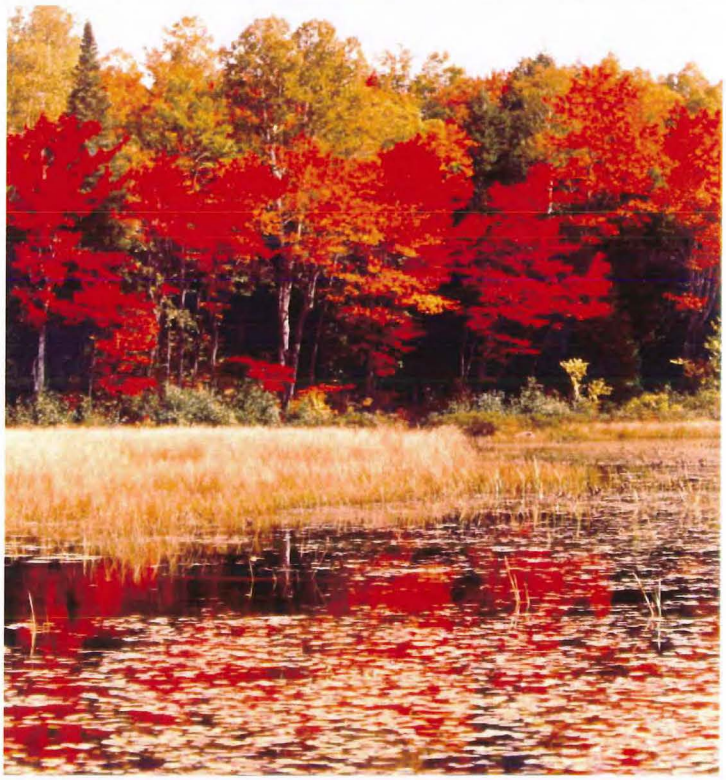
The 2005 Biennial Report on the State of the Forest and Progress Report on Forest Sustainability Standards

Report to the
Joint Standing Committee of the
122nd Legislature on
Agriculture, Conservation and Forestry
29 December 2005

Executive Summary



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We help you make informed decisions about Maine's forests

Correct citation: Department of Conservation, Maine Forest Service. 2005. The 2005 Biennial Report on the State of the Forest and Progress Report on Sustainability Standards. Report to the Joint Standing Committee of the 122nd Legislature on Agriculture, Conservation and Forestry. Maine Department of Conservation: Augusta. 124 pp.

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Note to readers: The information in this report is believed to be accurate as of 31 December 2005. New information received after this date may not be reflected in the report.

Printed under appropriation 010 04A 5100 512

December 2005

Dear Reader:

I'm pleased to present the 2005 State of the Forest Report. I hope you find the report interesting and informative.

The report reflects progress on a number of important issues, including increasing the amount of third-party certified land in Maine, planning what the state government can do to support the forest industry, and other issues as well.

Beyond status reports on specific issues, we have made a concerted effort to boil down the mountain of data on Maine's forests into a summary. Developing a meaningful and accurate summary on the condition of Maine's forests has been particularly challenging. Many facets of the forest condition must all be considered in concert to have an accurate picture; fitting the pieces of the puzzle together to form a coherent whole is exceedingly complex. In addition, different segments of Maine society have deep differences of opinion about the criteria by which to assess the meaning of specific facts. In this regard, persons of good will, but with different perspectives on what constitutes "good forestry," can interpret the information on our forests very differently. Examples of these differences are included in the introduction to this report. I encourage you to read the introduction and consider these different perspectives as you read the report itself. Despite the fact that people come to the discussion on forestry issues from very different perspectives; nonetheless, it is important for us all to be working from the same set of facts as we debate what they mean.

Disagreements on forestry issues have proven extremely divisive and have consumed large amounts of time and effort over the past 20 years. While I suffer no illusions as to the prospects for quick and easy progress in resolving these differences, those of us who care about our forests need to find ways to work collaboratively to resolve forestry issues if we are to maximize our effectiveness, achieve the benefits of a stable public policy (which financiers cite as a major factor influencing the investments needed to keep Maine's forest products industry competitive), and avoid divisive debates. This will involve improving our understanding of the issues and of one another's perspectives, as well as engaging in an open and constructive dialogue.

We intend to replicate the format of the summary in the future so that we can identify trends by consistently tracking a given set of metrics. However, we do not anticipate that this summary will be entirely static in format. We

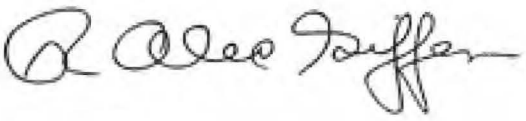
invite your comments on how to improve it over time. We do not claim to have a monopoly on wisdom regarding how to interpret the complex information available on this topic.

After over two years in the position of State Forester, I have been struck by how distinguished Maine's forest resources truly are in comparison to other parts of our region, never mind other parts of the country. For example, did you realize that Vermont has no (zero) nesting pairs of bald eagles, while Maine has over 300 nesting pairs? Did you realize that Maine's forest products industry accounts for more than half of the output of the industry in the northern forest region? The importance of Maine's forest resources in these regards are not isolated aberrations. Many other statistics lead to the conclusion that Maine's forests are especially important. Even those of us who work in natural resources tend to underestimate the significance of Maine's forest resources.

It truly has been an honor to serve as State Forester. Once again I hope you find this report both interesting and informative.

My thanks to the many people who worked on sections of this report, but particularly Donald Mansius and the staff of the Forest Policy & Management Division who were the principal authors of the report.

Yours truly,



R. Alec Giffen
Director, Maine Forest Service

INTRODUCTION

Around 300 BC, King Ptolemy I of Egypt aspired to learn the new mathematics of geometry. Frustrated by the complexities of the subject, he inquired of no less a personage than the father of geometry himself, Euclid, if there wasn't an easier way to master the subject. Euclid replied that there was no "royal road to geometry." Just as there is no easy way to understand geometry, there is no easy way to understand the complexities of the condition of Maine's forests.

The current assessment of growth vs. drain in Maine illustrates the complexity of these issues. In this regard, it is encouraging to note that the USDA Forest Service has concluded that growth equals harvest for pulpwood or better quality trees and that the volumes of these trees have been stable since 1995. Previous data had indicated that harvests slightly exceeded growth for this period and that as a result pulpwood quality volumes had been declining slightly each year (approximately 1% per annum). Therefore, the conclusion that growth now equals harvest for these trees and that timber volumes have been stable for the last decade is encouraging. However, other information in the report indicates that not all of the timber we are growing will be available for harvest. For example, approximately 132,000[1] individuals own less than 10 acres of forest land; another 57,000 own between 10 and 49 acres. Research indicates that owners of small parcels of forest land usually own it for purposes other than timber production, and hence the timber on these lands is unlikely to be actively managed and a portion of it may not be available for harvest in the future. This argues that our data are likely to paint too rosy a picture of future timber supplies (sobering). At the same time, we are monitoring the development of young stands resulting from the combined impacts of the 1970 – 1990 spruce budworm epidemic and extensive harvesting. Trees in these stands are nearing merchantable size. If harvesting levels remain stable, we would expect that timber volumes would increase in the decades ahead as these stands reach merchantability (encouraging). However, inventory data recently analyzed indicates that balsam woolly adelgid, previously confined to coastal Maine, is now expanding inland and killing large numbers of balsam fir trees. Preliminary analysis indicates that approximately 16% of the balsam fir trees in a band approximately 15 miles inland from the coast in eastern Maine died in the last 5 year period. Further, mortality from balsam woolly adelgid was detected as far north as the Greenville area, and it is not clear what the course of this outbreak will be (worrisome). The bottom line is that, as for many forestry metrics, assessing the relationship between growth and harvest, and looking to the future of supply, turns out to have several parts and some parts are only partially understood.

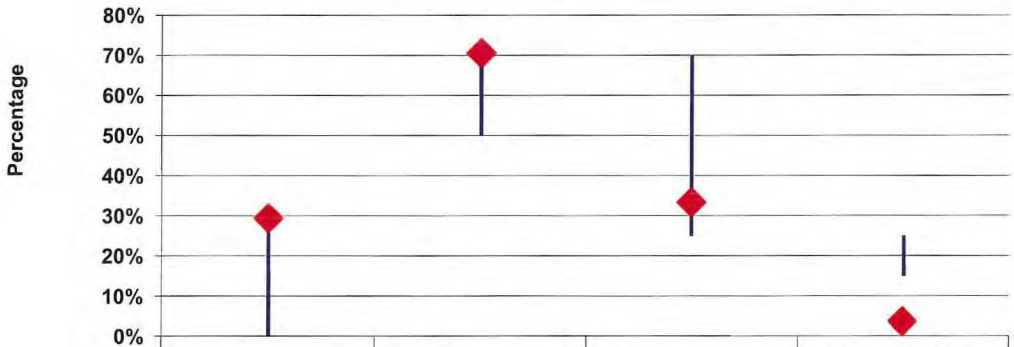
This situation is made more difficult by the fact that, even if we understood the situation completely and could predict the future perfectly, persons with different perspectives can view a single metric from very different vantage points. For example, consider the issue of stand size class distribution, another fundamental metric in assessing forest condition. Maine currently has approximately equal acreages in seedling and sapling, poletimber, and sawtimber sized stands, but what does this mean? Proponents of a regulated forest (meaning one where management is intended to produce a stand size class distribution that can support relatively consistent levels of harvest on a regular basis) are likely to see this as positive. On the other hand, persons interested in maximizing habitat values for

[1] McWilliams *et al*, 2005.

vertebrate wildlife would note that it deviates from both DeGraaf's idealized stand size class distribution and the distribution identified in the biodiversity benchmarks later in this report (Figure 1). Still others who believe that our management should more closely mimic natural processes might view it with alarm, as it deviates from what we know about conditions in Maine's forest at the time of European settlement. Thus, a single set of facts can be viewed from several very different perspectives. The effort to identify forest sustainability benchmarks as outlined later in this report is intended to provide a set of standards that Maine's forest conditions can be measured against, and thus help bring divergent perspectives together – but we are in the early stages of that effort.

Many other examples of the complexities of this information and the difficulties of interpreting it objectively are possible. Please keep these thoughts in mind as you review the 2005 State of the Forest report.

Figure 1. Idealized forest stand structure and current statewide timberland structure (K. Laustsen, 2005, personal communication).



	Seedling/Sapling	Poletimber	Sawtimber	High Basal Area in Large Sawtimber
Desired Minimum	0%	50%	25%	15%
Desired Maximum	30%	70%	70%	25%
◆ Current Estimate	29%	71%	33%	1.6%

Summary of the Report

The 2005 State of the Forest Report is a keystone of the Maine Forest Service's efforts to inform Maine citizens about the condition of and trends in Maine's forests and forest economy. Pursuant to legislative direction, the report covers a number of issues including forest sustainability benchmarking, forest land ownership changes, and forest condition.

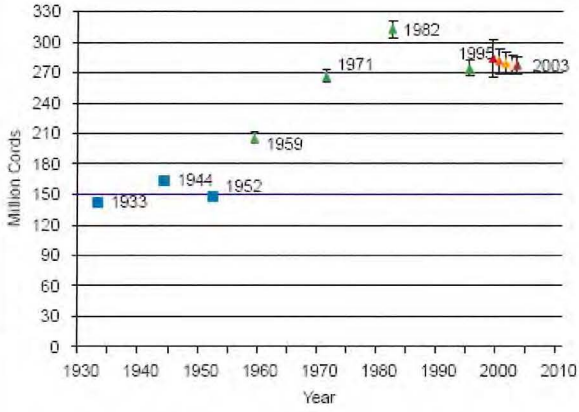
The Significance of Maine's Forests

Several things distinguish Maine's forests from others in the eastern U.S. Individually, these features are significant. In combination, they make Maine's forests unique.

- The resilience of our forest ecosystems: Maine's forests have been harvested for wood products for over 200 years, yet 90% of the state remains forested - the highest percentage in the country. Analysis of historical records indicates that Maine has approximately 2/3 of the stocking that it did at the time when commercial harvesting began. Further, Maine has largely maintained its forest biodiversity, with a few exceptions (e.g., caribou).
- The dominance of private ownership of forestland: 95% of Maine's forests are privately owned, one of the highest percentages in the country.
- The diversity and significance of our forest resources: In addition to a diverse timber resource, Maine's forests support many public resources, including 6,000 lakes and ponds and 32,000 miles of rivers and streams and abundant fish and wildlife resources.
- Maine has the largest contiguous block of undeveloped forestland east of the Mississippi: This includes approximately 10.5 million acres of unorganized territory which remain largely undeveloped forestland, most of which is actively managed for timber production.
- The strength and diversity of Maine's forest products industry: Maine's forest products industry accounts for approximately half of the output of the four-state region of northern New England and New York. Maine's forest landowners have markets – somewhere – for every stick of wood they harvest.
- A long history of multiple-use management on private land and a tradition of free public access to private land: This tradition dates to colonial times and is established in Maine common law for access to Great Ponds, navigable waters, and the coast.
- The special connection Maine citizens have with our forests: This heritage includes traditions of both consumptive and nonconsumptive use. Maine people care about the forests and how they are managed.

Forest Condition

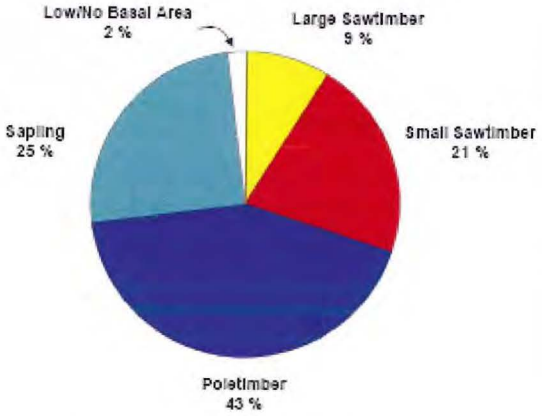
- Maine's forest inventory (chart below) has stabilized over the last several years at 275 million cords – 87% more than the 1950s.



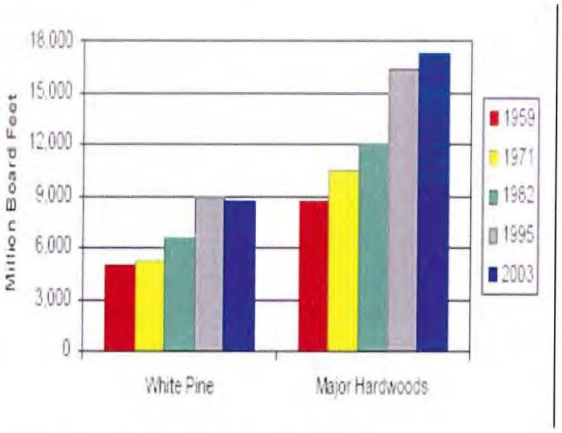
- Harvesting has stabilized at just over 500,000 acres per year, with a total

harvest of just over 6 million cords per year. Harvest and growth are currently in balance at around 0.35 cords per acre per year; however, Maine's forests have the potential to grow 0.5 cords per acre per year under improved management, and some intensively managed lands can and do produce more.

- Partial harvest methods dominate forest management, accounting for just under 60% of harvest acreage. Shelterwood harvesting accounts for 36% of harvest acreage. Clearcutting now accounts for less than 5% of harvest acreage, a significant decline over the last 15 years.
- The composition of Maine's forest stands is approximately 1/3 softwood and 2/3 hardwood, while the underlying habitats are 2/3 softwood and 1/3 hardwood. This difference between habitat type and stand type is a legacy of the last spruce budworm epidemic and harvesting.



- Maine's forest stands are roughly evenly divided between sawtimber, poletimber and seedlings/sapling size stands (chart above).
- With the exception of spruce and fir, sawtimber volumes of major species have steadily increased over the years (following chart).



- MFS continues to monitor the development of young stands resulting from the combined impacts of the 1970 – 1990 Spruce Budworm Epidemic and extensive harvesting. Efforts to predict the timing and initial merchantability of these young stands is underway. Over the last 5 years of data collection under the new annualized inventory design (1999 – 2003), annual estimates of ingrowth (new merchantable trees since 1995) have improved from 1.53 million cords in 1999 to 1.86 million cords in 2003. If current trends continue, ingrowth is expected to increase to 2.2 - 2.3 million cords per year in 2010.

Forest Economy

- Maine has a highly diverse forest industry "cluster" (a mix of mutually supportive manufacturing facilities). Maine's forest products cluster provides markets for waste products from manufacturing facilities, as well as high-grade material. Landowners have markets for everything they harvest, from the lowest grades of wood that go to biomass generation to dimension lumber and high end furniture products.
- Despite a very challenging global situation, Maine is still the #2 paper producing state in the U.S.; further, Maine's lumber production from over 200 sawmills has more than doubled since the mid-1970's.

- The forest products industry is still a key player in the state's economy. Its direct annual contributions amount to $6.2 billion; with indirect contributions, the industry's total impact is $10.2 billion. The industry provides over 18,000 jobs for Maine people. Forest products represent 36% of the state's total manufacturing output.
- Maine is also a major player in the regional forest products industry. Maine produces over ½ of the wood output of the four-state region that includes New Hampshire, Vermont, and New York. Our forest products industry accounts for 40% of the value of shipments in this same region.
- Employment in the forest products industry has declined steadily (following table), as mills and harvesting technology become more efficient. While employment is down, worker productivity, average wage, and capital expenditures have all increased. This is the natural evolution of a mature industry going through transition and taking steps to remain competitive in the global marketplace.

	1997	2002	% Change
Employees	23,430	18,130	-23%
Payroll ($1,000)	$ 900,957	$ 838,552	-7%
Value Added ($1,000)	$ 2,563,869	$ 2,526,752	-1%
Value of Shipments ($1,000)	$ 5,552,376	$ 5,263,591	-5%
Capital Expenditures ($1,000)	$ 296,965	$ 368,454	24%
Productivity ($ shipments / employee)	$ 236,977	$ 290,325	23%
Average wage	$ 38,453	$ 46,252	20%

Challenges

Maine's forests, its landowners, and its industry all face significant challenges as we look to the future. MFS has identified several critical and interrelated issues that are key to the future of our forests:

- Maintaining a sustainably managed, economically viable working forest land base. This is critical to maintaining the many public values provided by Maine's privately-held forests. For example, the habitat for many wildlife species is dependent upon active management.
- Conversion of forest land to development and parcelization. Parcelization makes good forest management less likely and more difficult, even if the land remains forested. Parcelization and forest land conversion are significant issues in southern and central Maine.
- Inadequate returns from long term forest management. The financial returns on long term forest management do not justify either retaining forest land, if other uses (e.g., development) are possible, or practicing long-term silviculture. Research at the Penobscot Experimental Forest indicates that the present value of stands managed for long-term value is about half that of stands subjected to diameter limit cutting, even though this practice diminishes the long-term productivity of the land.
- Maintaining and improving the long-term viability of the forest based economy. The state has faced the loss of mills, declining industry employment, fewer loggers, and consequent impacts on forest-based communities. At the same time, Maine excels in some sectors, and the industry has significant opportunities.
- Insect and disease threats. A number of exotic insects and diseases, some established, some not yet here, threaten significant components of Maine's forests. Existing threats include beech bark disease, balsam woolly adelgid, browntail moth, and hemlock woolly adelgid. Potential threats include sudden oak death and emerald ash borer.

Opportunities

Maine's forest landowners and the forest products industry also have a number of significant opportunities. These include:

- Conserving large areas of Maine's forests in perpetuity by capitalizing on the interest of investors to maximize their returns and purchasing conservation easements that ensure retention of undeveloped forest lands, public access, and sustainable management.
- Capitalizing on Maine's reputation for sustainable management to distinguish Maine's forest products industry in the global marketplace. In addition to demonstrated evidence that Maine's forests are sustainably managed, Maine has the largest percentage of certified land and possibly the largest percentage of certified harvests conducted of any state in the nation. These facts can be used to create a special niche for Maine's forest products among consumers who value sustainability – demand for such products is growing. This will require Maine to remain a leader in certification and addressing forest environmental issues, such as maintaining forest biodiversity.
- Increasing productivity. With improved management, Maine's forests have the potential to produce considerably more timber per acre while maintaining other forest values. On average, it should be possible to increase the productivity of Maine's forestland by approximately half over current levels.
- Diversifying Maine's forest products industry to be a leader in new products such as biofuels and those from biorefinery technology. With increases in fossil fuel prices, the opportunity exists to replace traditional sources of fuels and chemical feedstocks with wood and wood wastes.

Ownership Changes

Changes in ownership present both opportunities and challenges. Maine has experienced significant changes in who owns the forest since the mid-1990's. Most of Maine's large industrial forest landowners have exited the scene, replaced by a mix of corporate structures collectively known as timberland investment management organizations, or TIMO's. In general, these investors seek to maximize returns and generally plan on holding the land for 10-15 years.

Investor-owners now hold at least 3.75 million acres in Maine. This presents opportunities for unprecedented large-scale land conservation efforts, but there are also public concerns about the future of these large blocks of forest land; that is, will they remain as large unfragmented ownerships, will they remain undeveloped, will they be actively managed, and will they continue to be available for traditional public access?

The report concludes with a progress report on Criteria and Indicators of Sustainable Forest Management and proposes new indicators and benchmarks for the criteria of Aesthetics, Biodiversity, and Traditional Recreation. This is still a work in progress that will require more work, including a public process to validate the results of this effort.

ABOUT THE MAINE FOREST SERVICE

Established in 1891, the Maine Forest Service's mission is to protect and enhance our state's forest resources through forest fire prevention, technical assistance, education and outreach to a wide variety of audiences, and enforcement of the state's forest protection laws. Maine Forest Service offices are found throughout the state and provide Maine's citizens with a wide range of forest-related services.

For more information about the Maine Forest Service and its programs, visit our website at www.maineforestservice.org.

Back cover photo: National champion yellow birch, Deer Isle, photograph by Joe and Joan Bruno.

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