



To inspire curiosity and build knowledge  
about plants and wooded landscapes

in order to enhance life,  
preserve nature and  
advance sound stewardship practices.

# Highstead

Fall 2007

## To the Members and Friends of Highstead

The board and staff of Highstead have always insisted that as a small institution we must think strategically in defining our role in the world. In this newsletter as we announce the hiring of a new Regional Conservationist, outline our latest research in woodland ecology, explore the activities of our undergraduate interns, and unveil a new web page the niche that we have defined for Highstead is taking shape.

Since 1982 Highstead has been a sanctuary for the study and appreciation of woodland plants and habitats. Through the careful development of plant collections, interpretive trails and woodland demonstrations we have sought to engage and educate our many friends, members and visitors in our long-standing mission: *To inspire curiosity and build knowledge about plants and wooded landscapes in order to enhance life, preserve nature and advance sound stewardship practices.*

Two years ago, we recognized that this mission carries an opportunity and responsibility to engage a broader audience with information and assistance concerning woodland environments and their care. Consequently, we expanded our efforts to include ecology and conservation across southern New England and adjacent New York. This rapidly urbanizing region contains a wonderful array of natural and cultural landscapes that are unfortunately in jeopardy. The region also provides many opportunities to partner with other groups and organizations in research, education and stewardship efforts to forge a bright future. Through our emerging activities Highstead hopes to bring new ideas and catalyze partnerships that can advance greater appreciation for nature and its conservation.

I hope that you enjoy learning more about these ongoing efforts and join us in our programs and development. We promise to continue to share our energy and ideas with you. Thanks for your interest and support.

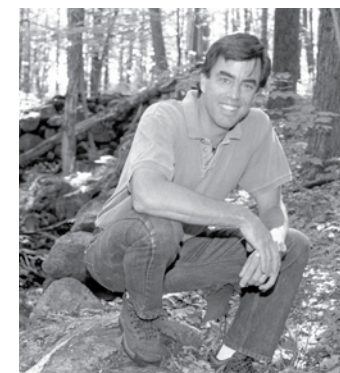
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David Foster  
Chairman, Highstead Board

**David Foster** is the Director of the Harvard Forest at Harvard University and the Chair of the Highstead Board. His research focuses on the history, ecology and conservation of landscapes shaped by natural and human processes.





## Regional Conservationist Bill Labich Joins the Highstead Staff



Bill Labich – New Regional Conservationist at Highstead

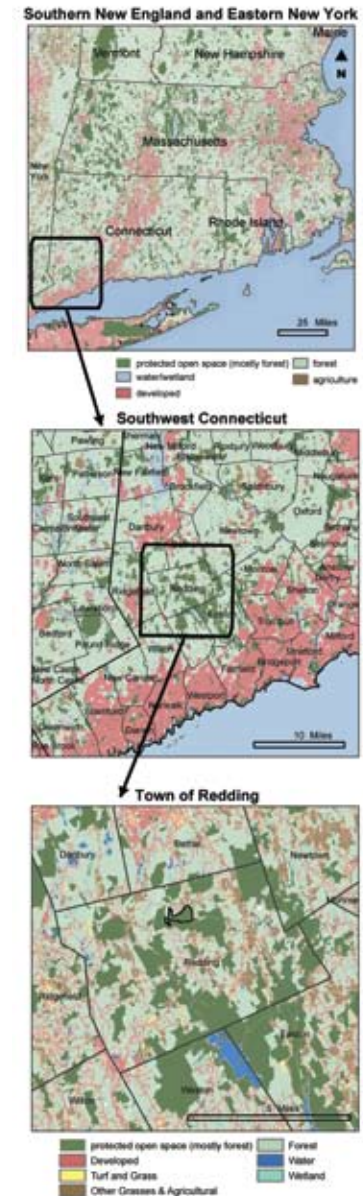
Following a national search, Highstead has selected Bill Labich from Shutesbury, Massachusetts to fill a new position advancing regional and landscape-scale conservation efforts across Southern New England and New York. By researching and communicating lessons on successful models of collaboration at the regional and national levels, Bill will seek to strengthen existing partnerships of individuals and organizations at the local, regional, state, and multi-state levels intent on conserving regional forest landscapes.

Bill brings to this position considerable familiarity with the Redding region as well as conservation experience from across New England. Originally from Fairfield, Connecticut, his first job was at the Connecticut Audubon Society where he worked as Sanctuary Operations Coordinator. Since 1985 he has been in community and land use planning, environmental education, and forest management working with local, state and regional governments, non-profits, and private landowners. For the last nine years as a regional land use planner Bill has assisted communities across Western Massachusetts to retain the vibrancy and character of their communities, watersheds, and landscapes. Previously, Bill served as Director of Education and Resident Forester for the New England Forestry Foundation.

One focus of this new initiative at Highstead will be to facilitate the development and activity of conservation partnerships in local, regional and state-wide settings where strong groups, opportunities for conservation, and the will to work together exist. As the Regional Conservationist at Highstead, Bill will be working with organizations across four states that are interested in increasing the constituency, diversity, and effectiveness of their forest conservation efforts. He will also be communicating conservation-related lessons to landowners, organizations, the media and public by conducting workshops, meetings and educational programs regionally and through web-based products and publications and public events.

Bill is on the boards of the Massachusetts Watershed Coalition and Eagle Eye Institute, which use experience with nature to transform urban youth. He is also a member of the Quabbin to Cardigan Conservation Collaborative Steering Committee, the Massachusetts Wildlands and Woodlands Partnership and served as the Co-Chair of the North Quabbin Regional Landscape Partnership from 2002-2006. He has a Masters in Regional Planning from the University of Massachusetts, Amherst and a Bachelors of Science in Forestry from the University of Maine at Orono. One formative experience in Bill's career involved working as an agroforestry extension agent with the Peace Corps in Haiti from 1985 to 1987.

Bill can be reached at [blabich@highstead.net](mailto:blabich@highstead.net).



Maps depicting the context for Highstead's work and the activities of Bill Labich as regional conservationist. The Redding, southwestern Connecticut, and southern New England areas support a remarkable array of open space and have witnessed substantial

conservation and land protection activity. Our expanding activity will seek to advance these efforts by developing new information and facilitating existing and emerging local and regional partnerships.

## Undergraduate Interns and Woodland Ecology Studies

Each summer Highstead's undergraduate intern program supports two to four students working with staff and board members on research and educational projects that advance Highstead's many programs, assist local and regional conservation efforts and provide the students with hands-on experience and training. Students reside locally, receive a stipend that supports their activities when they return to college, and assist the staff in developing scientific articles and outreach products for our web page and educational programs.

This past summer Interns Jesse Taylor-Waldman (Connecticut College) and Catherine Erne (Shippensburg University) had a busy and productive summer working with Ecologist Ed Faison on two research projects that examined (1) the variation in regional forest composition and the distribution of invasive plant species and (2) the impacts of deer on forests, especially the regeneration of trees. Catherine and Jesse showed considerable versatility working simultaneously on both projects. Over the summer they sampled a total of 60 forest vegetation plots located across some 20 properties in 6 different towns. Properties studied included land owned by numerous towns, land trusts, conservation organizations, other groups and private landowners. With the assistance of botanical expert, Bill Moorhead, the pair developed strong field skills, particularly with species of grasses and sedges, which are quite challenging to discriminate. Applying this knowledge to the regional forest study, they sampled much of the vegetation and environmental diversity in Redding, including Calcareous Swamps, Terrace Floodplain Forests, Sugar maple-Ash Forests, and Oak Forests of varying land use histories.

Ed Faison will analyze the data gathered by Jesse and Catherine and previous woodland interns this winter and will begin preparing the results for publication. The efforts of these interns will contribute much to our understanding of how history, environment, and modern disturbances are shaping the forests of southwestern CT.



### *Forests Studied in Highstead Ecology Projects - Summer 2007*

*Highstead is pleased to acknowl-  
edge the cooperation of numerous  
landowners, private organizations  
and town boards that facilitated  
the research conducted by  
Ed Faison and summer interns  
Jesse Taylor-Waldman and  
Catherine Erne.*

#### **Redding, CT**

Hoyt Boy Scout Reservation - Connecticut Yankee Council  
Putnam State Park - State of Connecticut DEP  
Huntington State Park- State of Connecticut DEP  
Kruger Preserve - The Nature Conservancy  
Parcel West of Station Road - Aquarion Water Company  
Parcel Southwest of Glen Road - Aquarion Water Company  
Dayton Road Preserve - Town of Redding  
Stormfield Preserve - Town of Redding  
Little River Preserve - Town of Redding  
Gallows Hill Preserve - Town of Redding  
Black Rock Turnpike Preserve - Town of Redding  
Warrups Farm - William Hill  
Picketts Ridge and George Hull Hill Road - Robert McCormack

#### **Ridgefield, CT**

Seth Low Pierrepont State Park - State of Connecticut DEP  
Hemlock Hills Preserve - Town of Ridgefield

#### **Wilton, CT**

Gregg Preserve - Wilton Land Trust

#### **Newtown, CT**

Forest South of Towns End Road - Aquarion Water Company

#### **Easton, CT**

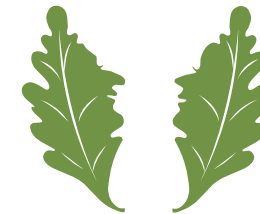
Trout Brook Valley Preserve - State of Connecticut DEP  
Forest Southeast of Westport Road - Aquarion Water Company  
Forest at Stepney and Maple Road - Aquarion Water Company

#### **Weston, CT**

Devil's Den Preserve - The Nature Conservancy



*Catherine and Jesse examining  
and measuring the damage to a  
red maple sapling from deer ant-  
lers in Highstead's oak forest*



#### **New Website Coming to Highstead:**

Highstead is pleased  
to announce the rede-  
sign of its website. Web  
consultant, Julie Pallant  
has worked with David  
Foster, graphic designer  
Elaine Shiramizu and staff  
members Ed Faison and  
Kathleen Kitka to capture  
the complexity and breadth  
of offerings from High-  
stead, including research,  
regional conservation,  
collections and events.  
This new site will be avail-  
able by late October and  
should be visually captivat-  
ing and easy to navigate.  
[www.Highstead.net](http://www.Highstead.net)

## Summer Undergraduate Internships at Highstead - 2008

Each summer we seek 2-4 energetic undergraduate (or recently graduated) students with a demonstrated interest in field ecology, natural history, conservation, and plant biology and related fields to participate in on-going projects at Highstead and studies across southern New England. Responsibilities may include field work (e.g. vegetation sampling and tree coring), laboratory work (e.g. tree ring analysis, soil sieving), conservation mapping, data entry and analysis. Students receive room and board and a summer stipend along with education, training and the experience of working on real-world studies.

In addition to working with Highstead scientists, interns typically interact with researchers from other regional institutions including the Harvard Forest (Harvard University), Brooklyn Botanic Garden, Connecticut Agricultural Field Station, and The Nature Conservancy, as well as local botanical experts. Interns also have the opportunity to attend seminars and guided tours held at Highstead given by nationally and internationally regarded scientists and conservationists.

Interested students should explore the Highstead web page ([www.Highstead.net](http://www.Highstead.net)) or contact Ed Faison ([efaison@highstead.net](mailto:efaison@highstead.net)) for more information. Applications are due by February 8, 2008.

## Insights from the Long-Term History of Southern New England

The land that we view and the plants and animals that we encounter in our walks are a product of history. Geological processes such as erosion shape landscapes and the nature of our soils. Natural disturbances such as hurricanes, ice storms or fires can readily dictate the composition and structure of our vegetation for decades or centuries. Beaver, white-tailed deer, moose and other animals that have been expanding their ranges and abundance over recent decades exert major pressure on natural areas as well as our own backyards. And current changes in our climate will influence conditions long into the future.

Of course, for most areas of the globe, it is the direct and indirect consequences of human activity that has left the largest imprint. Across the New England countryside, colonial settlement and forest clearance for agriculture initiated one of the greatest landscape transformations in human history. After more than a century of intense farming,



new opportunities in the western U.S. and industrial jobs in emerging cities drew New Englanders from the land and allowed forests to grow back expansively. Many of the most distinctive characteristics and changes in our land today, ranging from our stone-wall-filled forests to the decline of bobolinks and meadowlarks and the reappearance of moose, beaver and bear can only be understood in relation to this history.

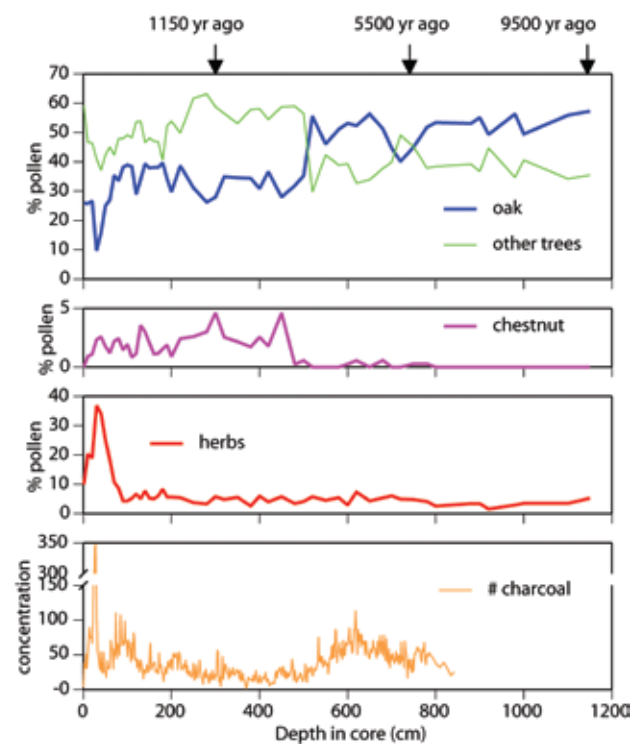
At Highstead, we decided to develop a better understanding of the history of our landscape in order to interpret its current condition and to anticipate future changes. The array of studies that we have pursued is broad and growing. For some we have relied upon historical documents, in others we have used old aerial photographs or data collected by other groups, and in a few we have employed more esoteric approaches such as analyzing the fossilized pollen that lies in the sediments of ponds and wetlands to reconstruct vegetation and climate changes over centuries or millennia. From these studies comes a growing appreciation of how much our landscape has changed and the questions and challenges that these changes present us.

**The Ancient Past – Post-glacial Records from Pollen Analysis**

To assess the region’s ancient ecological history Ed Faison and Harvard University collaborators David Foster, Wyatt Oswald, and Elaine Doughty examined peat that has accumulated in Highstead’s swamp. Radiocarbon analysis from the bottom of the eight feet deep peat revealed a maximum age of approximately 14,000 years. More than half of the peat in the swamp accumulated in the 2000 years immediately following the retreat of ice-age glaciers. Dr. Barbara Hansen from the University of Minne-

**Umpawaug Pond, Redding, CT**

A 10,000-year old record from Umpawaug Pond in Redding depicts changes in the forests and fire history of southwestern Connecticut. Oak forests dominated the entire history in varying abundance. The largest change in the entire record followed European settlement when fire and logging were used to clear forests and maintain fields, which are indicated by grasses and herbs. Farm abandonment and the regrowth of forests appear in the extreme left of the figure as a decline in herbs and grasses and increase in oak and other trees.



**Settlement Period Forest Vegetation of Southern New England**

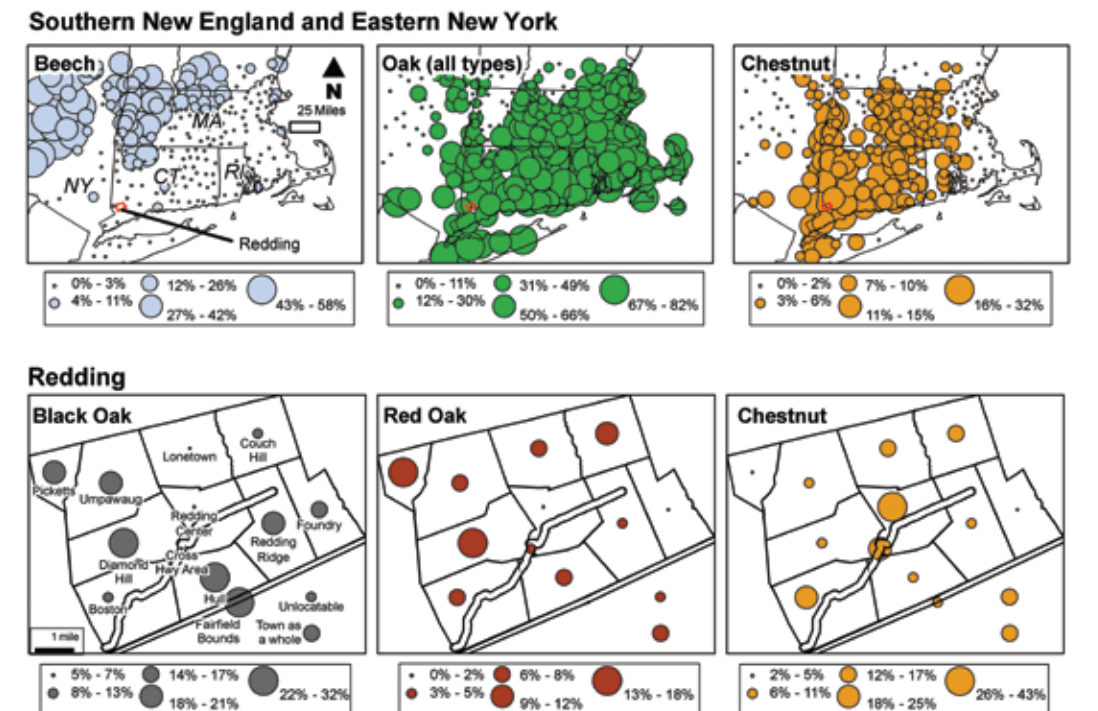
Surveys conducted at the time of European settlement in each town across New England allow us to reconstruct the forest vegetation before it was substantially altered by logging, land clearance and agriculture. At both a regional scale and within the town of Redding there was substantial variation caused largely by climate and soils.

sota analyzed pollen grains preserved in the peat and discovered that there was a transition from boreal spruce forest to temperate white pine forest during that early period of time. This change in vegetation indicates (1) a dramatic shift from a cold, ice age environment to a warmer, modern-like environment and (2) reveals that Highstead’s woodland was once dominated by conifer trees (for several thousand years) in contrast to the deciduous oaks and red maple that characterize the property today.

This collaborative group is also examining Umpawaug Pond, located 3 miles southwest of Highstead where 40 feet of sediment has been recovered so far. Initial results extend back 10,000 years, documenting major shifts in climate, vegetation composition, and fire across this region of southwestern Connecticut.

**The Pre-European Forests Landscape – Records from Early Land Surveys**

When the first colonists arrived to southwestern, CT and other eastern seaboard regions, one early task was to survey and distribute the land. In these initial allotment surveys and subsequent deeds, individual “witness” trees, were identified by species as reference points. Today we can use these early records, usually obtained from town hall vaults, as a rough determination of the original composition of the forest.



Data from Charlie Cogbill, Stuart Reeve, and Harvard Forest



A compilation of these witness tree data across southern New England and eastern New York by our collaborators Charlie Cogbill from the Hubbard Brook Research Forest and John Burk and Glenn Motzkin at Harvard show distinct forest patterns. In particular beech and hemlock dominated in the north and oak dominated in the south with an abrupt boundary running from northwestern Connecticut across northern Massachusetts.

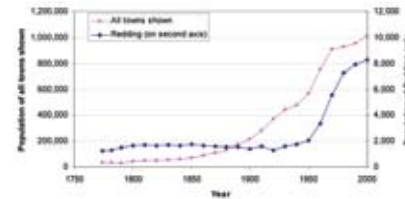
To interpret local forest variation, Harvard Forest researchers Brian Hall and John Burk examined witness trees from the first 120 years after Redding's settlement, supplemented with additional information from historian, Stuart Reeve. A total of 920 trees were recorded in 12 geographic areas in town. Across Redding the original forest was dominated by oaks (50%), chestnut (14%), and hickory (10%) with lesser amounts of ash, birch, maple, and cherry.

However, there was considerable variation across town. The Redding Center district was distinct due to its abundant chestnut and cherry. The southern boundary of town ("Fairfield Bounds") differed by having large amounts of black birch and sassafras. Meanwhile, Picketts Ridge, Diamond Hill, and Hull had more red and black oak; Umpawaug, Foundry and Redding Ridge had more cherry; and Couch Hill, Lonetown, and Boston districts had more chestnut and less black oak. One thrust of our current studies is to examine the extent to which these historical differences in forest composition persist to the present.

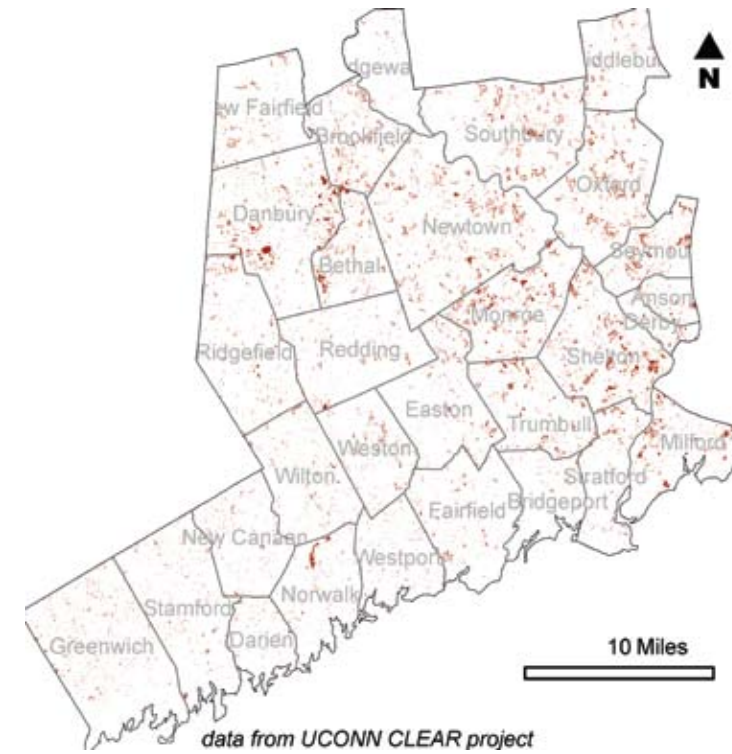
### Historical Changes

Early New Englanders earned a well deserved reputation for hard work. Shortly after settling the heavily-forested Redding area in the late 1600s and early 1700s, the colonists began planting preexisting Native American fields and clearing forests to be plowed, mowed, and pastured. Forest cover declined rapidly: only 50% of the town was forested in 1800 and by the late 19th century this had declined to a low of 30-35%. Farm abandonment and reforestation progressed through the 1950s when suburbanization brought great population growth and new home construction. Since 1985 developed land, lawns and golf courses have increased by more than 12 statewide, and forest cover has declined to less than 60%. In Redding, although development rates have been somewhat higher than the state average, strong conservation efforts have ensured that forest cover exceeds that for the state and most surrounding towns.

Redding has retained a remarkably rural character as a result of several factors: its distance from population and commercial centers delayed development pressure until the mid 20th century, large blocks of land were protected in Putnam and Huntington State Parks and the Saugatuck Reservoir, and the town's citizens displayed an early commitment to conservation through early adoption of zoning regulations in 1950, creation of an effective conservation commission in 1964 and formation of the active Redding Land Trust in 1965. With this history and a lower population density than



Population Trends in Redding  
and Surrounding Areas:  
1774 - 2000

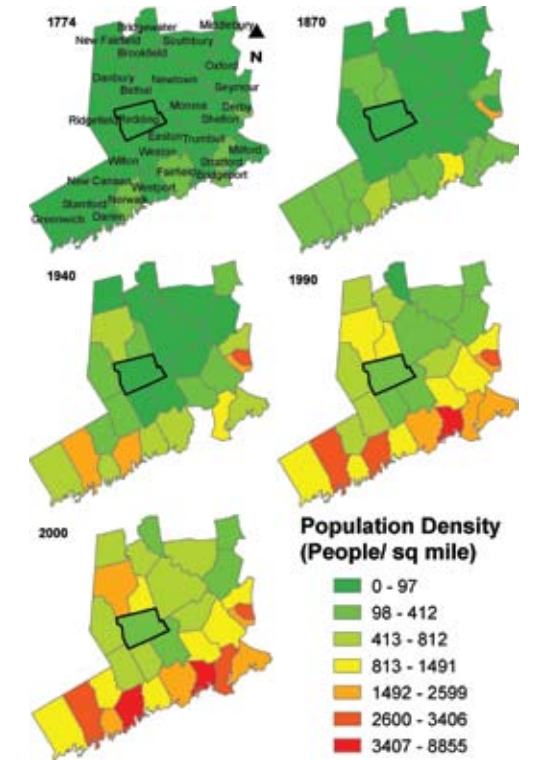


Land Developed Between 1965 and 2002 in southwestern Connecticut

most towns in southwestern Connecticut, Redding is positioned to continue this conservation activity into the future.

### History, Ecological Questions and Conservation Challenges

From our studies it is clear that land in southern New England is strongly shaped by the history of land clearance, logging, fire and reforestation. Meanwhile, the integrity of the remaining land is being compromised by regional activity and local land conversion. These past and ongoing changes present many ecological questions and conservation challenges for Highstead researchers and all residents of this beautiful region, including the following: How have these past changes shaped the modern character and ongoing changes of wooded and open landscapes? How will these natural areas be impacted by the new pressures of changing wildlife populations, especially deer, new invasive plant and insect species, and ongoing changes in the environment? What approaches to land protection and stewardship can best ensure that natural areas remain available for plant and animal communities? How can willing landowners, adjoining towns, active land trusts and conservation groups, and neighboring states work to ensure that large and continuous blocks of protected land will persist to support natural processes, native species, and important human experiences into the future?



Changes in Population Density: 1774 - 2000



## Highstead's New Oak Forest Deer Exclosure and Woodland Path

Over the last decade we have witnessed major changes in the one-acre deer exclosure in the red maple forest that comprises Highstead's Woodland Demonstration. Almost immediately following the construction of the seven-foot high fence we began to see a return of many native wildflowers, an increase in tree seedlings, and a generally greener appearance inside the exclosure than in the surrounding forest that remains exposed to deer browsing. As we approach the tenth year since construction of this demonstration we recognize its immense value to us, to land managers and policy makers across the region and to the larger public that is attempting to assess and manage the impact that deer have on the landscape of southern New England.

However, our Woodland Demonstration is just one site, located in a forest type dominated by red maple that is not necessarily representative of general conditions in our region. In an effort to develop a more robust understanding of deer impacts we have begun to work with other groups to encourage the establishment of deer exclosures on other properties and we have decided to erect a second large exclosure at Highstead in upland oak forest that is quite typical of our land and southern New England. In developing this new exclosure we sought to create a facility that would serve multiple purposes: to be scientifically rigorous so that it will provide useful quantitative data on deer impacts that can be published in research and conservation journals; to be accessible to our visitors so that it can be used as a demonstration to the public and interested land managers; and to be located strategically so that it fits well into our network of interpretative trails and affords our members and visitors more diversity in their experience at Highstead.



*A view from the northwest corner of the new exclosure along the length of the fence*



*The woodland path that winds between chestnut oaks past the northeast corner of the fence and along the ridgeline*

Construction of the 30 by 60 meter deer exclosure and accompanying interpretive trail were completed this past summer in Highstead's oak forest between two rocky ridges just northeast of the Kalmia Collection and the West Loop Walk. The foot path begins at the Kalmia Collection, passes by the northwest corner of the fence, and follows the ridgeline to the East Loop Walk. This location affords a nice elevated perspective of the experiment and adjacent control plot to visitors so that any changes due to the exclusion of deer will be easily observed. A short access spur allows interested individuals to walk to the exclosure for a closer look. The foot path will also accommodate walkers looking for a shorter loop through the oak forest than the traditional loop through the Azalea Collection. A combination of the exclosure's wire-mesh design and the bowl-shaped topography of the site make the fence virtually invisible from the Kalmia Collection and Loop Walks, preserving the natural appearance of the surrounding oak woodland.

Ed Faison and his interns began sampling the vegetation in the exclosure and adjacent control plot this past summer and will continue to monitor the vegetation inside and outside of the fence in the coming years. This experiment will complement Highstead's existing Woodland Demonstration Project by showcasing the impacts of deer in two very different forest types and will play an important role in Highstead's broader study of the response of forest understory vegetation to abundant deer in southwestern CT. We plan to report on the results of this new experiment in future newsletters and will maintain updates, data, and photographs of the areas on our new website.

### Judy Zuk

**Botanical leader, inspirational educator and friend, at 55 years**

Judith D. Zuk, our great and good friend and one of the founding directors of Highstead died recently. Judy gave to her community very generously and effectively, and her accomplishments and involvements were numerous. Over many years Highstead was a beneficiary of her thoughtful wisdom and expertise. As the inspired leader and President of the Brooklyn Botanic Garden for 15 years, she addressed the colossal challenges of that large urban botanical garden by establishing valuable educational programs for neighboring children, and by making the pleasures and benefits of that horticultural treasure totally available to its neighborhood and beyond. Judy is greatly missed.