Community Forestry At the Urban-Rural Interface: The Beaver Brook Association and the Merrimack River Watershed

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Editor's Summary

Managing the forest and watershed in a remnant forest surrounded by suburban sprawl is the goal of the Beaver Brook Association, a 34-year-old non-profit organization in New England. Beaver Brook forestry at the urban-rural interface is a model for how farming, forestry, and recreation can complement rather than threaten each other, a model that is increasingly important as rural landscapes are overcome by bedroom commuter communities and urbanization. This remnant Beaver Brook forest, in a landscape which in 300 years was transformed from forest to farmland to bedroom community, is being re-valued as forest again.

Two cousins who had grown up in the watershed and were saddened by the devalued land, rural poverty, and depleted soils they now found there, decided to act upon their nostalgia for rural ways, their belief in outdoor education, and their savvy about tax write-offs. They undertook a land-buying venture in the watershed and established the Beaver Brook Association, a conservation organization with an educational mission and endowment. Because of these two men, their use of money for conservation, and the associates they attracted to the Beaver Brook Association Board, 2,200 acres of the Merrimack River watershed is held as open space for nearby residents and visitors, creating land valuations considerably higher than the original real estate.

Beaver Brook Association forest management has developed over the years to emphasize a watershed perspective. Management includes the selective logging of trees to produce income for Association activities, for recreation and wildlife preservation. To demonstrate how forestry can coexist with recreation and wildlife, the Association offers programs for schoolchildren, public festivals, summer residential programs, nature trails, horticulture classes, and a model working farm on Association lands, to the growing suburban and urban populations which surround the conservancy. In 1996, almost 20,000 people attended the Association's various programs.

A challenge for the Association in the years to come will involve maintaining its integrity in the context of its growing use. The fate of these 2,200 watershed acres surrounded by housing developments and a growing human population with a propensity to either abandon or use a place to death, is uncertain. Whether or not this forest "island" in suburban America can support the life within it will ultimately depend on how well its lessons are learned, and by the will of its neighbors and others in the rapidly suburbanizing watershed.

Back to the Future

In a once out-of-the-way corner of the 5,010 square mile Merrimack River watershed, the Beaver Brook Association (BBA), a 34-year-old nonprofit educational corporation, manages an "island" of forest within a rapidly suburbanizing landscape. For the previous 300 years, this island was a small segment of a large rural area comprising forest, farm, and swampland in southern New Hampshire and northern Massachusetts. Now, this "island" of forest reverberates far beyond its limited acreage—providing a lingering educational opportunity to learn about forests, forestry, farming, and recreation for the bi-state region where farming and forestry lifestyles have mostly disappeared.

The Beaver Brook Association was founded through the efforts of two cousins in the early 1960s. Their initial gift of 17 acres of land to the community of Hollis, New Hampshire, "dedicated to the advancement of knowledge and appreciation of the natural world among people of all ages," formed what has become a diverse and active institution. The volunteers and staff of the Association manage a certified tree farm, a series of educational programs for schoolchildren and adults, and an increasingly important wildlife and human recreational refuge from the surrounding urban and suburban areas.

The philanthropic vision of "two unlikely partners," Hollis P. Nichols, a Boston banker, and his country farmer cousin Jeffrey P. Smith, made possible the acquisition of a loosely adjacent series of played out farms, fields, forests and swamps at a time when prices were low and demand for the land was nearly nonexistent. The land was obtained with money from the various funds and trusts established by Hollis Nichols and his wife Ellen, in addition to the efforts of Hollis' cousin, the local farmer, town official, and horticulturist Jeffrey Smith, who contributed a substantial amount of his own land.

Since its founding in 1964, the Association's property has grown through purchases, gifts, and exchanges to encompass approximately 2,000 acres of land and several old homesteads in three towns. Much of the Beaver Brook land is managed as a productive, certified tree farm with related wildlife management practices and goals. Substantial portions of various habitats are preserved in their natural states. These include mature second growth forests with magnificent trees, mixed-age forests, and several types of wetlands. Beaver Brook, one of two streams crossing the main set of properties in Hollis, New Hampshire, is a tributary of the Nissitissit River, which flows into the Nashua River in Massachusetts. One of the nation's great success stories in watershed restoration,[1] the Nashua River flows north back into New Hampshire where it joins with the Merrimack River at the "Thoreau's Landing" condominium development in Nashua, New Hampshire.

The Regional Context

The Merrimack River watershed presents a 20th century study in contrasts: a watershed of 1.7 million people with land uses ranging from federally designated wilderness, to National Forest managed primarily for recreation, to heavily industrialized urban/suburban corridors along 100 miles of the Merrimack River itself. This previously agricultural watershed is 83 percent forested with generally poor quality, small ownership units of slowly re-establishing forest (high graded harvests resulted in increasingly poor re-growth) since the 1860s when less than 40 percent of the watershed was forested. The Merrimack watershed is a microcosm of eastern North America: an increasingly fragmented island of forest and wildlife habitat surrounded by the pressures of over 80 million people living within one day's drive.

The Merrimack River watershed rises in the White Mountains of New Hampshire at the southern edge of the Great Northern Forest. The 180 mile-long watershed drains two-thirds of New Hampshire (3,800 square miles) and 1,210 square miles of northern Massachusetts. Formed by the confluence of the Pemigewasset River (draining from Echo Lake and the Old Man of the Mountain and from the East Branch Wilderness of the White Mountain National Forest), and the Winnipesaukee River (draining the Sandwich Range and Lake Winnipesaukee) in Franklin, New Hampshire, the 116 mile long Merrimack's major drainages include the north flowing Contoocook, Nashua, and Concord rivers, along with the Suncook, the Souhegan, and the Piscataquog before reaching the Gulf of Maine and the Atlantic Ocean in Newburyport, Massachusetts.

Cradle of the industrial revolution in America, the Merrimack is storied in literature (Thoreau), poetry (Whittier), and song (Tom Rush). The mills of the Merrimack in Concord, Man-

chester, Nashua, Lowell, Lawrence, Haverhill, and Newburyport provided power, textiles, shoes, machinery, and cash for a young nation. By the beginning of the 20th century, the Amoskeag mill complex in Manchester, New Hampshire would be the largest textile mill in the world, employing 17,000 workers.

The Merrimack's first major products after white settlement, however, were beaver and the four-to-six-foot-diameter white pines favored as mast trees for England's Royal Navy. By the time of Thoreau's trip on the Concord and Merrimack in 1839, the vast forests of white pine, white oak, hickory, chestnut, cedar, ash, maple, and beech were largely eradicated throughout the Merrimack watershed except for its northern mountain reaches. Forest cover statewide reached a low of 48 percent in 1850 with a population of approximately 3,000 people in the watershed. One hundred fifty seven years later, approximately 83 percent of the watershed is again forested and 1.7 million people call the Merrimack basin home.

The people of New Hampshire have a long and distinguished history of concern for forests. New Hampshire is home to one of the oldest private land trusts/environmental advocacy groups in the country, the Society For the Protection of New Hampshire's Forests (the Forest Society). Founded in 1901 "to protect the state's most important landscapes and promote wise use of its renewable resources," the Forest Society was, in part, responsible for the 1911 passage of the Weeks Act which established the White Mountain National Forest and laid the basis for the entire Eastern National Forest System.

Hollis Nichols, Jeff Smith, and Beaver Brook

One common factor for many of the land protection projects throughout the Merrimack watershed, is the initiating presence of an individual or a small group of individuals who, for a variety of reasons, want to protect a body of land.[2] The origin of the Beaver Brook Association embodies this pattern. According to Tom Mullin, Executive Director, "Jeff Smith was a farmer, forester, logger, and horticulturist, born and raised in Hollis. For years, he had been involved in a variety of conservation practices and in fact had been recognized over the years for his agricultural and forestry practices by the state and other entities. Hollis Nichols was a manager of a mutual fund outside of Boston . . . he's a cousin who went into Boston and made a fortune."

According to those who knew him, Hollis (who died in 1997—Jeff died in 1987) had an deep appreciation and love of the outdoors, land, and nature. He was also deeply involved with the prestigious Roxbury Latin School in Boston. He was on their board of directors, served as treasurer, at one time served as president, and had been a student there as a boy as he grew up in West Roxbury, which, says Mullin, "at that time was a very exclusive part of Boston." According to Mullin, Hollis thought it would be a good idea and a great opportunity to set up a space near enough to the city, but far enough away that the urban boys of Roxbury Latin (and eventually other organizations and people) could learn more about the out-of-doors. In the early 1960s, Hollis got together with Jeff to work on the idea. They were, says Mullin, "quite frankly an unlikely pair—though they had known each other for life, I'm not quite sure that without this venture they would have been anything other than distant cousins."

Ralph Andrews, a prone-to-laughter, silver-haired former President of the Beaver Brook Board of Trustees, identified a richly ironic set of factors which played into Nichols' vision for outdoor learning and preservation. He said, "It all started when he [Hollis] bought a farm to build a house for his mother with 17 acres and his mother didn't like the house." In the early 30s Nichols had purchased a 17-acre farm on top of a hill, and he and his sister and brother built an elaborate "summer cottage" for their mother. Tom Mullin added, "Though she did go there, she didn't really

like it because he had it built exactly the way he would have liked it. It looks like an Englishman's club, dark paneling, it fits Hollis perfectly but his mother didn't like it." In 1964, when Nichols and Smith formed the Beaver Brook Association, the 17 acres surrounding his mother's unwanted "summer cottage" formed the first donation.

Nichols was also motivated in part by his aversion to the Internal Revenue Service. "He began looking for ways he could use the property and found he could donate the land for conservation and get around the IRS—it motivated much of his giving! We can thank the IRS for steering him in the right direction" said Andrews. Mullin adds, "He had a vision, and after, he saw tax benefits to it."

In fact, the New Hampshire Department of Revenue Administration reports that 52 percent of all land statewide is in the Current Use Program which provides tax breaks to landowners. Eighty-five percent of that land is forested, followed by farmland, unproductive land, and wetlands.[3] Until the tax "reform" act of 1986, land donations like those of Hollis Nichols were much more common and advantageous.

Nichols connected with his cousin Jeff Smith, because while Nichols had the vision and idea for creating an educational forest conservation reserve, he didn't know where to start looking for properties and forest parcels. Jeff Smith had been on the conservation commission, had been a selectman,[4] and knew all about the ins and outs of small town life, so he knew which properties had been abandoned and had tax liens and which families were interested in selling. Tom Mullin remarked that "Of course, this was 1964 when this major purchasing was commenced—for the first 10 or 15 years I'm sure that when people heard that this new non-profit was buying up swampland and fields reverting to forest, people probably thought Hollis and Jeff were crazy."

According to Andrews, who, in addition to his volunteer work with Beaver Brook Association, the Audubon Society of New Hampshire, and other organizations, is a wildlife biologist retired from 40 years at the U.S. Fish and Wildlife Service, "That was still a time when people were glad to get any money they could out of this lousy New Hampshire land and move to the city somewhere. Land was cheap and much of it was already in the process of converting back to forest—though of very poor quality. I think people were glad to get rid of it. They weren't about to go back and try to clear and put it back into farmland, because that's what they wanted to escape and they couldn't make much out of it for forests." Through the efforts of Jeff Smith and Hollis Nichols, along with the first Beaver Brook Association Director, zoologist and forester Tudor Richards, and forester Peter Smith (no relation to Jeff), the Beaver Brook Association is composed of over 90 separate parcels totaling 1,729 acres clustered in the town of Hollis, with an additional 200 acres in the nearby town of Milford.

Beaver Brook Association holdings maintain Hollis' original connection with educating schoolchildren by support a range of programs for schoolchildren of the greater Nashua area, along with public festivals, summer residential programs, nature trails, horticulture classes, a new model working farm, and various special events. A small professional staff of 10 is supplemented with a part-time teaching staff of 12 to 15 and 9,850 hours of labor from nearly 200 regular and part-time volunteers in 1996. About 16,700 people attended various programs on Association property in 1996 with total estimated visitor hours at 52,000.

The Merrimack River Watershed Initiative:
Restoring an Industrial and Recreational Resource

As a kid in the 1960s growing up in New Hampshire, I knew the Merrimack as the river "too thin to plow and too thick to drink." The early 1970s knew it as one of the 10 most polluted rivers in America. Its major tributaries including the Pemigewasset and the Nashua, stunk of sulfur and dyes from the pulp and paper mills, and the Nashua would change color daily depending on the daily run of paper colors at the Fitchburg/Leominster mills. In the 1980s, state environmental agencies in Massachusetts and New Hampshire didn't cooperate on cleanup plans or action, and environmental advocacy groups were filing lawsuits against the major municipalities and industrial dischargers for gross violations of the Clean Water Act. Even the then 10-year-old Merrimack River Watershed Council (MRWC), while advocating a watershed approach to restoring the Merrimack River, focused almost exclusively in its program on the Massachusetts stretch of the river from Lowell to Newburyport. At the urging of the MRWC and others, Mike Deland, then Regional Administrator for EPA Region 1, recognizing the progress that had been made with the investment of over $500 million in federal and state expenditures for sewage treatment, stepped into the breach with $150,000 carved out of his budget in 1987 and created the Merrimack River Watershed Protection Initiative.

Using $50,000 for each state and an additional $50,000 for his own staff, Deland, at the MRWC's 1987 annual meeting, called for "an action-oriented watershed protection initiative [that] will allow us to step back and examine the Merrimack watershed not as a collection of discharge permits or a list of construction grants, but as a single ecological system. This precedent-setting, holistic approach will expand our understanding of the watershed, and allow us to more intelligently focus our pollution control efforts." Ten years later, the Beaver Brook Association is the beneficiary of much of the work arising from the EPA Initiative. Among other issues focusing the Beaver Brook's work, is the availability of an interstate GIS system created by the Initiative which includes sophisticated population growth maps and other useful parameters, along with a baseline geographic capability. -PL

Land Management at the Urban Rural Interface

At the time of Beaver Brook's incorporation, few people in the area foresaw the importance of the area of open space Smith and Nichols were protecting. In the larger context of a 5,010 square mile watershed, 2,000 acres may seem inconsequential. Yet, an analysis of changes in population and land use of the area over the last 50 years illustrates the importance of those 2,000 acres today. This southern tier of New Hampshire has been transformed from a largely rural series of small farm towns in the 1960s to a largely suburban/urban land use base with very few farms in the 1990s. According to Tom Mullin, there is one dairy farm left in Hollis, compared to approximately 60 dairy farms 50 years ago. There are only three large orchards left, along with scattered estate hay farming, most of which is harvested for hobby horse farms in Massachusetts.

Population figures for the three towns with Beaver Brook Association lands are instructive.

The town of Hollis grew from 5,700 people in 1990 to 6,600 in 1996[5] and is projected to grow another 25 percent by the year 2010. Respective figures for Brookline are 2,400 in 1990 to 3,200 in 1996 and 60 percent by 2010. Milford growth is projected to go from 1,200 in 1990 to 14,400 in 2010. The city of Nashua, bordering Hollis on the East, is projected to grow from 81,000 in 1996 to 90,000 in 2010. Projected growth rates in towns within 20 to 25 miles of Hollis range from a low of five percent in Ayer, Massachusetts to a high of 82 percent in Weare, New Hampshire. As subdivisions sprout in wooded areas and along former working fields, recreational open space becomes scarce, and the importance of the 35 miles of trails and the wildlife management of the Association becomes greater each year.

Two major protected features are the mostly undeveloped watersheds of Beaver Brook and Rocky Pond Brook, which flow into the Nissitissit River and then into the Nashua River. Beaver Brook's green belt of varying topography, woodlands, and wildlife protects clean water and a natural area of ecologically significant size. Although there are private inholdings of land in each of these watersheds, a combination of lack of access across Beaver Brook Association lands and placement in the current use tax system for forest purposes, effectively keeps both stream watersheds protected. This protected area is particularly important for a wildlife habitat and the protection of now ecologically unique communities in this region of fragmented habitats; just 45 miles northwest of Boston, and only 10 miles from the 80,000 plus city of Nashua, New Hampshire's fastest growing area. The context becomes clearer when one realizes that well over 80 million people live within one day's drive.[6]

The evolution of the economy of the area from a rural subsistence economy to a bedroom community affects the operations and the goals of the Association directly. Land acquisition has slowed as the costs of land increase, casual recreational visits to the trail system become more important to manage, and pressure on surrounding habitat begins to affect management of Association properties. Tom Mullin gives one small example of the growth in operations over the last few years. "We used to hold, for about 15-16 years, a special event called the Fall Festival, and we used to attract about 500 to 600 people per year—a very nice event. In 1993, with just a little bit of extra PR, it wasn't a tremendous amount, it's now attracting about 2,500 people. The growth of the area in the last four years has been tremendous."

Forest and Wildlife Management at BBA: Recovery, Harvest, and Transitions

Much of Beaver Brook's productive forestland has been managed since 1920. Trees are harvested selectively by a number of conventional methods. According to Lee Kantar, Beaver Brook's Natural Resources manager, harvesting is done for demonstration purposes, to improve wildlife habitat, to maintain the health of the forest, and to provide minor income for the Association's activities. A nursery for trees and shrubs provides a source for plantings on Beaver Brook lands and along roads in Hollis to replace trees killed by road salt.

Beaver Brook's Hollis/Brookline property has been certified in New Hampshire's Tree Farm program since 1975 and was recertified in 1995. In 1983, it was chosen as the New Hampshire Outstanding Tree Farm of the Year. The New Hampshire Tree Farm Program describes participating lands as privately owned forests that serve to grow trees on a sustainable basis while advocating the protection and conservation of its natural resources including wildlife habitat, watershed protection, and ecologically unique communities. Additional benefits include outdoor recreation, education, and aesthetic values.

Beaver Brook Association's first timber inventory and management plan was completed in 1979,[7] and set several policy goals for the Association lands including:

a. to maximize the educational benefit received by users of Beaver Brook;

b. to maximize multiple uses (timber, recreation, wildlife, water production, research, and education) over the entire acreage as opposed to maximum multiple use of each area;

c. to maximize utilization of all harvested products;

d. to prevent site deterioration;

e. to create a demonstration project;

f. to perform research as a cooperative effort with area scientists;

g. to have an overall forest management philosophy of uneven age harvest; and

h. to limit the designation of natural areas to those areas that are ecologically unique and/or fragile.

Forester Karen Bennett, who wrote the 1979 plan and is now a Beaver Brook Association trustee, said, "These goals, though never formally adopted by the trustees at that time, were warmly received and formed the basis for most of our management actions over the years. The plan did suffer a sort of benign neglect during the times we were without professional staff working on the forest, but we have generally stuck to the outlines of the 1979 plan."

In 1987, Beaver Brook Association trustees hired Consulting Forester Craig Birch to compile a report analyzing past forest management practices and the status of the Association forest, and to provide "realistic options for the Board of Trustees to use in planning future use and management of Beaver Brook's lands." At the time, total holdings were about 1,500 acres. Birch highlighted the foreseeable population pressures for the area noting:

> As everyone is aware, on Beaver Brook's land there is much more to the forest than the trees. In 1986, 2,187 registered visitors used Beaver Brook[8]. . . . As the surrounding area becomes more developed, Beaver Brook will become more important as a wildlife refuge and for passive recreation. Beaver Brook Association will have a great challenge and obligation to educate visitors about the wise use of New Hampshire's forests . . .

Birch's report noted that Beaver Brook's forest generally contained even-aged stands 60 years or older, with some stands 90 years old and others, "like the Howe pasture on Ridge Road, are forested by trees which grew after the 1938 hurricane." Birch also noted the high quality stands of white pine on the lands managed and formerly owned by Jeff Smith, and projected eventual species successions based on soil types and current dominant species if the forest was left unmanaged. Birch's report took the major policy recommendations from the earlier Bennett report and suggested several key modifications:

Forest Practices and the Merrimack Watershed: The Weeks Act of 1911

By 1885, 680 timber companies were cutting timber in the White Mountains, many of them indiscriminately. In their wake were denuded hillsides, streams choked with runoff, and devastating forest fires that fed on the piles of slash and waste. As logging railroads pushed the cutting higher into the mountains, visitors to the grand hotels of the Whites were greeted with burned over hillsides and great clouds of smoke. Textile mill owners downstream on the Pemigewasset and the great mills on the Merrimack watched helplessly as erosion-fueled freshets and summer droughts alternately flooded and idled their wheels. In the late 1890s, concerned editorials started to appear in the Boston and New York newspapers, while a handful of early conservationists huddled with business and political leaders.

In 1899, an Episcopal missionary for northern New Hampshire found the critical human angle that started to turn the tide. The Rev. John E. Johnson wrote an incendiary pamphlet that accused the New Hampshire Land Company—a Hartford based concern that, along with other investors, was buying up and consolidating large tracts to sell to the timber companies—of genocide. An article in the December 1900 issue of New England Homestead, a farm newsletter, followed this pamphlet. "The people are a unit in behalf of New England Farms, homes and industries!" the newsletter thundered. "The wanton destruction of forests in northern New England has aroused universal indignation . . . which simply needs to be organized to accomplish the desired reform."

Three months later, former New Hampshire Governor Frank West Rollins convened a meeting of nine friends from a range of backgrounds. They called themselves the Society for the Protection of New Hampshire Forests.

"The early Society was an amalgam of New Hampshire's political power with Boston's social and financial elite, plus a seasoning of pioneer conservationists and outdoorsmen and hardy Yankee townsmen and farmers," historian Paul Bruns tells us. Interests ranged from the altruistic (the Appalachian Mountain Club) to the commercial (American Pulp and Paper Association). United with advocates for a southern Appalachian reserve, the coalition decided that the only adequate response was federal ownership. Leisure, timber and scenery were all factors, but it was water that turned the tide. In a booklet entitled, "Reasons for a National Forest Reservation in the White Mountains," Amoskeag Manufacturing Co. president T. Jefferson Coolidge blamed clearcutting upstream for the alternating floods and droughts that were damaging his mills in Manchester. Soon, more than 100 mill owners joined the fray.

Finally, in 1911, with the support of Progressives in Washington and sponsored by Representative John Weeks of Massachusetts, a native of Lancaster, New Hampshire, an Eastern forest reserve bill passed both houses and was signed by President Taft. The legislation enabled the federal government to purchase privately owned land to protect the headwaters of "navigable streams." No region of the country was specifically named, but within a year of passage, land acquisition had begun in the White Mountain National forest. Eventually the Weeks Act would enable the creation of 50 national forests in the East.

Edited and shortened from *The Weeks Act of 1911* by Richard Ober. From *At What Cost? Shaping the Land We Call New Hampshire* Richard Ober, editor. New Hampshire Historical Society and SPNHF publishers, 1992.

Wildlife Management

The suburbanization of the lands surrounding Beaver Brook is beginning to raise complaints about "nuisances." Andrews chuckles, saying "people want wildlife, but when they find out what wildlife is, beaver, deer, etc. they become "nuisances." He calls it the "conservation land syndrome," saying the real estate industry emphasizes lots that back-up to protected conservation lands—leading to increased fragmentation on the edges of the conservation land and homeowner opposition to tree cutting and new recreational trails.

Most of the conflicts at Beaver Brook about forestry and wildlife operations have to do with the timber cuts around the wildlife pond, and adjacent land the Association doesn't control. The most controversial issue is the increased use of mountain bikes, but motorized vehicle use has been banned, and there is very little problem with all terrain vehicles, motorcycles, or snowmobiles. Andrews adds, "We've had some controversy with Trustees who were upset about ruts on their favorite trails, and other damage from forestry operations, but never to the point where the Trustees have said we don't want further cuts. In a sense, in the eyes of the public, we are a nature preserve because we do have regulations against hunting and trapping, and you can't pick the flowers, you can't remove vegetation." With irony in his tone, Andrews notes, "It's all right if we do forestry, but you can't pick the flowers. Fortunately, it hasn't come up into a big controversy that you can cut the trees, but you can't pick the flowers."

In 1968, Beaver Brook received PL 566 funds to build and maintain a dam for a wildlife pond and swamp. Beavers were long extirpated from the area, and there was no standing water for migratory waterfowl or other creatures. The wildlife pond is now one of the most popular spots on the trail system and fishing is allowed. In keeping with the spirit of the Association's name, wildlife management practices actively encourage beavers for maintaining wetland habitat for other species, and education programs are focused on their role. Andrews notes, "This at a time when ex-urban homeowners, road supervisors, and saw-log foresters want to get rid of them." But beaver have re-colonized the Association properties, and the pond is no longer an isolated water body.

Management of aquatic species, however, is one of the gaps in the history of the Association. According to Mullin, "We really don't know what kinds of fish we have." Though the land comprises a large part of the Nissitissit watershed and both Rocky Pond Brook and Beaver Brook are in relatively untouched condition, there has been no study or inventory of aquatic species other than an annual beaver census. There was an effort in conjunction with the Audubon Society of New Hampshire in the late 1980s to use Beaver Brook as a long term monitoring station of environmental quality. But the effort became mired in conflict about methodology and expense and eventually faded away after only one report.

Education

The original mission of serving kids from the Boston area Roxbury Latin School waned over the years. According to Mullin, the school's philosophy changed about 20 years ago with the arrival of a new headmaster and Hollis Nichol's departure from the Roxbury Latin board. The School's new leadership de-emphasized natural science and the importance of outdoor recreation and the close ties to Beaver Brook faded away. The mixture of students that Roxbury-Latin serves has also changed over the years from a diverse group of rich and working class kids to primarily rich kids. Andrews says, "The original intent of bringing kids from the city became not so special . . . coming here was no longer coming to the farms and fields of New Hampshire, and so it changed at both ends."

One tie remains between the school and Beaver Brook. Seventh graders from Roxbury Latin attend a two-night, three-day orientation program and camping experience each year. Andrews adds,

"From the standpoint of what Beaver Brook is about—that being the educational opportunities, with the land being the workshop for these opportunities, education is always the focus of what we do here at Beaver Brook. Kids are now bused in locally from the Greater Nashua area and neighboring Massachusetts schools and organizations."

Management Concerns and Growth

Growth put pressure on the board to fund programs from endowment and develop a professional staff. Ralph Andrews relates how:

> Originally we were very fortunate here, thanks to Mr. Nichols' foresight and antipathy toward the IRS. He made sure he set up tax-exempt funds so that we could keep our entire staff, and maintain these buildings and facilities without need for any membership money. But there came a time when we were outgrowing that, and also we found we had to put some of our money in more conservative investments—we were getting into a lot of junk bonds (which in the heyday were paying us quite a bit of revenue but fortunately we got out in time)—and put our investments in more conservative sources of revenue that didn't bring us as much. So, we really had to focus. There were some years where we cut back on staff and for a long time we were without a professional director . . . the President of the board was pretty much the person who ran things.

For many years, Beaver Brook was managed primarily by the all-volunteer Board of Trustees who were elected by a small group of members. Hollis Nichols, informed by his banking experience, held a traditional viewpoint of how the board of trustees should be operated and how they were morally as well as legally obligated to be well informed and to go deeply into operations. Over time, the hands-on nature of the volunteers willing to be trustees changed with the growth of programs and in particular the growing sophistication of the education programs. "The nature of the operation was changing so that it was more complicated, and a person with another job could not keep up with the day-to-day operation," says Andrews. Eventually the management structure had to grow with the programs.

Tom Mullin adds, "And then . . . we went pretty much from a rural community to an urban community . . . [we] had much more demand by the community, desires by the community about what you could provide. We saw this overwhelming demand; we were turning things away, while for many years, up until about five or six years ago, the board was running the organization. The committees at the time, about six or seven different standing committees, Executive, Finance, Library, Horticulture, Publications, Forestry, Trails—all those indications of a board-run organization."

According to Andrews, "This was an extension of Jeff Smith's personality, and he looked a little bit askance at some of the things that developed in education of horticulture operations here, but we all did eventually realize we did need to have a full-time director."

Beaver Brook's operating budget is about 40 percent endowment income, with the rest coming from a variety of sources including educational revenues, grants, and approximately 600 members in the "Friends of Beaver Brook Association" effort. Most of the education programs are provided on a fee-for-service basis, which is subsidized by the Association. Beaver Brook Association also made about $15,000 from timber harvest in 1996.[13]

New Land Trust for Future Acquisition

The trustees set up a new spin-off land trust, the Nichols Smith Conservation Land Trust, to accept gifts of land, easements, and conservation restrictions for Association lands (many of the Association lands were donated or acquired without development restrictions) and other lands in the area. The new land trust trustees are all local people. Although the impetus for the new trust was the need to protect the Association's lands, the trustees didn't want to limit the land trust to Association lands, because other area conservation organizations also had the need for a vehicle to hold permanent development restrictions.

The Future of the Beaver Brook Association in the Merrimack Watershed

From 1993 to 1997, the composition of the Beaver Brook Association board has changed by approximately 80 percent. Most of the founding members have died or moved out of direct involvement. Land acquisition efforts for the future are unclear, due in part to increased land values in the area and staff efforts in other programs. Beaver Brook has identified abutting properties they are interested in acquiring or gaining conservation easements on. Andrews says, "We'd like to acquire some of the inholdings and have identified key parcels (trail crossings and Rocky Brook and Beaver Brook properties), but we don't want to get involved in picking up parcels. We're also quite conscious of the fact that we have 10 percent of the land in the town and we don't want to be perceived as a land hungry non-profit taking property off the tax rolls—even though we all know that is beneficial."

The danger of the perception of a "land hungry non-profit" is particularly notable because of the structure and local impact of New Hampshire's tax system. New Hampshire is a lonely holdout in the modern age, as a state without either broad-based sales or income tax. Consequently, government services, including public schools and all municipal services, are financed exclusively through local property taxes. As a charitable organization, Beaver Brook is exempt from local property taxes, so the financial implications of adding private taxable lands to the exempted lands can be a critical local political issue with predictable financial impacts. Like many other private educational organizations in the state, the Association continues a practice started by Hollis Nichols of making an unrequested "payment in lieu of taxes" to the towns of Hollis and Brookline. Though New Hampshire is without a broad-based sales tax, it does have many specific sales and use taxes, including a 10 percent timber harvest tax whose proceeds benefit the towns.

Mullin is more cautious than Andrews about future land acquisitions, stating that with the rise in value of the surrounding lands (in part because of the amenity of open space Beaver Brook provides adjacent landowners), he doesn't foresee any major land acquisitions by Beaver Brook or its new Nichols-Smith Conservation Land Trust. Mullin may be reacting to his role as an executive director still catching up with the growth of educational programs and with years of deferred maintenance on buildings and trails prior to his arrival on staff. The organization has experienced great leaps in management and program delivery since Mullin's arrival in 1995 and is still expanding in budget and services provided.

One long-term management issue is the fact that many of the trails crossing private land are there based on handshake agreements with Jeff Smith. According to Mullin, "For some of the inholders, I think the idea of giving the land to Beaver Brook galls them a little bit. So, they have been thinking about it for a while. Even though they have no practical use or access and don't want to continue paying taxes on it." Andrews adds, "Some people have the idea that Beaver Brook is sitting on a big pile of money because Hollis Nichols at one time was our money source. They seem to think we could purchase their land at a big price. . . . I keep my fingers crossed and hope that the issue of trails going across private property doesn't become an issue in the future."

The Beaver Brook Association effort is a microcosm of the challenges facing communities at the urban-rural interface. It deals with issues of class illustrated by the changes of the Roxbury Latin student body (and the transfer of the majority of the school based programs to the now more influential urban area of Nashua) and the change of the local communities of Hollis and Brookline from working farm towns to commuter/bedroom communities with expensive new housing sprouting amongst the hay fields. It deals as well with the disconnection of children and adults from the natural environment and with the need for a different and smarter forestry management and restoration effort for the entire watershed. Beaver Brook, in the course of its education programs, is managing its forestlands to improve its condition, harvestable value, wildlife habitat, and recreational potential while consciously modeling an example for the region. Both the towns and the Association have contributed to and benefited from the studies of the EPA Merrimack Watershed Initiative and are explicitly conscious of their role in the larger picture.

The Beaver Brook Board's mission has been rewritten from "dedication to the advancement of knowledge and appreciation of the natural world among people of all ages" to "promote understanding of natural world interrelationships and encourage conservation of natural resources through education and stewardship." Its objectives include natural resource education, land protection, natural resource stewardship, land and water management, demonstration farms, outreach and community relations, and facilities management. Links to the past and perhaps steps to a sustainable future for the watershed.

Mullin concludes: "Our key challenges for the next 10 years include maintaining the integrity of the natural resources in the face of growing population. Whether we expand our program or not, the population visiting Beaver Brook land is going to increase. We have more than half a dozen access points to our property and the number of visitors is steadily increasing. I'm worried about the fact that the town of Hollis is changing from rural-suburban to suburban-urban, and the changes that will come about as a result of the increased uses by the people who live next door."

New England Prospects . . .

For Mark Lapping and other contributors to the 1982 book *New England Prospects,* the question posed by the evolution of a "working rural landscape" might be: Do the Association lands make a difference in a landscape view of the ecology of the region or are they solely a new kind of theme park for the ever-growing population of the region? Steve Blackmer, president of the Northern Forest Center[14] (a regional think-tank based in Concord, New Hampshire) says, in spite of the encroaching population growth and sprawl, it is still an open question. "A piece of land like that can be critical if it is part of a broader landscape conservation effort. If, however, it becomes an island of 2,200 acres surrounded by housing developments, it is of limited value (unless it happens to contain some specific instance of an endangered species)." Blackmer continues, "For Beaver Brook, the question is whether there is the potential for enough other protected land around the reservation to make up a meaningful network of protected areas and corridors. I think the chance is still there, but it would be very easy to let the region go the way of so many nice forests."

Notes

1. See, e.g., John Berger, *Restoring the Earth,* Knopf, 1985 or Lynne Cherry, *A River Ran Wild*, Harcourt Brace & Company 1992.

2. See, e.g., the account of Gordon Smith and the Piscataquog Watershed Association, Forest Notes, Summer 1997, p. 23.

3. Telephone interview with Linda Kennedy, NH Dept. of Revenue Administration, August 4, 1997.
4. Selectmen are the part-time chief elected officials in most small New England towns. Selectmen have powers somewhat analogous to County Commissioners in the Western United States or city councilors in cities without a strong mayor system with some crucial differences.
5. Population figures from 1990-1996 from the U.S. Bureau of the Census Annual Time Series found on the Internet at www.census.gov/population/estimates/metro-city/sets96/sc96t-NH.txt Population Projections to 2010 from the plotted map "Merrimack River Watershed Population Density and Projected Change" March 1996 EPA Merrimack River Initiative.
6. Population estimate from U.S. Bureau of the Census data of area ranging roughly from Buffalo, NY to Montreal to Portland, Maine to Baltimore, MD.
7. Beaver Brook Timber Inventory Summer of 1979 by Karen Bennett. BBA Files.
8. Contrast this with the 16,693 program participants in 1996.
9. "Toward A Working Rural Landscape" by Mark Lapping, essay in the book *New England Prospects: Critical Choices in a Time of Change* (pp 59-84). Carl H. Reidel, editor. University Press of New England, Hanover, N.H. 1982.
10. New Hampshire alone shows the trend clearly with a decline from a high of over 30,000 farms in 1880 to approximately 15,000 in 1940 to under 5,000 in 1970. Acres of farmland declined in similar proportion. Ibid., p 62. The dangers of population expansion in the Beaver Brook area along the Massachusetts border were clearly identified in the essay as well, with the population change map showing a growth of greater than 5.6 percent in Hillsborough county between 1970 and 1976. Ibid. p 81.
11. Ibid. p 81.
12. For a sampling of recent analysis on this topic see for example: Adler, Robert W., "Addressing Barriers to Watershed Protection" in Environmental Law Vol. 25, No. 4 pp 973-1106 (Fall 1995) or Lavigne, Peter M., Watershed Approaches: What Have We Learned?" River Voices, Vol. 6, No. 3, Fall/Winter 1995.
13. BBA as a nonprofit educational institution is not required to publish a public financial statement. These figures were obtained in interviews with the BBA Exec. Dir. and from a cursory Treasurer's report in the 1996 Annual report.
14. Blackmer is an experienced policy advocate and forester with degrees from Darmouth and the Yale University School of Forestry who over the past two decades has served as Vice President for Policy for the Society For the Protection of New Hampshire's Forests, Conservation Director of the Appalachian Mountain Club, founder of the Concord Community Land Trust, chair of the New Hampshire Rivers Campaign , and a city councilor in Concord, New Hampshire among other activities. He can be reached at The Northern Forest Center, P.O. Box 210, Concord, N.H. 03302-0210 email: nfc@northernforest.org or on the Web at www.northernforest.org.

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