland County, September 30, 1847 (Rutland, Vermont, 1848), page 18.
development, etc.). By rights, urban areas should be shown in green on maps while red should be reserved for the land on the sprawl frontier where forests are being converted to other uses.

![Population of Massachusetts, 1630-2000, with projections to 2025. Sources: US Census Bureau (http://www.census.gov/population/censusdata/urpop0090.txt) (1900-1990, 2000, 2025 projection) and Harvard Forest Data Archive, HF013, David Foster, 2005 (1630-1900).](image)

The rate and spatial pattern of forest conversion—about 40 acres per day—has been well-documented and described in Massachusetts by Steele (1999), Alerich (2000), and Foster and others (2005). The same thing is happening all over the U.S. (Stein et al. 2005)—in many places at a truly alarming rate. To make matters worse, agricultural land is suffering the same fate as forest land. Aldo Leopold (1949: 225)³ saw the beginning of this trend at the outset of the post-World War II building boom when he wrote the following.

"By and large, our present problem is one of attitudes and implements. We are remodeling the Alhambra with a steam-shovel, and we are proud of the yardage. We shall hardly relinquish the shovel, which after all has many good points, but we are in need of gentler and more objective criteria for its successful use."

We all need a place to live and work and we all should have access to community services, community groups, and recreational opportunities. But, as Leopold suggested, we need to find different ways to meet these basic needs—means and methods that maintain ecological integrity of the land and natural resources upon which we all depend.

The average 100 acre forest parcel in Massachusetts, once offered for sale, is likely to be subdivided into 20 or 30 building lots (what Steele [1999] referred to as "sprawl zoning"). As a

³ This was the last paragraph in Leopold's seminal essay …"The Land Ethic"
result, 20 or 30 clearings, driveways, and lawns (festooned with Norway maple), often created with substantial excavation and filling, leave only small remnants or fragments of forest. Would it be possible to (a) cluster 30 housing units in 2 or 3 groups, (b) reduce the forest conversion and earthwork to less than 30 acres, and (c) leave the other 70 (or more) acres intact? Ian McHarg (1967) described this approach almost 40 years ago in "Design with Nature". Construction and maintenance costs are invariably lower. Now, what if adjacent parcels were developed in the same way when needed to accommodate a growing population? Finally, what if the conservation areas were deliberately connected in order to retain forested areas that were 100s of acres in extent? Clearly, the same "implements" coupled with different attitudes could produce greatly improved results yet simply arguing that "more forest is better than less forest" has not generated much attention or change in the status quo.

Where is the tipping point?

Combining the forest area and population data produces a sobering picture of current and future conditions (Figure 3). It begs the question ..."Where is the threshold or lower boundary condition?" In other words ..."When will the loss of forests reach a point when the forest that remains is no longer able to sustain us [in the manner to which we have become accustomed]?"

Obviously, there is no pat answer to these questions, but 0.4 forest acres per capita (132' x 132') is not very comforting. One could argue that forest cover and population density vary widely across the Commonwealth (e.g., Boston versus the Berkshires) so the 0.4 acres of forest per capita is a skewed statistic. But, whether it's really 10 or 1 or 0.1 acres would any reasonable person confidently assert that the downward trend is not problematic? Does Massachusetts have all the forest it will ever need? Have we considered what the long-term (and recurring) replacement cost of forest functions like water filtration and air pollution mitigation will be in comparison to timely investment in forest conservation and improved planning and zoning?

![Figure 3](image_url)

**Figure 3** – Changes in per capita forest area (acres) in Massachusetts, 1790-present, with a projection to 2025. Sources: US Census Bureau and Harvard Forest Data Archive, HF013, David Foster, 2005.
In his introduction to the 1965 reprint edition of "Man and Nature", Marsh's biographer, David Lowenthal wrote…

"Anyone wielding a hoe or an ax knows what he is doing, but before Marsh no one had assessed the cumulative effect of all axes and hoes. For him the conclusion was inescapable. Man depends upon soil, water, plants, and animals. But in obtaining them he unwittingly destroys the supporting fabric of nature. Therefore man must learn to understand his environment and how he affects it. For his own sake, not for nature's alone, man must restore and maintain it as long as he tenants the earth."

In 2005 and beyond, the Massachusetts Forestry Committee should meet its charge within the Forest Cutting Practices Act (Chapter 132) and take an active leadership role in forest conservation for the Commonwealth. Our work should help our fellow citizens to recognize the net effect of all 21st century HydroAxes™ and backhoes and the costs and consequences of failing to see the forest for just the trees.

References

The Commonwealth is one of the world’s oldest political associations of states. Its roots go back to the British Empire, when countries around the world were ruled by Britain. The early Commonwealth Over time different countries of the British Empire gained different levels of freedom from Britain. Semi-independent countries were called Dominions. Leaders of the Dominions. St Kitts and Nevis joins the Commonwealth. Commonwealth Heads of Government Meeting, New Delhi, India. 23-29 November 1983. 21-25 October 1993. The Victoria Falls Declaration. South Africa rejoins the Commonwealth. The Commonwealth grants small countries greater access to network, and to raise matters of concern with their more influential fellow members. As news website reader Mohammed al-Sharif from Sanaa says: “Yemen needs a lot of help. We have been through a civil war and we have economic problems. We have so many hopes that our president will lead us to a better future. But we cannot do anything without outside help.” The fact that there is a lot of interest in the Commonwealth indicates that it really is the club of the 21st Century. “There is something that the Commonwealth has been doing right. “The Arab Spring was all about the hope that the whole region could live by the values the Commonwealth has been espousing for so long.” Image via Congress for the New Urbanism. The principles of New Urbanism were first created in the 1980s as an alternative to the suburban sprawl that was characterized by low-density zoning, and single-use buildings and homes that had become popular after the end of World War II. Underscored by the desire to make cities more walkable and remove the dependence upon cars, New Urbanism reflects on historical precedents and seeks to return to a more traditional planning strategy as seen in places like Charleston, South Carolina, and Georgetown in Washington, D.C. Beyond the pedestrian-friendly zone 21st-Century Forest Cover Change. M. C. Hansen, 1. Subtropical forests resulted in the highest rates of forest change globally. Boreal forest loss due largely to fire and forestry was second to that in the tropics in absolute and proportional terms. These results depict a globally consistent and locally relevant record of forest change. Changes in forest cover affect the delivery of important ecosystem services, including biodiversity richness, climate regulation.