The Massachusetts Forest Today

CHARLES H. W. FOSTER

WHAT ABOUT the Massachusetts forest today? First, we know that it is very extensive, occupying 3.2 million (64 percent) of the state's approximately 5 million acres of land. In the past 150 years, the proportion of nonforestland to forestland has virtually been reversed. Not since Colonial times have we become so markedly a commonwealth of forest dwellers.

Second, despite Massachusetts' position as the third most densely populated state in the nation, almost 3 million of these 3.2 million acres are classified as timberland — that is, capable of growing 20 cubic feet or more of industrial wood per acre per year. The amount currently available is simply staggering. As of 1985, the U.S. Forest Service reported some 20 million board feet on the stump throughout southern New England (up 50 percent since the last measurement, in 1972). From growth alone, the Massachusetts forest could provide materials for housing a quarter of a million people each year.

Third, the Commonwealth's forestlands are predominantly privately owned. More than 1,400 ownerships (in excess of 250,000 acres) are designated as Tree Farms. There are no national forests in the Commonwealth, and less than 500,000 acres of state, municipal, and nonprofit conservation ownerships. With the average private holding now at barely 10 acres, there are probably a quarter of a million individual forest owners in Massachusetts. Significantly, the average owner today is over 50 years of age, a circumstance that portends a massive turnover in ownership early in the twenty-first century.

Fourth, the average forest in Massachusetts is largely unmanaged, despite the fact that the value of the timber alone may represent the cash equivalent of as much as $1,000 per acre. State foresters estimate that perhaps one acre in four displays any evidence of actual management activity. Massachusetts forestry experts consider these observa-

tions to be quite reliable. They are based upon periodic state inventories conducted by the U.S. Forest Service in cooperation with the Massachusetts Bureau of Forestry.

The first formal, quantitative look at the forests of Massachusetts was a cooperative effort by the office of the state forester and the Bureau of Statistics of Labor. The work was begun in 1905 under the direction of State Forester Alfred Akerman and finished under State Forester Frank Rane in 1907. The methodology used was for the census employees to interview local assessors and to have them sketch the forested areas in their towns as best they could on maps supplied by the State Forester's Office. From this survey it was determined that the state was 37 percent forested.

The next survey of the Commonwealth's forest resources was carried out by the foresters of the Department of Conservation during the period 1915–28. It was determined that survey lines running across the town from one boundary to another at a spacing of one mile would yield statistically reasonable data. The project was staffed by a seasonal crew, usually consisting of three forestry students and a team leader. The leader was responsible for transporting the students to the starting point and from the end point of their lines each day. In addition to this, the leader was responsible for gathering information on the forest's status and use, such as wood-using industries in the town, gypsy moth infestation, and any other relevant information. This survey showed that 54 percent of the state was forested and that another 8 percent was in "transition land," consisting mostly of abandoned pastureland. From this, the department's Chief Forester H. O. Cook deduced that the present and prospective total potential forestland in the state amounted to 62 percent of its area. In addition to providing information about the extent of the forest, this survey also provided information about its size. During that period Massachusetts forests were quite young with 80 percent of the forest area in stands less than 35 years of age (trees less than 6 inches in diameter), and only 4.5 percent of the area in trees greater than 10 inches in diameter, what might be considered "saw timber" size. The reasons for this, Cook said, were "not far to seek, because under current conditions in this state as soon as a growth has attained some commercial value, even for fuelwood, the owners commence to cut it off."

Subsequent inventories were conducted in 1952, 1972, and 1985 by

Figure 8.2. Forest scene at the Metropolitan District Commission's Quabbin Reservation in central Massachusetts, the Commonwealth's largest (50,000 acres) and best managed public forest. Photo by David W. Haas. Courtesy of the Boston Public Library.

the Forest Survey Unit, a branch of the U.S. Forest Service's Northeastern Forest Experiment Station, in cooperation with the state. These surveys were increasingly quantitative, revealing a steady increase in individual tree size and timber volume but a relatively stable proportion of the state's area in forest. Meanwhile, however, three other Massachusetts data sources had begun to fine-tune these national inventory findings.

In the mid-1950s, the Commonwealth adopted the Continuous Forest Inventory (CFI) system for its 285,000 acres of state forestland. Nearly 1,500 one-fifth-acre plots were installed and 63,000 individual tree measurements taken in the course of three separate visits. A fourth remeasurement is planned for 1997–98 to determine the amount of forest growth that has occurred since 1977–1978.

In 1951, University of Massachusetts experts prepared a statewide set of land-use and vegetation maps from aerial photographs, on which

they classified the landscape into 104 relatively homogeneous units of forest and wildlife habitat. Remeasurements occurred in 1971 and 1984 and refined these classifications into 21 broad land-use types. These maps reveal not only the extent and nature of the forest, but its relationship to other land uses. By 1985, for example, the acreage of the forest statewide was found to have declined less than 3 percent in the intervening decade and a half. More important than sheer acreage was the emerging juxtaposition of forest and other cover types, a complexity that shows promise for a state management strategy predicated increasingly upon broad environmental forestry objectives, not just wood.

More particular information on individual forest ownerships is available from statistics on lands classified under Chapters 61 and 61A of the Massachusetts General Laws, measures that reduce and defer taxation on tracts of privately held forestland voluntarily committed to professional forest management. An owner of at least 10 contiguous acres whose land is subject to a state-approved forest plan, may petition local assessors for a reduction in the annual tax assessment. As of 1992, some 275,000 acres of Massachusetts forestland had qualified for such classification.

In 1995, a special legislative commission was established and charged with the study and investigation of the extent and adequacy of the management of state and privately owned forestland in the Commonwealth. Chaired by Senator Robert D. Wetmore (D-Barre), himself a forest landowner, the Wetmore Commission sought ways to better utilize the forest resource while simultaneously encouraging the development of healthier and more valuable forests.

Given these encouraging developments, it is ironic that most of the Massachusetts forest, far from being the storehouse of values and products that the Pilgrims encountered, has become an underrated, unappreciated, and underutilized resource. Why that is can be seen through the lens of history.

In the early period of Massachusetts' history, the forest played a dominant and integral role in the growth of the Commonwealth. First it had to be rolled back to make room for settlements. Its products then proved indispensable as fuel and building materials and consequently formed the basis for later trade and the growth of personal wealth. From what we now know of the modern forest owner, the situation

today is markedly different. The land and the forest on it are no longer the owner's principal economic assets. Nowadays, the importance of attributes of the forest such as site and setting have in many instances outstripped the importance of any expectation of direct economic return. This has led many modern forest owners to regard the forestland's values as watershed, wildlife habitat, recreation, and aesthetics more highly than its value as a source of wood products. The reluctance to manage forests stems in part from a fear of diminishing such indirect returns, but also from a perceived inability to obtain dependable, professional management and utilization services. Rightly or wrongly, the image of the forest operator remains that of a person insensitive to long-term natural values.

At the Seventh American Forest Congress, convened in Washington, D.C., February 20–24, 1996, and attended by a large contingent of forestry leaders and landowners from Massachusetts, the prevalence of these practical and attitudinal constraints became obvious. Nevertheless, among the tabulated responses receiving the highest general approval was the vision of the forest sustainably providing a range of goods, services, experiences, and values that contribute to community well-being, economic opportunity, social and personal satisfaction, spiritual and cultural fulfillment, and recreational enjoyment — in short, the broadest possible view of the value of forest in its largest sense. Given Massachusetts' long concern with its forest, the Commonwealth could and should be in the vanguard of states working toward these broad social objectives. How can history illuminate the path toward such ends?

First, we now know that the forest does not exist in isolation from external events. Some of these events are natural, such as the six major hurricanes since 1635 that have been verified by historical records and radiocarbon dating. Other disturbance effects are of human origin: the use of fire by native populations, land clearing by the early colonists and successor farmers, and the massive agricultural land abandonment that triggered the forest's most recent return and subsequent harvest at the turn of this century.

Second, the Massachusetts forest has turned out to be remarkably resilient to these types of disturbances. The new forests may not always be the same as those they replace — a pure stand of birch repopulates an old burn, white pine invades abandoned farmland or pasture, hard-

Young Dicken Crane, a sixth-generation descendent of Zenas Crane, the founder of the paper industry in Berkshire County, waited anxiously for his father, Frederick Goodrich Crane, to return home from Crane & Co., the historic manufacturer of paper for the nation's currency, located in nearby Dalton. Upon his arrival, the daily "peer and poke" routine would begin. Trailed by his four children, Fred Crane, a Yale-trained chemist, would wander through portions of the 1,300-acre Holiday Farm inspecting operations and seeing generally what was going on. On one such occasion, Fred Crane had pulled down an old wasp nest and explained to his attentive offspring that nature was really the first paper maker.

Thirty years later, in 1997, University of Massachusetts graduate Dicken Crane, the president of Dicken Crane Logging, was in the woods in "south county" just before daybreak firing up his articulated skidder (woods vehicle) and preparing to cut logs from a 50-acre woodlot in Sheffield. As he glanced through the pasture-origin pine-hardwood forest, now ripe for a harvest cut to release an understory of sugar maple, he could see the rock face and crest of Mount Everett towering above him.

As the skidder warmed up, Dicken reflected on how forestry had changed over the years, and what would be needed as the twenty-first century approached. For the most part, logging was no longer the cut-and-run operation it used to be. The professionalism evident in Scandinavia and other European countries was beginning to take hold in the United States. Mechanization was gradually replacing hand labor, generally to the benefit of an always hazardous profession and with less damage to the forest itself. But as these operational improvements occurred, the public perception of what should be done with the forest had fragmented.

Some citizens felt that forests and everything that occurred within them should be left to nature alone; others argued that forest management could actually hasten the development of the desired natural qualities and still yield important material and economic benefits to society. Berkshire County, Crane thought, could be a crucible for this search for a pragmatic accommodation of values.

woods succeed the pine after harvesting. But expressed in human terms, we have been blessed with a remarkably forgiving forest, one that provides us with a continuous and unusually varied set of options. Now, however, there is a new factor to consider when we speak of the forest's resilience: a growing realization that the appearance of a forest does not necessarily indicate its ecological health. The future Massachusetts forest may not recover from modern chemical and climatic stresses as well as the past forest did from physical and biological disturbances.

Third, the bulk of forest usage to date has been opportunistic rather than purposeful. Forest resources were largely taken for granted by aboriginal people. For the original European settlers, forest removal commanded priority attention. At the turn of the twentieth century, a completely unplanned new forest spurred by agricultural land abandonment led to a massive period of harvest and utilization, until that resource surplus had again been used up.

Currently, one can only conclude that unlike previous periods in its history, Massachusetts is substantially out of touch with its forests — ironically, just as the resource itself has recovered to a new state of abundance. Thus, if any single policy is needed to shape the future, it would be to awaken and reinvigorate the historic connection between Massachusetts citizens and their forests. Several steps would contribute measurably to attaining this objective.

Expanding our knowledge about the forest and forest processes and disseminating this knowledge to the public would help appreciably. At present there is no comprehensive research plan for the Massachusetts forest, nor any established system for making the necessary research investments. The result has been isolated and disconnected pockets of knowledge fitted to individual areas, investigators, and interests, but little understanding of the resource as a whole. Such an ineffectual research and development program would be regarded as a scandal in any other billion-dollar industry.

If the state of expert knowledge about the forest is deficient, public awareness of forests can only be described as appalling. Massachusetts citizens, though confronted daily with the forest, can barely distinguish among prominent tree species. The ecological functions of the forest are but dimly understood and are rarely reflected in public policy. At this rate, our twenty-first-century citizens, though they may turn out to

be computer-proficient, are likely to be environmentally illiterate. Yet the current fragmentation of forest ownership and the fabric of town forests, conservation lands, and open space already in place where people reside seem almost ideally suited to reintroducing present and future Massachusetts citizens to their forests.

Doing more with the forest on a proactive rather than reactive basis must be a major component of any future forest strategy. Expanding outlets for fiber, such as the new energy and products markets envisioned by the Wetmore Commission, would help stimulate responsible management activity. Accelerated forest-improvement practices such as weeding, pruning, thinning, partial harvesting, organized through publicly supported youth and community projects, could enhance the value of the resource while educating participants to its future potential.

Steps to bridge individual ownerships would encourage the management of forests as whole systems, thereby ensuring broad ecosystem and societal benefits. To do this, planning and management need to occur within the framework of entire landscape units, not simply individual ownerships or tracts. Preference should be given to units where there is a preexisting human sense of forest place or where one can be created through the establishment of "neighborwoods." Linkages between ownerships should be advanced that are both natural (such as corridors connecting lands in their natural state), and human (such as provisions for cooperative action to protect, manage, and utilize forest resources). Consistent with historic tradition, any such arrangements should to the extent possible be based upon incentives, not regulation.

That such an approach can be both practical and locally well received is illustrated by several recent developments. For example, the small forested western Massachusetts town of Plainfield, in conjunction with the state-run Massachusetts Forest Stewardship Program and the University of Massachusetts–based Coverts Program, has established two "neighborwood" stewardship projects involving eight landowner families and nearly 500 contiguous forest acres where management occurs cooperatively. Farther to the east, in the vicinity of the Quabbin Reservoir, Boston's main water supply, a more ambitious program is underway with the interest and support of affected

landowners. The state-designated 400,000–acre North Quabbin Forest Legacy corridor includes portions of the 19 towns and three central Massachusetts counties between Quabbin Reservoir and the New Hampshire border. A private local organization, the Mount Grace Land Conservation Trust, is actively encouraging the joint conservation and management of North Quabbin's mix of public and private forestlands on a voluntary basis. The prospects for an expanded, ecosystem-based approach in Massachusetts are likely to be enhanced by recent legislation permitting jurisdictions to enter into agreements with one another for environmental purposes.

Finally, the greatest challenge ahead for the Massachusetts forest will be to ensure that the next cycle of harvest and utilization, at least the third since the arrival of the colonists, occurs by design rather than default, so that the resource can be employed sustainably for years to come. To do so, Massachusetts' public and private officials must build support for a forest strategy that mixes market and regulatory forces and ensures an orderly conversion from the present to the future forest. Blocks of potentially permanent forestland must be identified and designated, then secured through agreements with private owners and, if necessary, state, local, and nonprofit land purchases. The state's successful farmland preservation program could serve as a model here. So too could Forest Legacy, which provides federal grants to the state for the acquisition of conservation easements to protect key regional forests against ownership fragmentation and conversion to nonforest uses. Whatever the course of action, the conservation of the future Massachusetts forest will require a different kind of initiative by the state's forestry leaders in regular and open consultation with the private sector. Once the strategy has been developed, it should be ratified at a statewide Massachusetts Forest Congress.

Just how might such an agenda be accomplished? Massachusetts has a wonderful reservoir of human resources devoted to forestry, but the present system of support and services is badly fragmented. For example, as many as a dozen types of intermediaries are now required in order to extract wood products from the forest and deliver them to the ultimate consumer. Each participant consumes a share of the value added. These inefficiencies raise costs for consumers, and offer only modest economic incentives for the forest landowner to manage his or

her forests. Forestry services are equally fragmented. The most recent Massachusetts directory lists 89 professionals offering fee-based consulting assistance. Massachusetts' lone forester working for the state Cooperative Extension Service is forced to divide his time between outreach and teaching responsibilities at the state university. At present, there is no concerted, coordinated forest-planning capacity anywhere in state government. The state has 16 service foresters but all are federally funded. Given the uncertainties of the federal fiscal picture, it would be prudent for Massachusetts to provide directly for its own resource service needs.

One good prospect is the Forest Products Trust Fund, placed on the state's statute books in 1991 as a means of sharing state forest revenues with cities and towns where they are situated. This modest revenue stream of $300,000 in average annual timber sales should be augmented by a portion of the state sales tax revenues derived generally from wood, paper, and forest-related products and services. The authorization should be framed to provide incentives for the use of Massachusetts-grown and processed forest products. The availability of a dependable financial base would permit many of the initiatives described above. It would also provide meaningful financial resources to cities and towns, encouraging them to engage actively in forest planning and development. Consistent with historic tradition, the private and nonprofit sectors should take the lead in bringing about these needed changes in public policy.

Can these ambitious goals be achieved? We think so. The late Hugh M. Raup, director of the Harvard Forest for more than twenty years and a student of what he called the "forests of the here and now," expressed great faith in "the contriving brain and the skillful hand of man." He believed firmly that humankind could not and should not be separated from nature. A botanist rather than a forester, Raup particularly favored the observations of the great historian of the American grasslands, James Malin. "The potentiality of man to solve problems," Malin once wrote, "has not yet been exhausted, and the potentiality of the resources latent in the earth to be brought into the horizon of usefulness is still beyond the power of man to conceive. The key to the situation is not the earth, but the minds of men determined to realize their own potential." This optimistic view of the future forest can and should be Massachusetts' own as it enters the twenty-first century.

SOURCES

For the vignettes on the Hobbamock and Winslow families in Plymouth, I am deeply indebted to James W. Baker of Plimoth Plantation, Inc., for the program training manuals, books, and special research reports and access to interpretive specialists he placed at my disposal. Other sources consulted on Native Americans were Harold E. Driver (1961), *Indians of North America;* George E. Hyde (1962), *Indians of the Woodlands;* Peter Farb (1978), *Man's Rise to Civilization: The Cultural Ascent of the Indians of North America;* Elizabeth Tooker (1979), *Native North American Spirituality;* and John Demos (1995), *The Tried and True.* Additional Colonial period references included Alexander Young (1841), *Chronicles of the Pilgrim Fathers;* John Demos (1970), *A Little Commonwealth;* and John Demos (1972), *Remarkable Providences.*

Annotated bibliographies prepared by the Massachusetts State Library and the Massachusetts State Archives at the request of the Special Commission on Forest Management Practices confirmed the dates of forest-related Colonial statutes. For an overview of early Massachusetts forest and environmental history, five references proved exceptionally helpful: John Bakeless (1961), *The Eyes of Discovery;* Charles F. Carroll (1970), *The Forest Civilization of New England;* William Cronon (1983), *Changes in the Land;* Sheila Connor (1994), *New England Natives;* and Edward T. Price (1995), *Dividing the Land.*

The vignette on the Sheldon family and the description of the Connecticut Valley in the 1700s draw heavily on source materials provided by Historic Deerfield, Inc., through the courtesy of Joseph Peter Spang. In addition, the classic two-volume work by George Sheldon (1895, 1896), *A History of Deerfield;* the later work of John Demos (1994), *The Unredeemed Captive;* and two publications available through Historic Deerfield, *Historic Deerfield: An Introduction,* and the school magazine *Cobblestone* (September 1995) all contributed to this section of the chapter. I am also indebted to C. John Burk of the Department of Biological Sciences, Smith College, for his account (*Rhodora,* January 1994) of the *Evolution of a Flora by Early Connecticut Valley Botanists.* Edmund Delaney's 1983 book, *The Connecticut River,* provided a concise background history of the valley.

The vignette of the Pliny Freeman farm in Sturbridge and much of the description of the forest environment of early nineteenth-century

Massachusetts were greatly facilitated by Jack Larkin of Old Sturbridge Village, Inc., and the use of its archives. Larkin's own work (1988), *The Reshaping of Everyday Life: 1790–1840,* proved most helpful. In addition, the Village's training notebooks and various issues of its magazine, *Rural Visitor,* synthesized much useful material. Special reports such as John Englund (1982), *Sawmills in Worcester County;* Myron O. Stachiw (1988), *Economy of a Countryside;* and Martha Lance's 1993 doctoral dissertation (University of Pennsylvania) focusing on Sturbridge and Southbridge, "The Fathers Lived in the Forest," were consulted extensively. Gordon C. Whitney and William C. Davis (*Journal of Forestry,* April 1986), "From Primitive Woods to Cultivated Woodlots," provided a parallel glimpse of the forest resource in nineteenth-century Concord.

The vignette on Bob Healy is derived largely from a personal interview with his son, Massachusetts commissioner of food and agriculture Jonathan L. Healy. Additional references used include the profile of outstanding Massachusetts tree farms (June 1991), *Massachusetts Tree Farms,* and Phil Lussier (1993), *Hall Tavern Farm Forest Stewardship Trail Curriculum Guide,* published by the Mary Lyons Education Fund, Inc., Shelburne Falls, Mass.

To place the Deerfield River in the context of western Massachusetts, two publications were consulted: Walter E. Bickford and Ute Janik Dymon (1990), *An Atlas of Massachusetts River Systems,* and Deborah E. Burns and Lauren R. Stevens (1988), *Most Excellent Majesty: A History of Mount Greylock.* The three-volume set of memorabilia from the Mohawk Trail and Savoy State Forest Civilian Conservation Corps camps assembled by Bernice O'Brien of the Massachusetts Department of Environmental Management, provided a unique picture of forest conservation activities in western Massachusetts during that period.

For the later part of the nineteenth century and the early twentieth century, several sources were consulted: William H. Clark (1948), *The First Fifty Years of the Massachusetts Forest and Park Association;* state forester Harold O. Cook's personal reminiscences (1961), *Fifty Years a Forester;* and Perry H. Merrill (1981), *Roosevelt's Forest Army: A History of the Civilian Conservation Corps.* Douglas MacCleery (1992), *American Forests: A History of Resilience and Recovery,* provided a useful overview of modern forest history.

The vignette on Dicken Crane was based almost exclusively on a

personal interview. However, background information on the Crane family was acquired from *The Berkshire Hills* (1939), a volume in the American Guide Series compiled and written by members of the Federal Writers' Project of the Works Progress Administration for Massachusetts.

Current Massachusetts forest statistics are drawn from David R. Dickson and Carol L. McAfee (November 1988), "Forest Statistics for Massachusetts"; William P. MacConnell et al. (October 1991), *Land Use Update for Massachusetts;* Robert T. Brooks et al. (February 1993), *Forest Resources of Southern New England;* statistical reports on Chapters 61 and 61A of the Massachusetts General Laws compiled by the Massachusetts Bureau of Forest Development and from material included in the interim report (June 1996) of the Special Commission on Forest Management Practices. The April 1996 special supplement of *The Forestry Source* (Society of American Foresters) summarized the results of the Seventh American Forest Congress.

For the recommendations on regional and ecosystem approaches, three sources were especially helpful: Massachusetts Bureau of Forest Development (1993), *Forest Legacy Needs Assessment;* Susan M. Campbell and David B. Kittredge, Jr. (*Journal of Forestry,* February 1996), "Ecosystem Management of Multiple NIPF Ownerships"; and Alisa D. Godoletz and David R. Foster (*Conservation Biology,* in press), "History and Importance of Land Use and Protection in the North Quabbin Region of Massachusetts."

Recommendations for action at the local level were inspired by Robert L. McCullough (1995), *The Landscape of Community.*

For the concluding observation, I am indebted to Benjamin B. Stout's 1981 collection of the writings of Hugh M. Raup, *Forests in the Here and Now.*

Finally, a source of help and guidance has been the Massachusetts Historical Society (especially Virginia Smith and Peter Drummey), which hosted an early meeting of the forest history authors, encouraged this project, and helped track down some of the more obscure references.