

Hurricane Town Forest, Hartford, VT
Planning for Stewardship: A consensus-building approach

The Setting

The Hurricane Town Forest is located on a ridge above the Connecticut River Valley covering an area of 423 acres in Hartford, the eighth largest town in Vermont with a population estimated at 11,000. The Hurricane Forest Wildlife Refuge Park (HFWRP), also owned by the town but managed by the Hartford Parks and Recreation Department, is adjacent to the town forest to the northeast. Residents live near the town forest boundary on the northern half of the property and to the west of Reservoir Road. Access is provided via Reservoir Road where a trailhead parking area is located and by trail through the HFWRP. Students at Hartford Memorial Middle School created a trail map.

Hartford Water Company acquired the land that comprises the town forest for reservoirs at the turn of the century, while the HFWRP was a gift to the town from the Brown family in 1972. Four reservoirs were built to supply the municipal drinking water for the town of Hartford. After the town drilled wells in the 1950s, the reservoirs were abandoned and the property neglected. The town allowed residents to cut firewood in the town forest at various times, but particularly during the energy crunch of the 1970s. Since that time, timber has been harvested commercially and numerous logging roads built. Many of the current recreational trails have been developed from these same logging roads. As recreational use of the forest increased greatly over the past several years, recreational conflicts began to occur and adjacent property owners became concerned about the impact resulting from expanded use. The concern over impacts to surrounding property owners and fear of potential conflicts between forest user groups prompted a recreation plan to be developed.

Recreation

Recreational use in the forest is year round and includes hiking, mountain biking, snowshoeing, bird watching, skiing, hunting and ice-skating on the reservoirs. The town allows snowmobile and All-Terrain Vehicle (ATV) use on certain trails. Use tends to be greater by people living close to the forest although the wide range of recreation opportunities permitted in the forest attracts both long-time and recent residents in Hartford.

Education and Outreach

Michael Quinn, a teacher at Hartford Memorial Middle School, has been instrumental in developing programs to integrate the school curriculum into the Hurricane Town Forest. In 1999 and 2000, he learned of the Community Mapping Program through the Vermont Institute of Natural Science (VINS). With periodic assistance from VINS staff, they designed a simple project that involved making a boundary and trail map for the Hurricane Town Forest. Although some administration hurdles proved challenging, the project was eventually completed by a team of seven eighth grade students (instead of the original sixty that was planned) on weekends and holidays.

Since that time, students at Hartford Memorial Middle School have completed several other projects in the Hurricane Town Forest. An eighth grade class developed an orienteering course through the Community Mapping Program with assistance from VINS that seventh graders used to practice their orienteering skills. Eighth grade classes have also participated in vernal pools studies. Students would visit the pools approximately six times over the course of the school year, collecting and identifying

organisms and recording physical data. Another portion of the eighth grade class adopted a 100-meter length of trail and studied it intensely, observing what grew alongside it, writing about what they found, and presenting it to their classmates.

Up to three classes of twenty students each typically visit the forest during the school day, which required overcoming some concerns of the administration through persistence as well as tactful and creative scheduling. Gaining positive recognition from the town through student contributions such as the trail map also provided justification for the project and created an expectation for future students to fill, which in turn encouraged school administrators to support the student's involvement in the town forest.

Other local groups are active in the forest as well. Students in the forestry class at the Hartford Area Career and Technology Center implement portions of the management plan under the tutelage of consulting forester, Paul Harwood. In particular, the students perform patch cuts to release the historic apple trees and create openings for wildlife, helping to promote an uneven-aged stand. Area Boy Scouts also camp in the forest once or twice a year. Additionally, the conservation commission leads an annual community outing such as a snowshoeing or bird watching trip.

Forest Planning

Beginning in the mid-1990s, the conservation commission recognized that the Hurricane Town Forest should be managed more actively and appropriately. In 1998, the conservation commission took over management responsibilities for the town forest. One of their first tasks was to update the 1984 Forest Management Plan. Town staff applied for and received a grant from the Vermont Department of Forests, Parks and Recreation. A consulting forester completed the update, which the selectboard adopted in

February 1999. While it outlined forest management objectives for the property, it did not address any recreation issues or rules. The selectboard decided that a recreation management plan should be written so concerns over increased use of the property could be addressed.

In order to avoid a potentially explosive result, the conservation commission decided to adopt a consensus building approach to the recreation plan's creation. The first step in this process was to form a steering committee composed of neighbors of the town forest and individuals representing a wide array of user groups. A "Friends of the Town Forest" email listserv and newspaper ads and articles kept those interested in the plan informed of the process. Six steering committee meetings, two public forums, and a public conservation committee meeting all took place prior to a vote on the draft by the selectboard.

An initial concern that the plan dealt with was how to address the use of ATVs and snowmobiles. While there was concern over potential impacts of ATVs and snowmobiles such as noise pollution, user conflicts, and erosion, the steering committee hesitated to ban their use outright. Instead, they reached a compromise by allowing ATVs and snowmobiles to travel through the town forest, but made parking a trailer near the town forest boundary illegal. The resulting plan allows current conscientious users in the town forest but prevents it from becoming a destination area for motorized vehicle use.

Funding

Grants from state have played a crucial role in funding much of the work in the Hurricane Town Forest. Two grants from the Department of Forests, Parks, and

Recreation funded improvements to the trailhead parking area, two new trails, trail signs and allowed the conservation commission to hire the consulting forester to mark trees for the Hartford Area Career and Technology Center students and assist them in the timber stand improvement projects.

In addition, there is a small line item every year in the town's general fund for the management of the two town-owned woodlands by the conservation commission. This money will also provide funds to hire a forester when it comes time to perform another harvest in the forest. Although any revenues from the forest have historically gone to town's general fund, in March 2005, the selectboard agreed to the conservation commission request to establish a reserve fund to ensure ample funding for the town forest's management in future years.

Knowledge and Leadership

The conservation commission has looked to various individuals for knowledge and leadership in the implementation of educational programs and the forest and recreational planning process. The Hartford town planner, Matt Osborn, as a paid staff member has been an immense resource and leader throughout the planning process. In addition, Tad Nunez, director of Hartford's Parks and Recreation Department, has also provided considerable assistance and expertise to the conservation commission. While volunteers including the conservation commission, itself, play a crucial leadership role in town forest management, their limited amount of available time often leads them to be more reactive than proactive in nature.

Looking to the Future

With the successful development of the recreation plan and its implementation well underway, the conservation commission in Hartford has scheduled a small, selective-cutting timber harvest in the Hurricane Town Forest next winter. In addition, the conservation commission is investigating potential opportunities to acquire additional lands to create a wildlife and recreation corridor by linking three core habitat areas within Hartford, one of which is the Hurricane Town Forest and the adjacent Hurricane Forest Wildlife Refuge Park.

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Hillsboro Town Forest, Starksboro, VT
Making Community Connections: An incremental approach to building community

The Setting

The town of Starksboro is located just northwest of the Green Mountain National Forest and straddles the foothills of the Green Mountains and the Champlain Valley. This largely rural town has a population estimated at 1900, and approximately 10% of the town's area is conserved land owned and managed by the state.

The town of Starksboro established the Hillsboro Town Forest on May 4, 1954 when the Rockwood and Hanon Farms with a combined area of 235 acres, were taken over for taxes and to avoid road maintenance during the winter months. The town has added additional acreage since then, resulting in its current area of 287.7 acres. In addition to the two old farm sites, a cemetery with approximately 30-40 headstones is located within the town forest boundaries. Prior to the 1950s, a portion of the forest also served as a landfill.

A steep class IV road recently improved with assistance from the state to reduce erosion provides access to the town forest. Only a sign marks the town forest and no trail maps exist for the property. The Vermont Fish and Wildlife Department owns and manages the Lewis Creek Wildlife Management Area, a larger tract of conserved land totaling 1796 acres and located adjacent to the town forest. The natural communities represented in the town forest are northern hardwood forest, mesic red oak-northern hardwood forest, spruce-fir tamarack swamp, red maple swamp and buffer zone, seeps and vernal pools, and a shallow emergent marsh. The property also cradles the headwaters of Lewis Creek.

Education and Outreach

The town forest serves as an educational resource for both students and teachers at the Robinson Elementary School, located nearby. According to Robert Turner, conservation commission past chair, having a teacher serving on the conservation commission has helped to link the school system to the town forest. With funds provided from state preservation grant, a geographer was hired to assist the school in completing a mapping program and a self-guided historic tour of the property. In addition, students completed a project plotting historic childbirth cycles in early Starksboro by garnering information from gravestones in the town forest cemetery. One hope for the future is to integrate further the Robinson School's science curriculum into the town forest by establishing continuous forest inventory plots using a methodology based on Vermont's Forest Examination System (FOREX).

The conservation commission also takes an active role in creating outreach opportunities for Starksboro community members. In addition to leading regular hikes in the town forest and throughout the town, they have also organized woodland management, forest landowner, and wildlife workshops.

Forest Planning

Steve Weber of Vermont Fish and Wildlife and David Brynn, current Addison County forester and founder of Vermont Family Forests (VFF), wrote the original plan for the forest in January of 1986 at the request of the selectboard and with little to no public involvement. At that time, a survey of the land indicated a young, low quality forest. Prior to the writing of the plan, the primary use of the Hillsboro Town Forest had been the development of roadside firewood lots. The county forester would mark the

trees, and with the assistance of the town tree warden, residents could come into the plots, cut the marked trees, and remove them from the property for firewood.

Green Certification

In 2000, the conservation commission formed a town forest sub-committee. This group began a process to update the forest's management plan following standards for Forest Stewardship Council (FSC) green-certification. They reviewed past management records, held public meetings, and organized tours of the town forest. Interested residents and the town forest sub-committee reviewed several drafts of the plan. Community members were asked to answer such questions as—how many acres and what areas of the town forest do you think should be protected? In February of 2002, with the guidance of VFF, the Hillsboro Town Forest became the first municipally owned forest in the east to have a green-certified management plan. The following objectives were determined through this process and are outlined in the plan:

- *Protection of biological reserves*
- *Recreational opportunities, including hiking, hunting, snowmobiling, cross-country skiing, horseback riding, snowshoeing, and mountain biking*
- *High-quality educational opportunities*
- *High-quality timber management while protecting fragile and/or unique natural communities and important wildlife habitat*
- *Enhancement and maintenance of diverse wildlife habitat*
- *Protection and enhancement of forest health, including water quality, site productivity, and native biological diversity*
- *Protection of scenic beauty*
- *Identification and protection of cultural resources*

Through VFF, whose mission is “to conserve the health of the forest community, and when appropriate, to promote the careful cultivation of local family forests for community benefits,” forests owners have two options. The first option is for a forest to be green certified by the FSC, an independent third party certifier. The second option is

for landowners to sign a conservation agreement in which they agree to manage their forestlands in accordance with VFF's principles; however, the forest is not officially certified.

Monitoring

As described by VFF's guidelines, a forester monitors the Hillsboro Town Forest every 5 years. The conservation commission is currently investigating ways to engage others in this monitoring process. One program they are considering is a model developed and led by Richard Hart of the Forest Guild. In this program, Hart trains students in a youth conservation corps in monitoring techniques for 3-4 weeks during the summer and then serves as a mentor as they monitor parcels throughout the community for the remainder of the season.

Through the unique development of forest health and values indicators, monitoring also takes place at the town level. The conservation commission developed objective measurable indicators over several years with input from town residents and will reexamine them at five-year intervals. The goals of this project have been to educate town residents about values associated with the natural environment, to develop an appropriate set of indicators to gauge forest health, and to inform future revisions of the town plan.

Public forums have provided the backbone for the project. Individuals from the voter checklist were randomly selected and invited to attend these meetings to talk about potential indicators through facilitated small group discussions. During these small group sessions individuals were asked to address questions pertaining to (1) the value of Starksboro's forests and the threats and opportunities that exist, (2) the appropriateness of

proposed measures to monitor Starksboro's forests, and (3) the policy options available to address threats to the associated values. Indicators have included measuring the number of posted acres, the percent of stream corridors with forest cover, the amount of subdivisions created in Forestry and Conservation Zones, and the average tenure for forested parcels, to name a few.

Looking to the future

Planning for the future in Starksboro also involves directly connecting town residents with the natural environment. David Brynn emphasizes the importance of linking people with natural cycles through the creation of community traditions. Engaging community in local natural resource issues leads to a greater awareness of the positive and negative impacts we can have on our surroundings. For example, 3rd and 4th grade students at the Robinson Elementary School were responsible for selecting a single tree in the town forest that provided lumber for bookshelves in the local library. In addition, sap collected in the springtime from sugar maples on the property may soon provide maple syrup for the elementary school.

As a member of the conservation committee and a long-time resident of Starksboro, Robert Turner emphasizes the need to build connections across the community by creating new ties between residents that might not typically interact on a day-to-day basis. This can be accomplished in part through the development and implementation of a broad array of activities attracting town residents from a variety of backgrounds and with a multitude of interests. Turner sees demonstration as just one use of the town forest, but also as a way to engage a different set of people than would be attracted to other outreach activities like a group snowshoeing excursion. He also noted

that engaging community is an incremental process and that it is important to recognize that while interest may wax and wane, if a clear vision is outlined and kept in sight over the long-term, community engagement will gradually increase. Turner's primary concern pertaining to this incremental process is the challenge of finding new ways to cultivate and nurture community leaders to ensure that each new generation is becoming actively involved in the community.

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Musquash Conservation Area, Londonderry, NH
Keeping it Green: Conservation for multiple-use in a rapidly developing region

The Setting

Londonderry, located in southern New Hampshire approximately 40 miles northwest of Boston, is one of the fastest developing areas in the state with a population estimated at nearly 25,000. In 1984, approximately 74% of the town's land area was undeveloped; this percentage has decreased to 38% as of 1996. The town of Londonderry established the Musquash Conservation Area in west-central Londonderry with the purchase 585 acres in 1979. Since that time, the town has acquired additional lands resulting in an acreage that now surpasses 1000. While not technically the "town forest" in Londonderry, the Musquash Conservation Area still serves similar purposes to that of many town forests: for recreation, conservation, and sustainable timber harvesting. Hickory Hill Road, Sara Beth Lane, and Alexander Road provide access to the property. A map and guide for the conservation area developed by the Londonderry Trailways organization is available at the Londonderry Town Hall, Leach Public Library, and online.

Forest Utilization

A large network of trails totaling between 6 to 8 miles in the Musquash Conservation Area is used heavily for recreation, although use tends to be more concentrated during the winter months. While few organized educational activities regularly occur in the conservation area, the conservation commission plans an annual field day during which community members learn about the forest. Deb Lievens, current chair of the Londonderry Conservation Commission, noted that the demonstration of sustainable timber harvesting techniques in the forest provides an excellent opportunity

for others to learn informally about forest management, of particular importance in such an urban and suburban setting.

Conservation Area Management and Planning

The seven-member conservation commission oversees all town-owned lands including the Musquash Conservation Area, and reviews and comments on any town issues if there is a related conservation concern. With guidance from such agencies as the Soil Conservation Service and the University of New Hampshire Cooperative Extension, and input from the community, the conservation commission formulated several management goals for the conservation area in 1983. These are as follows: (1) *improve habitat for as many species as possible and practical*, (2) *develop recreational opportunities*, (3) *manage forestland to meet the above goals, generate income if possible, and improve the forest's health and growing conditions*. The management plan written by the town forester integrates detailed forest mapping, inventorying, multiple-use planning, and silvicultural techniques. Because the Musquash Conservation Area is a certified tree farm, a forester must update the management plan every five years.

Hunting is allowed in the conservation area; however, the use of motorized vehicles is not. In an effort to prevent the use of All Terrain Vehicles (ATVs) and the damage they can potentially cause, the conservation commission spoke with the town council and the local police department about their concerns. Consequently, the police department, with assistance from grant money, purchased an ATV for use on patrols and hired several additional weekend staff members to patrol the area.

Funding

All forest revenues in addition to proceeds from the land use change tax (a tax levied in cases where land is transferred from current use to development) go to the conservation commission with the objective of being used towards acquiring new conservation lands in town. Grants have also funded numerous projects in the conservation area as described in the following section.

Stewardship

Londonderry Trailways (LT), a local non-profit recreational organization, has been very active in promoting and stewarding the Musquash Conservation Area. Formed in 1999, they have approximately 130 members and work extensively with town boards in Londonderry such as the conservation commission, town council, and planning board to assist in the planning and management of town-owned conserved lands. The mission of the organization is to encourage a greater sense of community through the development of a network of walking and biking trails throughout the town of Londonderry, and to promote safe walking and cycling through community education.

In 2002, the organization received a \$9700 grant from the New Hampshire Department of Resources and Economic Development Trails Bureau to build bridges, increase signage, and print maps of the conservation area. LT has also worked with the conservation commission in leading numerous volunteer workdays in the Musquash Conservation Area to build boardwalks and bridges, maintain and reroute trails, paint signs, and pick up trash. On average, the group leads 3-4 trail workdays and logs 200 volunteer hours per year on town-owned conserved lands. They have also assisted the conservation commission in writing numerous other grants for conservation area projects.

LT has also been instrumental in assisting other volunteer groups such as the Boy Scouts in completing stewardship projects by writing and prioritizing “to do” lists of projects in the Musquash Conservation Area.

Looking to the Future

The master plan steering committee for Londonderry developed the following vision statement regarding the environment, open space, and recreation in Londonderry in 2003: “Londonderry will continue to create and protect a healthy environment for residents and wildlife, by actively pursuing the opportunities for active and passive recreation and ample agriculture, open space, parks, and recreational facilities.” The current goal for land protection is to protect 25% of the town lands, of which approximately 9% are currently protected. This percentage includes areas like ball fields and parks, in addition to parcels such as the Musquash Conservation Area. With the support of Londonderry residents, the town plans to pursue the town’s remaining open space aggressively by various means including “policies that support open space preservation and protection, and support of privately-sponsored efforts to preserve and protect open space.” Adding additional acreage to the Musquash Conservation Area is of priority.

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Lyme Town Forest, Lyme, NH
Working Towards a Sustainable Future

The Setting

The town of Lyme with a population estimated at 1700, is located in Grafton County in west central New Hampshire along the Vermont state line. A certified New Hampshire Tree Farm, the Lyme Town Forest totals 372 acres and is located in a fairly remote area (with the exception of the western border) near the northern town boundary. Access to the forest is provided off Orfordville Road, which borders the eastern edge of the forest, and off Mud Turtle Pond Road, a class VI road that passes through the center part of the forest. Guides for both town woodlands containing information on how to get there, where to park, and the forest's history and management, as well as a trail map, are available throughout Lyme and on the internet.

The Lyme Town Forest was established in the early 1990's from property acquired through tax default. As is the case with many forested areas in New England, the town forest was once under agricultural use. Several clues such as cellar holes, barn foundations, stone walls and barbed wire fencing are still in existence and point to this pastoral history. Since that time, the forest has re-grown through the process of succession and was cut again over half a century ago. At present, the acreage is composed of mixed hardwoods, a small wetland and field, two small white pine stands, and a mature stand of hemlocks.

Recreation

The primary activities taking place in the forest are hiking and snowshoeing or cross-country skiing, as well as limited equestrian use. In the western section of the forest, a skid trail receives light use by All Terrain Vehicles (ATVs) and in addition,

snowmobilers maintain a small section of trail in this region during the winter months.

Hunting is allowed on both the Lyme Town Forest and the Trout Pond Forest.

Recreational activities draw new and long-time residents alike.

Outreach and Stewardship

Once during each winter and summer season the conservation commission sponsors a walk that is typically attended by 10 to 15 people. While there is no use of the forest by the local schools, the Boy Scouts developed a semi-permanent campsite with tent platforms that they use several times a year. During the annual National Trails Day, the conservation commission also sponsors a trail maintenance day in the town forest for which turnout has been quite high, sometimes exceeding 20 people.

Forest Planning

The Lyme Town Forest is one of two town-owned properties, both of which the conservation commission manages. However, the other, the Trout Pond Forest, is not officially registered with the state of New Hampshire, therefore any management decisions affecting it must be addressed and voted on annually at town meeting. Although the conservation commission has authority over the Lyme Town Forest, the selectboard can intervene as necessary. The selectboard would call a public hearing in conjunction with a public comment period for any significant forest management decisions.

The conservation commission formulated management goals for the town forest and manages it to create income for the town through sustainable management of forest resources, as a recreational and educational resource, to conserve and promote wildlife habitat, and to protect water quality.

A local consulting forester wrote the forest management plan in 1995 and updated it in 1996. Specific management objectives include shifting the current even-aged stand to a more uneven aged stand representing a variety of habitats. In addition, the forest plan sets aside an area that will remain uncut in order to achieve old growth conditions. Although town forest literature states that only non-motorized recreation is allowed, use of ATVs and snowmobiles has been light and caused little damage, therefore the conservation commission has been lenient in the enforcement of this rule.

Looking to the Future

In addition to actively managing the Lyme Town Forest, the town of Lyme is taking steps towards protecting and preserving the town's rural character through proactive land use policies. The National Community Forestry Center, Northern Forest Region recognized the town of Lyme in 2001 for their land-use plan, which outlined a zoning ordinance, designed to restrict development on important forestlands.

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Bangor City Forest, Bangor, ME
An Integral Piece: Restoring connectivity in Bangor

The Setting

At nearly 700 acres, the Bangor City Forest makes up just one of four town owned woodlands, but is by far the greatest in size. Bordered to the north by the Orono town line and to the west by the abandoned Veazie Railroad bed, it contains close to nine miles of recreational trails, five to six of which are handicap accessible. Access and parking are located off Tripp Road at the southern end of the city forest and Kittredge Road to the west, which the city recently expanded to allow for additional cars. Trail maps are available at parking area kiosks for all four town-owned forests and the Bangor City Forest trail map is available also available online. Approximately 30,000 people live in Bangor, and like many communities of its size, it has recently been experiencing significant increases in residential and commercial development resulting in a decrease in open space. As a result, the forest serves as a destination for recreational pursuits, and as a demonstration forest for sustainable timber harvesting.

Most of the Bangor City Forest was acquired because of unpaid taxes prior to 1964, but two parcels have been purchased since then, and two additional parcels are in the process of being obtained by the town. Like many town forests established on marginal lands, the soil is quite poor and conditions must have been difficult on a farm that existed on the property near the end of Kittredge Road at the turn of the century.

Although a capped landfill and a large shopping mall flank the city forest, the forest links to the Orono Bog Boardwalk, built in 2003. With an annual visitation of approximately 5000, the boardwalk attracts visitors from the region (79%), other areas in Maine (11%), and 44 states (9%). The boardwalk meanders through different peat and

bog communities over a distance of one mile along which interpretive stations occur.

Groups can arrange guided walks through the bog by contacting the University of Maine.

Recreation

Rolland Perry, the city forester in Bangor for forty years, estimates that the forest receives between 200 and 300 visitors everyday, most of whom are not residents of Bangor. Visits typically last approximately an hour, cross-country skiing and dog walking being the most popular activities. Because of the rapid increase in forest use over the past five years, the city no longer permits hunting.

Four miles of access roads were built within the forest to assist in logging operations. All-terrain vehicles (ATVs) are not allowed, with the exception of the use of a snowmobile to groom trails for cross-country skiing during the winter months. While there have been few problems with illegal ATV use, their occurrence in the city forest is getting even rarer as more people visit the forest and informally monitor it. A rapid increase in visitation initially caused a few conflicts between recreational user groups; however, they were resolved when the city allowed mountain bikers to maintain a primitive trail system through the forest.

Demonstration and Stewardship

Informational signs and maps displayed throughout the forest explain forest management techniques and depict various management areas. In addition, workshops demonstrating various logging techniques have been held in the past. Several groups from local schools visit the forest on a regular basis and Cub Scouts have assisted in trail maintenance activities.

Forest Planning

Recreation, wildlife, and sustainable timber harvesting are the primary management objectives in the Bangor City Forest. The forest's management plan, written by the city forester and updated in 1997, outlines various silvicultural techniques demonstrated on the property. A 2-3 acre arboretum has been established, in addition to several monitoring plots that will be inventoried every five years. A portion of the forest is designated a "no-cut" area and selective cuttings will take place on 125 acres to promote wildlife habitat.

Funding

Any revenues from logging activities in the Bangor City Forest, as well as from the city's chipping operation, go into a forest trust account, which provides ample funding for city forest projects.

Looking Towards the Future

As Bangor faces the associated problems of suburban sprawl, the city is looking to acquire additional lands that will serve to connect the city forest, an adjacent marsh, and the nearby city-owned property of Essex Woods into a single recreational entity, which would provide a buffer zone between residential and commercial areas. However, they have faced several challenges in undertaking this endeavor. Although conservation groups have strongly resisted pressures to expand the Bangor Mall into the adjacent marsh, the recently formed Bangor Land Trust has been unable to offer competitive prices for any land on the market as land values have skyrocketed. Despite these challenges, the land trust has received a conservation commitment of 410 acres adjacent

to the city forest and west of the Veazie Railroad bed. In addition, the city will add 25 acres to the forest in the near future.

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China School Forest, China, ME
A Hands-on Approach to Learning: Turning the inside classroom out

The Setting

The primary and middle schools in China, Maine are located between three main village areas on a property of seventy acres, twenty of which are taken up by recreational fields and the school buildings themselves, and the remaining fifty acres make up the China School Demonstration Forest. Two main trails provide access to the forest: one is a narrow hiking trail from the middle school and the other, a larger woods road from the primary school. Formerly an agricultural area through the early 1900s, the farmer heavily logged any remaining forest before selling the property. The forest has since grown up into a young stand of mixed hardwoods and softwoods that have been managed for sustainable timber harvesting since the mid-1980s. The forest was recognized as a Maine Tree Farm in 1985 and in 1997 received the Outstanding Maine Tree Farm Award.

Education and Outreach

On any typical school day, one is likely to run across a teacher with his or her students out in the China School Forest, a remarkable feat in an era typified by large class sizes, overworked teachers, and frequent testing. The former town forester, Paul Memmer who has since retired, is credited as the visionary for the demonstration forest. The China School Forest gives China's students an opportunity to learn about forests as dynamic ecosystems. Students seek to understand how to make sustainable and wise management decisions regarding a forests' use as a resource for recreation, education, and wood.

Fourteen learning stations were built using guidelines from Project Learning Tree (PLT), an organization developed in the mid-seventies in an effort "to increase students'

understanding of our environment; stimulate students' critical and creative thinking; develop students' ability to make informed decisions on environmental issues; and instill in students the commitment to take responsible action on behalf of the environment.”

PLT has developed a set of environmental, age-specific curriculum correlated to national and often even state standards designed to increase the students’ awareness and understanding of their environment. In addition, they offer educator workshops to assist teachers in incorporating PLT activities into their lesson plans.

China’s small class sizes of fifteen to twenty lend themselves to outdoor activities. Classes use the forest year-round, with the exception of deer rifle season. Although hunting is not allowed in the forest, this extra precaution is taken to ensure the students’ safety. In addition, during other hunting seasons, each class has the option to wear bright orange vests as an extra safety measure. During the winter months, teachers, with help from town residents and the Parent Teacher’s Association, have integrated cross-country skiing on the forest trails into the physical education program at China.

While learning stations provide a broad array of lesson activity suggestions, teachers are encouraged to incorporate their own curriculum into forest-based activities for all subjects including physical education, math, social studies, and language arts during all seasons. A large handicap-accessible tree house provides the backdrop for reading, drawing, and creative writing activities. A primary school physical education teacher takes her students out at the beginning of the period for a short warm-up jog on the trails. New England history is taught at the wood measurement station where a neatly stacked cord of wood provides a visual aid for discussing how timber was cut, measured, and used over the past 200 years.

For each grade, a couple of stations or areas are targeted, which provides teachers with a specific focus. For example, the fourth grade has a geology focus and the fifth grade concentrates on learning about wetlands so they may spend a significant portion of their time studying macro-invertebrates in a pond on the property.

A natural extension of the fifth grade wetland unit was to expand their pond study area that drains into China Lake to the watershed level. To do this teachers developed Lake Day with assistance from the China Region Lake Alliance, during which the fifth grade students go out in pontoon boats (owned and driven by community volunteers) on China Lake and test water quality, among other activities, to gain a larger watershed perspective.

Other members of the community utilize the forest too. Community hikes have been organized in the past in conjunction with the town organized event, China Community Days, and the forest's trails provide avenues for recreation including skiing, snowshoeing, and bird-watching, just to name a few. A second grade teacher has offered a day camp for several summers and the Boy Scouts host a Klondike Derby during the winter where troops from around the state gather in the school forest for a variety of activities including sled building, orienteering, and first aid. Every other year the school forest committee plans and hosts a school-wide School Forest Day where community volunteers including members of the Maine Department of Environmental Protection and Forest Service, as well as employees of area conservation organizations lead educational activities in the forest for all the students. In addition, students from a local private high school get involved in the forest through community service activities such as painting picnic tables or doing general maintenance on some of the structures. A town resident

has also set up a geo-cache in the school forest, which has attracted visitors that may not have otherwise been to the forest.

Forest Planning

Anita Smith, a teacher at China Middle School and co-chair of the China School Forest Committee, became involved in this project through a PLT facilitators workshop she attended at the suggestion of another teacher and the town forester back in 1991. Four years later, interested staff and community members formed the school forest committee. They went to the town selectboard and the school board with their vision for the demonstration forest and asked for permission to go ahead with the project. “We really wanted to make sure everybody knew what our intentions were and tried to build a place where people could have a lot of input” (Personal Communication, Anita Smith).

The committee is composed of two teachers along with other interested community members and is responsible for overseeing the day-to-day operations in the forest, as well as long-range forest planning. While they met every other week during the initial stages of the project, they currently meet a couple times each season, and on an as needed basis. The selectboard, which has the final authority over the forest, makes major management decisions with input from the school forest committee. Due to the presence of the school forest committee, the current town forester does not play a large role in the forest’s management.

When the school forest committee was first formed, they attempted to get one teacher from each grade level to serve on it, which they felt would contribute to getting school wide input and support for the project. Because time is often a huge barrier to any project’s success, the next step was to identify sections of the current curriculum taught

in the classroom that teachers could take outside into the forest. Project participants identified time as one of the major barriers they had to overcome for success. When everybody involved is incredibly busy, trying to sustain interest in the project, to recognize that it is ongoing, has also been challenging.

Funding

The first projects in the demonstration forest were limited to laying out the trails and doing a small timber harvest. The minimal amount of money received from this harvest was put into a school forest account and used as seed money for road development and trail improvement. A logging operation after the 1998 ice storm also added funds to the school forest account (although there is not a written law to ensure that revenues from the forest stay with the forest committee). Donations are greatly appreciated.

In addition, the parent teacher association, as well as individuals and businesses in the community, volunteered both time and money. Community members helped to design, build, and fund many of the structures for the learning stations. A teacher and former carpenter developed an alternative education program with a group of middle school students who used a service-learning model to build two of the structures: they spent mornings constructing the actual structures, and during the afternoon hours, students used their math and reading skills to determine the supplies they would need for the following day.

Looking to the Future

Plans for the forest's future include setting up Forest Inventory Growth (FIG) plots with the assistance of a local forester. Students would collect data on the plots and

enter it onto a website hosted by the Maine Forest Service. The forest committee's ultimate goal is to develop a natural resource learning center in the demonstration forest.

Staying motivated can be a challenge, but Anita Smith finds her motivation in witnessing the excitement students begin to show for nature and for the environment, and through the realization that many of the students in her first fifth-grade classes are now reaching voting age and applying some of what they learned as decision makers for the community.

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