

FINAL DRAFT

The Commonwealth of Massachusetts

REPORT
of the
SPECIAL COMMISSION
on
FOREST MANAGEMENT PRACTICES

Insert Date

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To the Honorable Senate and House of Representatives:

We, the undersigned members of the Special Commission on Forest Management Practices (as established by Section 341 of the Acts of 1995, and most recently revived and continued for one year under Chapter 194 of the Acts of 1998), hereby file this report containing the findings and recommendations of our study to date, as well as our works in progress, and a description of our future activities.

Senator Stephen M. Brewer, *Senate Chairman*

Senator Andrea Nuciforo

Representative Stephen Kulik

Warren E. Archey, Chief Forester,

Department of Environmental Management

David B. Kittredge, Extension Forester,
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Walter F. Hubbard, President
Hubbard Forest Industries, Inc.

Keith Ross, Director of Land Protection,
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Robey Hubley, Legislative Director,
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INTRODUCTION

As the millenium draws to a close, we are provided with the opportunity to reflect upon our past accomplishments, our successes, and even our failures. For many, the turn of the century marks the dawn of a new era; a chance for new beginnings. In this atmosphere of reflection and anticipation, the publication earlier this year of *Stepping Back to Look Forward: A History of the Massachusetts Forest* (Charles H.W. Foster, Editor) proved to be quite timely, for not only did its pages contain an account of our forest's past, but more importantly, an opportunity to shape our forest's future.

The Special Commission on Forest Management Practices' hearing held at Mount Wachusett Community College on May 21, 1999 was met with great anticipation as David Foster and Charles H.W. Foster presented their follow-up report to *Stepping Back - Thinking in Forest Time: A Strategy for the Massachusetts Forest*. Within the report we find the transformation of the events presented in *Stepping Back to Look Forward* into the framework of ideas for a comprehensive forest management plan for the next millenium.

Now is the time for the state to take an active role in shaping the destiny of one of our most abundant and precious resources. The state's commitment to the exploration and development of the propositions laid forth in *Thinking In Forest Time* is paramount if we seriously intend to create a novel, holistic approach to our forests. Only through the wise management of both state and public forestland can we maximize the potential of this resource.

As the Chairman of the Special Commission on Forest Management Practices, I am excited by the prospect of helping to create a Massachusetts in which there exists a heightened awareness of our forest and its potential within the ranks of state and local government, and our private citizenry. I welcome the opportunity for the Special Commission to take a proactive role in shaping legislation, policy, and attitudes. There is

much work to be done and a long road ahead, but the time is right to begin *Thinking in Forest Time*.

Senator Stephen M. Brewer

Chairman, Special Commission on Forest Management Practices

September, 1999

SOME KEY OBSERVATIONS AND CONCLUSIONS

- Massachusetts' forests are a constantly renewable resource
- Massachusetts is more forested now than it was a century ago
- Our forests, however, are not in good shape in terms of value
- Some Massachusetts forests pose severe fire threats because of neglect
- Like backyard gardens, forests must be "weeded" to produce excellent "crops"
- It costs money to cull and thin forests to maximize growth and value
- The role of forest stewardship must be reinvented and reinvigorated
- One way to pay for forest management is to find markets for lesser valued wood
- Wood products must be developed that utilize this lesser valued wood
- "Masswood" or "Green Certification" could increase the product value
- Sale of wood used in making these products will help finance forest management
- Massachusetts has no up-to-date inventory of its forests, public and private
- We must project ahead to ascertain the maximum potential of our forests
- Forests are not neat and ignore artificial, manmade property lines
- Forests outlive their owners, many, many times over
- Management of our forests requires a "large view" approach
- "Timber banking" like Open Space "land banking" should be studied
- The twin goals of timber production and the encouragement of bio-diversity must not be disconnected; they are interrelated and not mutually exclusive
- An adequate revenue stream for forest management must be developed
- A template for futuristic thinking is mapped out in *Thinking in Forest Time*
- Our planning for the next century should be done by *Thinking in Forest Time*

A COLLOQUY ON MASSACHUSETTS' FORESTS

An Ongoing Process of Forest Progress

When the members of the Special Commission on Forest Management Practices met at Mount Wachusett Community College in Gardner on May 21, 1999, they were continuing a process begun in 1994 aimed at improving the health and value of Massachusetts' forests.

Some of the earliest discussions were focused on how to assist Massachusetts' forest production based business in improving the value of their sales.

There soon developed a circularity to the issue, improving both private and public forests, and a whole range of forest issues -- from timber production to recreation to water quality protection.

Even preliminary studies showed interesting paradoxes.

Although a heavily populated state in per capita residents per mile, Massachusetts had more acres forested in the 1990's than were in forests a century ago. Best measurements now indicate that about three million acres of forests (private and public) exist in Massachusetts.

Massachusetts' net-forested area has continued to grow despite increasing pressure from new home construction and shopping areas. One of the reasons for the net growth has been the continuing abandonment of land from farms to forests.

Although many of these "forests" are small, fragmented and really not much more than "woods." Our forests, in their totality, represent a vast, renewable economic as well as environmental resource.

Forests Need to be Used

Paradoxically, forests must be used, culled, cut and harvested to enable them to thrive.

For better or for worse, a great deal of Massachusetts' environmentally friendly activities are aimed at "preservation" of lands and wildlife as is. It is often considered anathema to "work" or to "use" or to "manage" natural resources. Thinning our state's exploding deer population -- for the benefit of the surviving deer as well as farmers and homeowners -- is an example of where emotion often confronts rational planning. The exponential growth of a weed (Purple Loosestrife) and of a long time bird resident (Canada Geese) are causing a problem with balanced species representation in wetlands on one hand, and a public health and recreational nuisance on the other. But efforts at control are often halted when emotional rhetoric is invoked.

As Foster & Foster point out in *Thinking Forest Time*, "To the average citizen, the prospect of harvesting trees triggers instant environmental concern notwithstanding the fact that carefully managed forests tend to provide more uses, values and benefits than those lacking responsible stewardship actions." (*Thinking In Forest Time*, p. 9. Emphasis by Commission)

People who whose views of forest conservation are limited to, for example, the worthy preservation of "old growth" forest parcels sometime fail to acknowledge that managing millions of acres of forests will necessarily mean the cutting and harvesting of trees, the construction of interior service roads, and similar "destructive" steps.

The problem with simply saving and not managing forests, Foster & Foster conclude, "has been a Massachusetts landscape in which forest is *quantitatively abundant but qualitatively deficient*." (*Thinking ...*, p. 9. Emphasis by Commission)

The Cost of Improving Our Forest

While we cannot afford NOT to save our forests, we might also not be able to afford TO save them unless we make the forests more valuable and a source of self-sustaining reinvestment income.

As noted in previous reports by this Commission, there is a need to remove low value wood or substandard wood from our forests to enable the healthier parts of the forest to thrive. It costs money to remove this wood. Thus, an economic incentive must be developed to "finance" the removal of inferior, lower quality wood by creating profit-making markets.

A natural impetus for creating a profit-incentive has come for years from within the state's private loggers, forest product companies, and wood industries. For a variety of reasons their efforts (especially when they act individually) have not been enough to solve the market problem.

Creating a Profitable Market

A whole new push toward creating a profitable market for existing, and to-be-developed wood products, has been centered by the Governor and the Legislature at Mount Wachusett Community College (MWCC), in its Forest and Wood Products Institute.

The impetus for the creation of the Wood Products Institute came as a result of the earliest meetings of this Commission. The Institute was launched in 1996.

In testimony before the Commission in May 21, 1999, Joseph Smith, the Associate Director of the Institute, explained that the Institute's mission consisted of "promoting the effective stewardship of the Commonwealth's forests; assisting private enterprise in the marketing of forest products; providing education in the skills and technologies relevant

to the forest products industry; and promoting public awareness that addresses the issue of the balance of forest management and utilization as a means of sustaining forest resources."

The market-creating efforts of the Institute -- vital to producing the profit incentive needed to clear under-utilized wood from forests -- includes five major initiatives.

1. **Creation of a Massachusetts Natural Resources Cooperative** -- a Greenfield co-op serving 76 member companies and individuals including sawmills, foresters, loggers, truckers, and friends of the forest. Begun in 1997, the Co-op is already in the black. It is working to create new markets for Massachusetts' wood products such as sawmill chips (as colored landscape mulch), hardwood and softwood pulpwood, red pine poles, and red pine stud wood.
2. **Wood/Plastics Composites** -- Utilizing a grant from the Chelsea Center (at the University of Massachusetts), the Institute is working with local Central Massachusetts plastics manufacturers to develop composite products utilizing recycled plastics and wood.
3. **Biomass Energy** -- Working with the Massachusetts Department of Environmental Management (DEM), the Institute is actively encouraging the development and use of state-of-the-art, wood-based biomass energy systems. These heat and electricity producing plants would be fueled with environmentally safe wood wastes and residues, as well as abundant low-valued woods in our forests. Several systems are now in use, and a major pilot plant is being sought for MWCC.
4. **Wood In Transportation** -- In cooperation with many major State agencies, and with a grant from the United States Department of Agriculture's (USDA) Forest Service, the Institute is seeking the development of products made of Massachusetts' woods that can be applied to transportation construction projects. Some early project possibilities include: wood bridge construction, railroad ties, sound buffer barriers, culverts, retaining walls, sign posts, posts



and railings, steps, marine docks and piers, advanced laminated decking (ALD), and trailer truck floors.

5. **Integrated Wood Products Industrial Park** -- The Institute has already received a USDA grant to determine the feasibility of creating a "no-waste", wood products-based and powered industrial park. The centerpiece would be a sawmill processing underutilized species and small logs, found in abundance in all Massachusetts' forests, which presently inhibit the practice of good forestry because of the expense involved in clearing them. The center would also include value-added functions such as furniture, flooring and crafts manufacture, and a wood products business incubator.

There are also recommendations contained in the report by Foster & Foster which were discussed in the MWCC colloquy. These included *Masswood* and *Greenwood* products, so called, and will be discussed later. Also to be discussed later are some problems associated with bringing wood to market.

Where Are Our Forests?

Forests compose nearly 60 percent of this state's five million acres. This translates to some three million acres of forests. But where, specifically, are they?

As residents of one of the nation's most heavily populated states, many of us are city or suburban dwellers and have relatively little knowledge of or appreciation for the impact of the forest upon our state. We are, after all, one of the most densely populated states in residents per square mile (land surface) in the United States according to the 1990 U.S. Census. We have an average of 768 people per square mile. Our population density trails only New Jersey, Rhode Island, and the District of Columbia.

Increasing urbanization is seen every day. This has led Foster & Foster to conclude that "*Our citizenry is now spatially and psychologically removed from the land.*" Environmental battles are increasingly fought over growth management, open space,

recreational access, and biodiversity *without much consideration of the actual biological or resource potential of the forest that forms the basis of most land use in Massachusetts.*" (*Thinking ...*, pp. 8-9, emphasis by Commission)

But if one travels by plane across Massachusetts, the picture is one of greenness. If there had been planes one hundred years ago, a similar flight would have shown much less forest than today. In the immediate post Civil War period, nearly 70 percent of Massachusetts' land -- or about 3.5 million acres -- was cleared of forests. This is regarded by Foster & Foster as the "state-wide...peak deforestation for agriculture." (*Thinking...*, p. 7) That would have left just 1.5 million acres in forests compared to the plus 3 million forested acres we have today.

One of the major reasons for the growth of our forest in the past century has been the reversion of farmland to forestland. A great part of this shift is due to new transportation and storage methods for farm products. Products no longer have to be grown close to home to be usable. (Although "Massachusetts Grown And Fresher," locally-grown produce and farm products, remain seasonal choices of Massachusetts' citizens, with top quality and extremely competitive prices, the demand is not so great as to cause new farms to be developed in any statistically significant way.)

These forests -- which were battered especially hard by the hurricane of 1938 -- are now approaching maturity. (Full maturity estimated at between 80 and 100 years for a forest here.) Ironically, it is at this point in their development when, if not maintained in a healthy forest mode, they are considered to be very vulnerable to another major storm, to fire, or to being harvested prematurely before they are fully valued.

Forests, however, are not neat. They grow across ownership plot lines, city and town boundaries, state and county lines. And they frustrate record keepers because forests tend to have many owners over time, with ownership of any particular plot averaging just seven years. Thus the records and pedigree (and the philosophy of maintaining) of a 100-

year-old forest might stretch across the family or business records of an average of 14 different owners.

And Massachusetts forests tend to be small. As Walter Hubbard of Hubbard Forest Industries, Inc. of Royalston, Massachusetts pointed out to the Commission, "Due to the building boom of the last thirty or forty years, much of our private forestland has been fragmented into 3 to 10-acre lots, and is totally unmanageable." (Hubbard letter to Commission, 27 Jul 99) Foster & Foster note that this average 10-acre forest parcel is "half of what it was a decade ago." (*Thinking...*, p. 8)

Thus forests, while seemingly everywhere, are difficult to actually measure. Measurement of these forestlands is carried out both quantitatively and qualitatively.

Quantitative Measurements

Massachusetts, quite simply, does not have the available information as to specifically where its forests are arranged.

David B. Kittredge, Jr., the Extension Forester for the University of Massachusetts (UMASS), cogently summarized this in a presentation to the Commission.

In commenting on the many favorable results of the state's newly ongoing and critically important Continuous Forest Inventory (CFI), Kittredge pointed out that "...this (the CFI) will not tell us how many acres there are in the forest in Massachusetts, nor how many we are losing annually, and where they are being lost." (Kittredge letter to Commission, 24 Jun 99)

Similarly, he noted that a recently completed USDA Forest Service's "Forest Inventory and Analysis" (FIA) for Massachusetts "...likewise does not tell us where we have forestland in Massachusetts, and how it is arranged spatially."

Despite Massachusetts' leading role in computer and space-based technology, data being used for spatial measurements of Massachusetts' forests are often nearly a decade old. Work on a new forest map of Massachusetts being done by Massachusetts Geographic Information Systems (MASSGIS) "...using satellite imagery from 1991, 92, and 93 as their original source of information," according to Kittredge.

The lack of up-to-date space-based photo data is a hurdle that both Massachusetts and federal forest planners must confront. Based on data presently available, several dramatic developments are obvious.

The FIA information, as dated as it is, shows a decline of 85,000 acres of forestland between 1985 and 1998, an average loss of 6,500 acres per year. (Kittredge, 24 Jun 99) But where has the loss occurred? And why?

Addressing findings of the state's CFI (the qualitative view of our forests), William Rivers, a Forester for the DEM, pinpointed Worcester County as a major forestland loser. He said Worcester County suffered a 9% loss of forestland in the period under study. He noted a surprising, slight offsetting gain in Western Massachusetts, where additional farm acres were reverting to forests.

But several witnesses told the Commission that the lack of more up-to-date visual photographic information relative to the spatial distribution of forests leaves many questions unanswered. When homes and malls and similar forest-takers are built, what essential forest attributes are lost? Is productive timberland access lost because the backlands are isolated by the new construction? Are wildlife trails and habitat corridors cut off? Is the future of water quality compromised by the loss of important watershed forests?

UMASS Extension Forester Kittredge summed up the problem resulting from the lack of an up-to-date visual database of our state forests: "Without valid, up-to-date spatial information on where Massachusetts' forestland is, our ability to protect and manage this

resource is impaired...Given the incredible wealth of benefits that all Massachusetts' residents enjoy from forestland...it seems to me that making a strategic investment in monitoring this resource would be money well spent...Timely and up-to-date spatial information in the third most densely populated state in the nation seems vitally important in order to be able to monitor where our forest is, where we are losing it, and where we can hence focus our efforts most efficiently and cost-effectively on protecting it." (Kittredge, 24 Jun 99)

Continuous Forest Inventory (CFI)-Qualitative Measurement

With recent strong support from the Special Commission, and the resulting allocation of badly needed funds by the Legislature and the Governor, Massachusetts is now in the midst of its first Continuous Forest Inventory (CFI) in twenty years. The CFI is a comparison of the "quality" of sample forest lots over succeeding surveys.

DEM Forester William Rivers told the Commission that support and funding spearheaded by the Special Commission has brought the DEM's CFI program to a position where, "we may very well be the best equipped and most technologically advanced state forestry agencies in the northeast, if not the nation."

The contrast between the State's ability to measure the "quality" of sample woodlands on the ground, and its difficulty in assessing the spatial status or "quantity" of our forests from air and space, is a dramatic one.

CFI analysis is made of approximately 1,400 plots located throughout the Commonwealth, in a process that might be compared, essentially, to public opinion polling. These woodland "samples" are measured by on-the-ground personnel. The plots are located in state forest and parklands, in various growing conditions. The plots – each 1/5 of an acre in size and 105.4 feet in diameter – contain a total of some 65,000 trees. These plots were first laid out and measured in the 1950's. This will be the third measurement of the sample, which is roughly one percent of total state forest acreage, but

which “provides a statistically valid sample for determining the condition of the entire forest” (*What Is CFI?* – DEM pamphlet 1998).

According to DEM guidelines, over thirty variables are measured for each lot, and eighteen for each tree on that lot. These lot data include the age of the stand, productivity, forest type, vegetation, past disturbances, and soil type, among others. Tree data include species, diameter, height, vigor, quality, biological damage, and wildlife potential.

Although limited to State property plots, the CFI provides DEM foresters with information on forest health, habitat distributions, financial maturity, potential economic yields, and criteria for the application of silvicultural treatments and the planning of sustainable harvests. This information about our 280,000 acres of State forests is equally representative of the 2.7 million acres of private forestlands in the state. The CFI data are shared with the academic and scientific community, as well as being in the public domain for use by private industry.

Forester Rivers’ enthusiasm for the ability of the CFI teams to do their jobs is reflected in the fact that more than 54% of the lots had been remeasured by the time of the Commission meeting in May. A target for completion of the project was set for Dec. 31, 1999. And an additional several hundred CFI plots are expected to be established in the spring of 2000.

The “ground-level, high-tech” job of conducting the CFI has been enhanced during the present survey by the addition of such new tools as ruggedized Portable Data Recorders (PDR’s) allowing on-site data entry into notebook computers. New laser technology enables field crews to measure horizontal angles, distances and tree heights with new and higher degrees of precision. Global Positioning System (GPS) units help locate the plots, some of which are located in remote areas more than a mile from roadways.

Results from the CFI will be available in raw form early in 2000.

Another recently qualitative study involved the cooperation of the State DEM and the US Forest Service, with results presented to the Society of American Foresters meeting at Mt. Wachusett Community College.

The inventory indicated that there was a 2.6% drop in the area of forested land between 1985 and 1998. Forests now make up 62% of the Commonwealth's land area – some 3.1 million acres of 5 million total land acres are forests (this inventory also mirrored earlier findings that Worcester County had seen a severe decrease in forests during the period).

Timberland – defined as forestland that is capable of growing at least 20 cubic feet a year of industrial wood, and is not withdrawn from timber production – makes up 85% of the state's forestland. Timberland was formerly called “commercial forest land.”

According to William Rivers, DEM Forester, the size of trees in Massachusetts continues to increase. Saw timber stands now cover 66% of timberland, up from 44% in 1985. Critically important seeding and sapling stands continue to decline, from 6% of timberland in 1985 to just 5% in 1998.

The inventory revealed a 19% increase in the volume of growing stock trees compared to their 1985 volume. However, Rives termed it “disheartening” that some species are being removed faster than they are being regrown.

Particularly significant is the “negative growth” of highly prized Northern Red Oak, one of our most valuable species. Its growth deficit is .8 to 1.

Red Maple, a lesser-prized wood, is growing three times faster than it is being utilized; Hemlock is growing twelve times as fast as it is being used.

“It doesn't take a genius to predict what the forest of the future will be like if our current methods of exploiting the forest continue,” Rivers observes. Not only does Red Oak

have great commercial value, but its value to wildlife is extraordinary.” Noting that one Red Oak, American Chestnut and American Beech were producing great quantities of mast timbers a century ago, Rivers notes that Red Oak today is “the last of the significant mass producers in the Massachusetts forest that is not beset by disease, and it is declining in numbers. We should be gravely concerned about this” (Rivers’ data from Testimony May 21, 1999 to Commission).

'Mast' refers to nuts, seeds and fruits of woody plants that provide food for wildlife. This food is critical to certain birds and mammals to carry them through the winter. Hard mast (from American beech, hickory and red, white and black oak) are important dietary components for white-tailed deer, black bear, wild turkey, ruffed grouse, wood duck and various other mammals and birds. Soft mast (from Black Cherry, pin and choke cherries, wild apples, mountain ash and such) is important to bears, small mammals and 28 bird species. (Good Forestry in the Granite State P.55 (c) 1997)

According to preliminary work on the CFI, and by the completed work of the DEM-USDA Inventory, it would appear that Massachusetts woodland – public and private – may be suffering from a decline of valuable species and a proliferation of less-valuable species.

Comments From Around the Table

One of the most productive parts of the Special Commission's colloquy on forest management came in the discussion from the floor -- a give and take between members of the Commission and members of the industry and public attending the session.

Some random observations follow:

Millions in Wood Energy Research Funds Tied Up In Court

Commission Chairman Senator Stephen M. Brewer noted that a possible major source of funding for pioneering wood-based alternative energy systems, such as biomass, continues to be tied up in court. **A Renewable Energy Trust Fund**, created by the Massachusetts Energy Deregulation Law assesses a small surcharge on consumer bills. To date this accumulating amount of funds has been frozen, pending various court appeals on sections of the law. **"There are about \$37 million in funds -- and the amount is growing monthly -- that could help finance some of our alternative energy projects involving wood,"** Senator Brewer said. "But there are civil suits inhibiting the release of these funds...and one of the victims of this situation is Mount Wachusett Community College's Forest and Wood Products Center...which is at the top of the list for funding," he pointed out.

Wood Bridge Building Girders Competitive With Steel

The surging growth of less-valuable Red Maple could be utilized by employing the native species in the **fabrication of bridge girders**. David Kittredge, University of Massachusetts' Extension Forester, said that in under-fifty foot applications, the wood girder would be extremely competitive with steel and concrete in durability and strength.

Substantial Potential for Timber Bridges

There is a **"substantial" potential** for timber bridges with the Massachusetts Highway Department, according to the DEM's Chief Forester, Warren E. Archey. "They last longer, they're cheaper to use, and they're made with local raw materials," he said. He added that the "real action" for wood in bridge construction was in the **municipal area** where there are **an estimated 5,000 short span bridges**.

Engineer Awareness of Wood a Key

Greg Cox of the Massachusetts Forestry Association said a key to increasing the use of local wood in bridge construction is making local engineers aware that **wood is an option** in short span bridge building.

Better Wood Bridge Information Needed

Robie Hubley of the Massachusetts Audubon Society said the Society had experienced **difficulty in finding information** on wooden bridge construction when it sought to build that type of structure. He urged a greater effort on making the Wood In Transportation resources known.

Wood Furniture Industry Impacted

Increasing the use of wood by increasing the local manufacture of wood products would have a beneficial impact on the **wood furniture industry employment**. According to the Associate Director of MWCC's Forest and Wood Products Institute, Joseph Smith, the new interest in wood has eased a free fall in wood furniture job loss. From 1972 to 1992 the job figure fell from 3300 to 1100. In 1999 the number had climbed to 1400. Smith said a variety of efforts are underway to facilitate the use of local wood, including the creation of a Corps of Craftsmen at MWCC (senior wood industry craftsmen, who are using their experience to assist new wood workers), additional joint marketing, production and Research and Development through the previously-mentioned Forest Products Cooperative; and distance learning.

Need for More Technical Training in Wood

Commission Chairman Senator Stephen Brewer stressed a need **for improved quality and accessibility of technical school training** with courses relevant to the wood and wood products industry. Brewer said we need to train "more people who make things with wood."

Use Internet to Sell Forest Issues

DEM Commissioner Peter Webber said a key to better using and improving our forests was in "**public education and better public awareness of our forests.**" He said he and the Secretary of Environmental Affairs, Robert A. Durand, shared a commitment to "**use new technology such as the Internet to connect with students and the public**" on the importance of forests and forest issues. He noted that New England loggers were doing a CD ROM on forests for computer users.

A Proposal to Reconstruct Workable Forest Lots

In speaking of the spatial layout of forests, Walt Hubbard, the President of Hubbard Forest Industries in Royalston, noted that, "... **much of our private forestland has been fragmented into 3 to 10-acre lots and is totally unmanageable.** These 30 to 200 plus acre lots in their original form were the backbone of the forest products industries' wood supplies. In this form they supplied us with wildlife habitat, water resource, pollution control areas, etc. We need to reconstruct these areas to regain management of them again.

"Most people who own 3 to 10 acre lots use about one-quarter to one acre as a house lot and the rest remains unmaintained area," Hubbard said. "If we could create a program where one acre would be taxed as a house lot and the remaining acres used **to jointly reconstruct 20 plus acre environmental management areas**, we would be able to reconstruct a large portion of these areas."

He noted that some sort of "tax incentive with no strings" should be developed to entice land-owners to use their property this way, with lots being classified as to their specific natural resources attribute, such as wildlife management, timberland, water quality, endangered species habitat, and such.

THINKING IN FOREST TIME

The second major section of the Special Commission's meeting at Mount Wachusett Community College was the presentation of a new paper -- *Thinking In Forest Time* -- co-authored and edited by Charles H.W. Foster, a former Massachusetts State Forester and Secretary of Environmental Affairs, and presently an environmental policy specialist at Harvard University's Kennedy School of Government, and David R. Foster, the Director of the Harvard Forest in Petersham.

Subtitled "A Strategy For The Massachusetts Forest," the Foster & Foster paper follows by a year, the publication by Charles H.W. Foster of **Stepping Back To Look Forward -- A Centennial History of Massachusetts' Forests**, a book providing an historical look at our forests from the Glacial period on. Publication of the book coincided with the 100th anniversary of the creation of Massachusetts' public forests system.

Some central points of the *Forest Time* paper, summarized by Foster & Foster, are excerpted here as follows:

"...without a clearer application of intelligence, purpose, and direction, Massachusetts is destined to repeat its history of unenlightened, premature harvesting followed by extensive periods of forest restoration and recovery. Given its long-standing commitment to conservation, the Commonwealth can and should do better."

"With nearly 60% of the state's 5 million acres currently in forest, a reversal of the peak period of land clearing for agriculture in 1860, the forest is now the Commonwealth's predominant landform. Forests grow here naturally and well, subject only to human-induced disturbances and periodic natural events such as the 1938 hurricane. But the state's history of prior land-use has favored a new landscape of even-aged stands with sharp boundaries in species composition and forest structure between adjacent stands, thereby increasing the potential that future disturbances will be more damaging than those in the past. And without intervention by the Commonwealth, the present forest,



only midway in its growth cycle, is likely to be cut prematurely before it can attain full economic value and yield the important water, wildlife, recreation, and aesthetic values associated with intelligent, long-term, forest management.”

"We have 25 specific recommendations in the following five highlighted areas.

"...First, the Commonwealth should identify priority regions of mixed private and public forests, to be termed Massachusetts Legacy forests, where research, databases, facilities, programs, and services could be concentrated. Such a statewide system of legacy forests would assure the Commonwealth of a permanent forest resource base, varied in composition, ownership, and distribution, that could be managed ecologically and sustainably for all time.”

"Second, Massachusetts should explore a locally-based, self-sufficiency approach, Massachusetts would not only move to develop the largest available untapped market for forest and wood products -- its own -- but also help reduce the negative 'environmental footprint' caused elsewhere by less enlightened forest utilization practices.”

"Third, to advance public awareness of forests and forestry, the Harvard Forest report visualizes an expanded role for cities and towns, based on a modernization of the historic local forest warden structure and the existing mechanism of town forests. These and other state and local forests could serve as educational centers where school and community groups can see firsthand how these remarkable environments function and contribute.”

"Fourth, to ensure that legacy forests remain as managed woodland, the Harvard Forest specialists urged the Commonwealth to consider purchasing timber rights on prime forest tracts. They noted that "timber banking" could give current landowners an immediate source of income from their forests. It would also enable Massachusetts forests to be held to at least economic maturity (100 years) and, in some cases, allow new

biologically-mature forests to complement the barely 1000 acres of existing old-growth forest remaining in the Commonwealth.”

"Fifth, a new revenue base will be needed to support the state's expanded forest program initiatives, to capture and redirect a portion of the existing revenue stream from present corporate and retail forest products taxation, and the exploration of supplemental funding approaches such a "green certification", "Masswood" product eco-labeling, a special forest license plate, and even public sales of "green bonds" to raise additional forest-directed revenues.”

"We urge those concerned with the forest to put our recommendations to work promptly. To do so will not only be an initiative of enduring value to Massachusetts, but an example worthy of emulation by the nation as a whole."

Reaction to Thinking in Forest Time

Special Commission Chairman, Senator Brewer, said the Foster & Foster paper represented a unique "bottom up" approach to formulating public policy. He said the work by Charles H.W. Foster and David R. Foster was an instance where **citizen involvement would spark government policy planning.**

Keith Ross termed the report "long overdue...a vision and a plan that has been lacking for too long." He said the concept of ownership line-crossing Legacy Forests (where public and private owners deal with forests as they exist, as distinct ecosystems, and ultimately entire landscapes, with what Foster & Foster termed "a pervasive sense of heritage") would **bring people together in support of wise forest practices.**

Audubon Society Representative Robie Hubley said the concept promoted "**A huge spectrum of values**" including environmental and recreational ones. He urged an effort to "identify the values" such a plan as the Fosters' could positively influence.



In terms of bringing privately held land under some form of stewardship management, Senator Brewer cautioned that a **"non-coercive approach"** with **"positive incentives"** would be mandatory.

Former Senator and Special Commission Chairman, Robert D. Wetmore, said tax benefits should be developed and aimed at **"making owning forestland attractive."** He said that much forestland is under economic pressure with quick money possible if the land is turned over to other uses, such as malls and large home developments. Wetmore said that **forest owners should be encouraged through economic incentives to "keep their land in forests"**, much as open space and farm preservation statutes have done over the past two decades. He saluted the contributions of the Fosters, noting in a communication to the Commission that they represent a **"natural resource"** that Massachusetts has in abundance -- **educated specialists.** "This report is a fine example of the benefits we can receive in dealing with the state's problems when **highly qualified people in the great institution of higher learning, that we have in large numbers in the state, commit themselves to addressing these problems,**" Wetmore said. "People like the Fosters are one of the state's top natural resources."

Joseph Smith of the MWCC Forest and Wood Products Institute suggested that money invested in keeping land as forestland would be "recaptured" by government because of the added value of the wood products from those forests. Also, Smith said that incentives should be developed so that the "right trees" are harvested, to increase the value of the remaining forest.

What's Next? The Visioning Process

The old adage "one cannot see the forest for the trees" is relative to our perception of the Massachusetts forestlands. We need to step back. **We need to look at our trees from a distance so that we may be able to see the forest as a whole.** And, we need to see our forests in **"time" as well as in "space."**

This is why Foster & Foster have urged Massachusetts' friends of the forest – in both public and private sectors – to spend time in a **visioning process** before rushing into well-intended but possibly self-defeating reforms.

They have urged that “before proceeding with a comprehensive forest plan, Massachusetts needs to first develop a thoughtful vision of how this extensive resource could be made to contribute more substantially to the present and future well being of the Commonwealth. The visioning process should examine the forest as a whole, from individual trees to entire landscapes, watersheds and regions. It should reach out to a wide range of interests and be participatory in nature.”

Setting the Groundwork for Visioning

With the presentation of *Thinking in Forest Time* by Foster & Foster, **public action was initiated almost immediately on behalf of the Commission by Senator and Commission Chair, Stephen M. Brewer.** The Administration responded equally quickly via a response by Environmental Affairs Commissioner Peter C. Webber.

Chairman Brewer noted in a letter to Secretary Robert A. Durand that discussion of the Foster & Foster report was “extensive and most favorable,” and that following the session, the Commission voted unanimously to request that he Environmental Secretary promptly activate the **proposed Forest Environment Program Review Board** and a companion interagency team to “develop and implement a long-term vision plan...for the Massachusetts forest.”

Senator Brewer added that “there is some urgency...because if the Commonwealth does not act quickly we believe the forest may well be subject to a repeat of the unenlightened, premature harvesting...that has occurred at least four times in its history.” He added that the Commonwealth “can and should do better this time around.”

Replying quickly for the Secretary, Commissioner Webber said he agreed that “the preparation of a vision for the future of Massachusetts forests is imperative as a prerequisite to embarking on a long-term plan.” He noted that “**assembling an interagency team should be the background** to a comprehensive planning process.”

Commissioner Webber also said he would “hope that the Special Commission on Forest Management Practices would see itself as the natural entity to conduct public hearings on the draft version, in order to engage citizens generally, and build broad support for a statewide forest initiative.”

He also said he would ask Environmental Secretary Durand to “speak to all Executive Office of Environmental Affairs commissioners concerning the establishment of a Massachusetts Forest Environment Program Review Board – a sound proposal and a logical vehicle to both guide the creation of a vision of the Massachusetts forest and to implement its provisions.”

(Please view Webber/Durand letters in their entirety, Appendix C)

SOME CONCLUDING THOUGHTS

By Commission Chairman Senator Stephen M. Brewer

It has been just four years since the Massachusetts Legislature launched this special Commission on Forest Management Practices --- in "Forest Time", a mere millisecond ago. And yet, four years in the time in which we measure civilization is a significant period of time.

What have we learned thus far about the about the stewardship of our Massachusetts forests?

The year 1996 was a breakthrough year in the sense that Section 341 of chapter 38 of the Acts of 1995 established this Commission and mandated to it the mission of analyzing the state of our forests and then devising a long-range plan to protect our forest.

Much of our time since then has been spent collecting data. In some cases -- such as in the qualitative measurement of forestlands through CFI -- the Legislature, at the urging of the Commission, provided critically needed funding to go forward with fact gathering.

We learned this year that we are woefully lacking in up-to-date space-based or aerial photography of our forests enabling us to do a comprehensive spatial mapping of where our forests actually are.

In the past several years the Commission has been able to demonstrate that the interests of a Massachusetts Audubon Society, represented by Commission member Robie Hubley, of forest harvester and Commission member Walter Hubbard, of Hubbard Forest Industries, and of state environmental agencies such as the DEM and the MDC, to cite a few interests for the sake of example, can coexist in harmony.

More to the point, we have learned that disparate groups with disparate interests in our forests *must coexist* because their individual interests, pursued as part of a thoughtful strategic program of forest management, work together in a positive way.

A healthy, diverse forest is a good forest for all. It is a good forest for people seeking recreation. It provides watershed. Its clean water resources nurture fish. It provides a healthy habitat for game. It is the source of a perpetually renewable source of timber. Its lower quality and lesser-valued wood can be used to fuel environmentally friendly power production. A contiguous and holistic forest with a variety of forest species in a healthy range of growing ages from meadows and young forests to fully mature timber stands will shelter wild animals and rare migratory birds, endangered species of birds and plants.

Clearly, one of the major lessons the Commission has been able to receive and then relay to those in policy making positions (public and private) is that healthy, aggressively well-managed forests, can be one of this state's most important assets in the coming century -- economic, recreational, environmental, aesthetic.

One of the most encouraging developments in the work of the Commission has been in citizen involvement, highlighted this year by the comprehensive and forward thinking proposals contained in Foster & Foster's *Thinking In Forest Time*. These suggestions -- especially those involving managing forests as entities in themselves, irrespective of artificial manmade borders -- are in some cases controversial and sure to guarantee impassioned public involvement. Any forest protection proposals, likewise, that depend upon new revenue, or revised revenue sources (including tax recapture), are also guaranteed to generate controversy.

But that is precisely what the Special Commission on Forest Management Practices is all about. And our efforts have been well served by Foster & Foster. We want leading edge proposals that look decades ahead, not merely tactical "quick fixes" that will carry us from one crisis to the next.

It is in this spirit that the Commission will continue its mission.

As we get closer to the heart of the problem -- and to possible solutions -- there are bound to be conflicting ideas, a resistance to new ways of dealing with old problems, and in some cases, a refusal to even acknowledge, even in the first place, the problem that exists in our forests.

Our time to act is running out. The Millennium year is a fitting time to turn the corner into a new century with a new and aggressive determination to protect our forests, enhance their growth, encourage their health, and use them for the variety of uses that -- with prudent management -- can be enjoyed perpetually.

I wish to thank all of the members of this Special Commission for their work -- which is really their work for the future forests of our children and grandchildren.

Senator Stephen M. Brewer

APPENDIX A

STATUTORY LANGUAGE CREATING THE SPECIAL COMMISSION

SECTION 341. There is hereby established a special commission to research innovative approaches to the Department of Environmental Management's forest management practices. The scope of the commission's inquiry shall include, but not be limited to, the study and investigation of the extent and adequacy of the management of state-owned and privately-owned forest land in the Commonwealth, the examination of the extent to which low-grade wood harvested in the Commonwealth is utilized, the study of the ecological soundness of different approaches to timber cutting, and a cost/benefit analysis of increasing timber cutting in the Commonwealth. The Department of Environmental Management shall provide staff and other support to the commission. The commission shall be comprised of three Senators, two to be appointed by the Senate President, and one to be appointed by the Minority Leader; three Representatives, two to be appointed by the Speaker of the House, and one to be appointed by the Minority Leader; a representative of the Executive Office of Economic Affairs to be appointed by the Governor; the Commissioner of the Department of the of Environmental Management or his designee; a representative of the State Office of Business Development to be appointed by the Governor; the Forester of the Massachusetts Extension Service; one representative from the Audubon Society to be appointed by the Governor; and three persons to be appointed by the Governor, one of whom shall have experience in the management of forest land, one of whom shall have experience in the wood products industry, and one of whom shall represent an agency which has as one of its purposes the conservation and management of forest land. Said commission shall make recommendations as to the changes and improvements in the management of state-owned and privately-owned forest land which would encourage the harvesting and use of low-grade wood. In addition, the commission shall make recommendations as to economic strategies needed to develop markets for such low-grade wood. In developing such recommendations, the commission will hear the testimony of experts, cooperate with

other groups or agencies working in the area of the commission's interests, review studies and other literature on pertinent subjects and take advantage of the technical and professional expertise of its members. Said commission shall report its recommendations to the Clerks of the House of Representatives and of the Senate on or before July first, nineteen hundred and ninety-six.

APPENDIX B

BOSTON GLOBE EDITORIAL

Shortly after the report was issued to the Commission, the *Boston Globe* reacted positively with an editorial that noted that "a recent call by a Harvard study group for a **comprehensive policy fashioned by a broad-based environmental task force makes great sense.**"

Boston Sunday Globe

BENJAMIN B. TAYLOR, *Publisher & Chairman*

MATTHEW V. STORIN, *Editor*

H.D.S. GREENWAY, *Editor, Editorial Page*

Seeing the forest *and* the trees

Massachusetts, one of the nation's most heavily forested states in proportion to its size, has a disjointed approach to this major economic and natural asset. A recent call by a Harvard study group for a comprehensive policy fashioned by a broad-based environmental task force makes great sense. The Cellucci administration, through its Department of Environmental Affairs, should launch the effort by organizing the task force.

Forests have made a remarkable comeback in Massachusetts following the 19th century peak and subsequent decline in farming. At the peak, more than 70 percent of the land was covered by farms, dramatic traces of which can be seen with the many stone walls still wandering through the woodlands that now cover more than 60 percent of the state.

Ownership of the woodlands is fragmented. Private tracts, which averaged 20 acres apiece a decade ago, now run about 10 acres. Public tracts in state parks and forests and in locally held areas are seldom added to. Private organizations like the Trustees of Reservations have limited assets for acquiring land.

But, as the study led by Charles H.W. Foster and David Foster of the Harvard Forest Research Station in Petersham has noted, there is virtually no coordination for cataloging all these assets and developing a coherent set of policies for effective woodland management. Nor are there guidelines for long-term, sustainable exploration of the economic potential of these assets, although haphazard lumbering operations last year yielded about 70 million board-feet of timber that produced \$250 million in retail sales.

Assets of this magnitude deserve careful stewardship. The forests are not only woodland but habitats for a wide range of plants, birds, and animals. The state must make sure that the current burst of residential development does not squander a unique treasure that makes Massachusetts what it is.

APPENDIX C

AGENCY CORRESPONDENCE WITH SPECIAL COMMISSION

<Insert Letters>

APPENDIX D

PRELIMINARY RESULTS OF THE 1998 MASSACHUSETTS INVENTORY

Preliminary Results of the 1998 Massachusetts Inventory

Forest-Land Area

The 3.1 million acres of forestland in Massachusetts cover 62 percent of the state's total land area (5 million acres). Timberland, the largest component of forestland, totals 2.6 million acres and makes up 85 percent of the forestland, and 53 percent of the total land area. This is a decrease from 1985, where timberland acres were 2.9 million acres, or 90 of the forestland, and 58 percent of the total area.

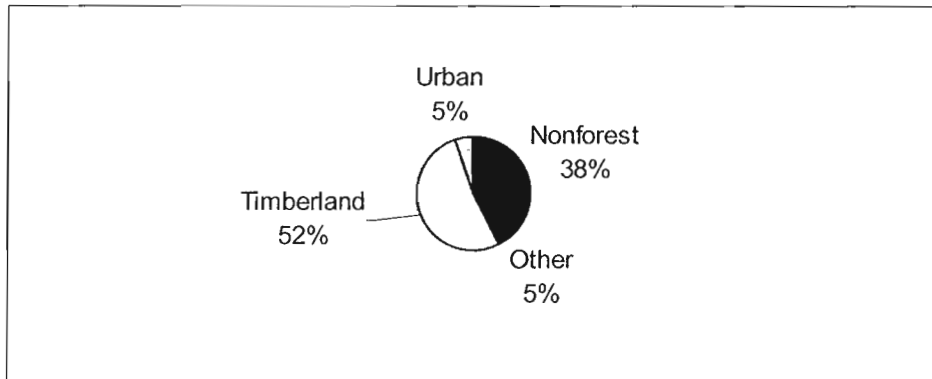


Figure 1. Area by land class, Massachusetts, 1998

As I expected, the more urban counties showed a drop in forestland, while the western part of the state showed a slight increase since 1985. Across the state, there was more than a 2 percent drop in forestland since 1985, when forestland covered 64 percent of the area.

Unit	1985	1998	Percent Change
Western Massachusetts	1,311	1,346	+2.7
Worcester County	700	634	-9.4
Eastern Massachusetts	1,197	1,143	-4.5
State Total	3,209	3,124	-2.6

Figure 2. Area (in thousand acres) of forestland and percent change, Massachusetts, 1985 and 1998.

Species	Growing stock	Sawtimber
White pine	1.9 to 1	2.6 to 1
Red maple	2.7 to 1	6.8 to 1
Northern red oak	0.8 to 1	1.9 to 1
Hemlock	12.2 to 1	15.4 to 1
Other red oaks	0.9 to 1	1.9 to 1

Figure 3. Growth to removals ratios of growing-stock and sawtimber volume on timberland, top five species, Massachusetts, 1984-1997.

APPENDIX E

FORESTS OUTLIVE THEIR OWNERS

<Insert Figure 2>

APPENDIX F

FORESTS ARE NOT NEAT

<Insert Figure 3>

APPENDIX G

PRESERVATION OF PRIVATE FORESTS' INTEGRITY

<Insert Figure 4>

APPENDIX H

A VISUAL INTERPRETATION OF STATE-OWNED FORESTLAND (which constitute about 280,000 acres of Massachusetts' total 2.7 million acres of forestland)

<Insert Figure 5>

APPENDIX I

REFERENCES

In addition to the testimony presented directly to the Special Commission at Mount Wachusett Community College on May 21, 1999, the following publications have provided additional resources for the Commission in the preparation of this report:

Foster, Charles H.W. and David R. Foster. 1999. *Thinking In Forest Time*. Harvard Forest and Harvard University Press: Petersham and Cambridge, Massachusetts.

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APPENDIX J

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