

# Highstead

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



The need and the mission are clear – to connect more people with plants and woodlands in their own backyards and afar and motivate the appreciation, conservation, and stewardship of all natural landscapes for the benefit of the environment and ourselves. But how should Highstead advance this agenda? Our activities of the past year, many of which are found within these

## To the Members and Friends of Highstead

pages, show some of the ways that we have begun to answer this question.



In late September Highstead sponsored a Woodland Conversation by Dr. Eric Chivian, Nobel laureate and Director of Harvard's Center for Health and the Global Environment, who highlighted global examples of the intimate connection between biodiversity and human health. Earlier in September, nearly 150 friends joined us for a captivating demonstration of the history and magnificence of raptors. Visitors were able to enjoy and experience art and stories by artists of the Guild of Natural Science Illustrators in the morning and learn about raptor behavior and conservation from Master Falconer Chris Davis and three of his Harris's hawks in the afternoon.



**David Foster** is Director of the Harvard Forest at Harvard University and President of the Board of Highstead Foundation.

Locally and across southern New England our ecology program is collaborating with private landowners, conservation organizations, and other scientists to evaluate the many stresses that are altering New England forests. High on this list are invasive plants and heavy grazing from increasing populations of deer and moose. Our studies provide insight into the history of our landscape and make clear the rapid rate with which forest landscapes can change. Landowners and conservation managers can use these insights to better manage plants and wildlife now and in the future.

On a much broader scale, we are advancing woodland conservation by providing education and assistance for those concerned with permanent land protection and the long-term, sustainable stewardship of natural resources. At home, this work involves collaboration with the Fairfield County Regional Conservation Partnership. Across southern and central New England we coordinate the more than 60 conservation organizations comprising the Wildlands and Woodlands Partnership and assist their many regional efforts. This year we have begun sharing our conservation approaches with groups across Maine and with the Pew Environmental Trust, which is advancing conservation across the boreal forest of Canada.

At every scale, we at Highstead are actively promoting the appreciation, understanding and management of plants and the landscapes that support them. I look forward to joining you in these activities in the coming year.

David Foster, President,  
Board of Highstead Foundation, Inc.

## From the Director

*Bill Toomey*



# To Members and Friends of Highstead,

## **Communicating the Importance of Forest Conservation:**

Forests and woodlots have long been part of our New England heritage. They provided the fiber and fuel that supported the growth of our towns, warmed our homes, and have been a source of livelihood for many generations. Today, they still provide the fabric that holds the New England landscape together and help to make it such a special place. However, with many of us living in urban and suburban landscapes, the benefits of woodlands are perhaps less obvious and often taken for granted.

Protection of the region's forests is important for its own sake, but more important is the preservation of the services these forests provide to us and to wildlife. Forests sustain life on earth by providing clean air, water, habitat, and helping to mitigate the impacts of a warming climate. Additionally, forests offer economic and recreational opportunities as well as enhancing the beauty and character of our communities.

In order to ensure that forests are protected into the future, the conservation community must communicate the importance of our forests in a way that the public and decision makers can understand. We must find creative ways to develop and deliver these messages to our desired audiences within a media-saturated environment. It will be critical for those messages to be consistently delivered by members of broad-based conservation partnerships to successfully influence the actions and decisions of key leaders at all levels.

Over the past year, Highstead has been developing creative ways to effectively communicate the importance of woodland conservation to our many members, visitors, and partners. In 2009, we enhanced our communication and outreach efforts to reach more people by offering creative and informative programs and by forging new relationships with academic, nonprofit and agency partners. As a result, there has been a significant increase in the number of people attending our programs and we have expanded the number of organizations and conservation partnerships we are assisting and supporting. Looking forward, 2010 promises to be a year filled with significant opportunities to advance large scale and lasting forest conservation work, ensure that science is shaping conservation action, and educate visitors about ecologically based land management and stewardship.

We look forward to your continued interest and support of Highstead.

Bill Toomey  
Director



## Forest Ecology

Ed Faison  
Highstead Ecologist



# Forest Change at Highstead: Separating the Pattern from “Noise”

An understanding of our dynamic natural environment is one of humanity’s oldest and most important pursuits, critical to the procurement of game and the cultivation of crops. The study of nature is also a noble pursuit for its own sake that has impassioned thinkers from Aristotle and Thomas Jefferson to Henry Thoreau. Today, in southern New England, an additional purpose warrants a deep understanding of our natural surroundings: how best to conserve and manage our forestlands altered by more than 300 years of European settlement and diminishing in extent each year to suburbanization. Jefferson recognized that to be accurate, the study of nature must be comprehensive, extend beyond the immediate, and be based on systematic observation. His establishment of a network of weather stations from which consistent, long-term data could be gathered was a historical precursor to the permanent vegetation plots established here at Highstead in 2004. These plots, arranged in a systematic grid across Highstead’s landscape, allow us to return to the same patch of forest over time and record the same measurements. It is the most effective and accurate way of documenting forest changes over time.

right:

Ecology interns, Erik Yando and Stephen Murphy, identifying one of the difficult sedge species in Highstead’s maple-ash forest

This past summer, ecology interns Erik Yando (Connecticut College) and Stephen Murphy (Denison College, Ohio) – under the guidance of Ed Faison – re-sampled 90 of Highstead’s one hundred five-year old permanent forest plots and three of its deer exclosures (ages 3, 11, and 16 years). Deer exclosures are another type of permanent plot that specifically investigate the effects of deer on vegetation. A patch of forest is surrounded by a seven-foot tall fence to protect it from deer, and the vegetation inside and outside the fence is compared.



Before the summer began, we had a number of hypotheses about how our forests had changed during the past 5+ years:

- 1) White ash (*Fraxinus americana*) trees had declined from the combined effects of ash decline and the cutting of dying ash trees.
- 2) The invasive Japanese stilt grass (*Microstegium vimineum*) had spread from the driveway entrance into the surrounding maple-ash forest.
- 3) Invasive plants had not spread from the historically cleared maple-ash forest into the historically forested rocky oak forest.
- 4) Forested areas protected from deer browsing were producing more oak and total seedlings than areas exposed to deer browsing.
- 5) Tree seedling abundance in the maple-ash forest would be related to Japanese barberry (*Berberis thunbergii*) abundance because barberry was acting as a natural fence and protecting seedlings from deer browsing.

## Forest Ecology

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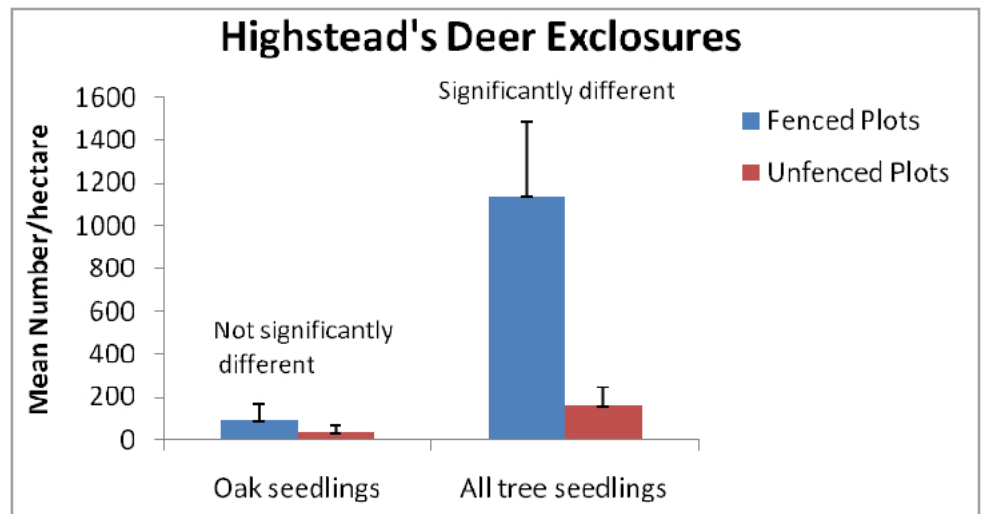
The results confirmed some of these hypotheses but contradicted others.

1) **Ash Decline:** We learned that we have, in fact, lost over 10% of our ash trees in the past 5 years. The ash decline, a disease involving the native ash yellows fungus, typically kills ash trees within 2-10 years of their being infected and has killed about 25% of ash in the northeastern United States in recent decades.

2) **Japanese Stilt Grass:** We confirmed the spread of Japanese stilt grass (JSG) into the maple-ash forest where it is now well established after being absent in 2004. JSG was introduced to Tennessee in 1917 and has become invasive in southern New England in the past 15-20 years. This grass is a particularly aggressive invader because it can tolerate low light levels and form monocultures on the forest floor.

3) **Other Invasive Plants:** We were surprised to discover that previously established invasive plants in the maple-ash forest had begun to spread into the largely uninvaded oak forest. Oriental bittersweet (*Celastrus orbiculatus*) occurred in nine new plots on the west side of Highstead and garlic mustard (*Alliaria petiolata*) was discovered in four new plots. Bittersweet is primarily dispersed by birds, while garlic mustard seeds are dispersed by wind, small mammals, and humans. These plants generally invaded disturbed areas: along Highstead's border near houses and the Redding Country Club, sites crossed by woodland paths, and adjacent to the Kalmia Collection. These results remind us that small forest preserves in suburban areas are vulnerable to exotic invasion. They also demonstrate the potential pitfalls of establishing woodland trails, which can act as conduits for human dispersal of garlic mustard seeds and provide the soil disturbance necessary for invasive plants to colonize new areas.

4) **Deer Exlosures:** Tree seedlings were, on average, almost seven times more abundant when protected from deer. Surprisingly, however, oak seedlings did not differ in fenced and unfenced areas, indicating that other factors (perhaps soil moisture, low light levels, and competition from other plants) are limiting oak regeneration.



5) **Tree seedlings and Japanese barberry:** Although our fences have effectively protected tree seedlings from deer, Japanese barberry does not appear to be an effective natural fence, as there was no relationship between tree seedling abundance and barberry abundance. In contrast tree seedlings were less abundant in areas with substantial mountain laurel (*Kalmia latifolia*).

These results tell us much about the role of deer, the spreading capacity of invasive plants, and the ability of native and invasive shrubs to influence forest regeneration in a small woodland preserve. They also demonstrate that half of our initial predictions about our forest were wrong. When we casually assess our forested landscapes, we seldom interpret the patterns completely correctly; rather we tend to see random “noise” along with genuine pattern. Systematic, repeatable, and long-term observations are the only way to separate pattern from noise, and this approach to studying forest change is central to Highstead’s mission.





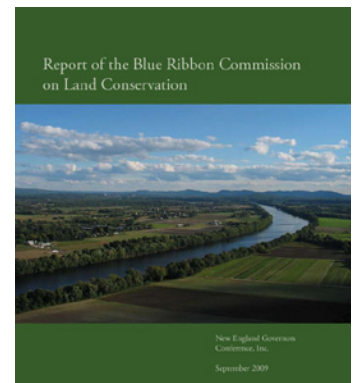
## Regional Conservation

*Bill Labich*  
*Regional Conservationist*



# Big and Bold Ideas Bring New Englanders Together for Forest Conservation...Again!

For New England conservationists, 2008 was an auspicious year! One hundred years earlier in 1908, the first meeting of the New England Governors' Conference led to the establishment of the White Mountain and Green Mountain National Forests, and Acadia National Park. It was last year that our region's Governors, recognizing the historic anniversary as an opportunity, established a Blue-Ribbon Commission on Land Conservation. The Commission's charge was to study "the most urgent conservation issues facing our region and develop recommendations on preserving and protecting our natural heritage and places..." In September of 2009, the Governors accepted the Commission's report and signed a resolution to act boldly to keep forests as forests; keep farmlands in farming; protect coastal resources, wildlife and their habitats; and connect people to the outdoors.



Even as the Blue-Ribbon Commission was in deliberation, great advances were being made by members of the partnership that are advancing the Wildlands and Woodlands Vision, which calls for the permanent protection of one-half of the southern New England landscape in forest. Members of the Wildlands and Woodlands (W&W) Partnership, which is coordinated by Highstead's Regional Conservationist, collaborated this year to promote forest management across Connecticut, Rhode Island and Massachusetts. The Partnership is developing new ways of protecting many parcels of land in a single project, improving forest and climate change policies, and coordinating conservation training programs for town boards and forest landowners. Highstead is also promoting partnerships seeking to sustain woodland landscapes at the local, regional and multi-state scale.

## What Do Conservation Partnerships Need to Succeed?

Successful partnerships need trust, vision, leadership, and action. Highstead works with many conservation partnerships to help them create structurally sound organizations that cultivate leadership from within, build trust among the membership, focus on member-led actions, and foster sharing of information and ideas. Partnerships can provide a forum for conservation professionals, scientists, foresters, business owners, interested individuals, and landowners to share ideas, science, and best practices to increase the pace of land protection and improve how we care for the land.



**Landowner Workshop**

Saturday, October 24, 2009 9:00 am to 12:00 pm  
C.H. Booth Library, 25 Main Street, Newtown, CT 06470

**You're Invited!**  
**Landowner Workshop**

Private Forest Land Management • Enhancing your Land for Wildlife  
Options for Conserving your Family Land

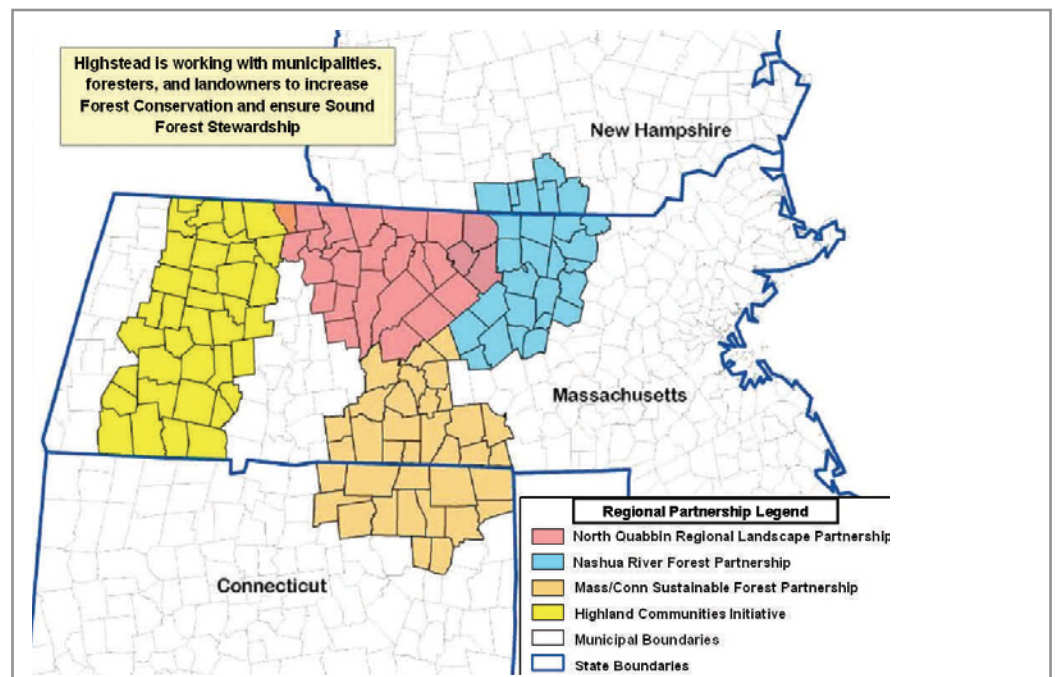


## Regional Conservation

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**The Fairfield County Regional Conservation Partnership** – This relatively new group is comprised of thirteen organizations and commissions from seven towns ([www.wfcconservationpartnership.org](http://www.wfcconservationpartnership.org)). With Highstead's support, members have hosted speakers and learned about regional land use planning, the art of landowner engagement, the accreditation program of the Land Trust Alliances, and a regional woodland study. Their first joint-initiative, a landowner's workshop on stewardship, will be held on October 24, 2009.

**Regional Conservation Partnerships Collaborate Across State Lines From NH to CT** – After a year of collaboration and effort, five regional conservation partnerships, all members of the W&W Partnership, were awarded a \$200,000, 3-year grant from the US Forest Service. This grant will fund extensive outreach and education efforts targeted to woodland owners, foresters, and municipal boards and commissions in 105 towns from southern New Hampshire to north-central Connecticut. Highstead is providing technical assistance to this effort and to individual partnerships, especially the Mass-Conn Sustainable Forest Partnership, whose steering committee is now able to hire their first part-time coordinator.



**Forestry in Southern New England** – What began with a workshop organized by Highstead and the Norcross Foundation for 33 foresters from Rhode Island, Massachusetts, and Connecticut, has led to the creation of a new W&W working group focused on sustainable forest management in MA, CT and RI. This new group of forestry activists and mainstream environmental organizations has developed a draft action plan and are working collaboratively to begin the implementation of that plan.



## Landscapes and Collections

*Kathleen Kitka*  
*Landscape and Collections*  
*Manager*

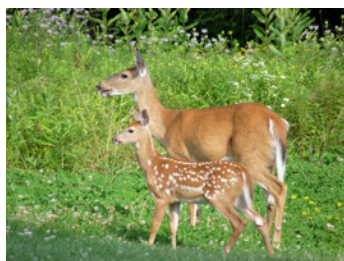


Some of the principles and practices we employ to accomplish this goal:

- 1) Giving priority to native species represented in the adjoining woodlands and meadow to help blend the Barn into its natural surroundings and to ensure a local sense of place is maintained.
- 2) Planting multiple layers of native vegetation of different sizes and forms, as well as using native alternatives to invasive ornamentals that provide equally desirable flowers, fruit, and fall color in order to promote biodiversity.
- 3) Utilizing a combination of deer-resistant plants, sprays, and fencing that effectively reduce deer damage.

## The Barn Landscape

One of the goals for landscaping around Highstead's Barn headquarters is to provide visitors with useable ideas for creating ecologically sound and aesthetically pleasing naturalistic home landscapes and wooded areas in the presence of high deer populations.







# Welcome to Highstead

## Highstead

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[www.highstead.net](http://www.highstead.net)



Printed on recycled paper.

## Program Highlights



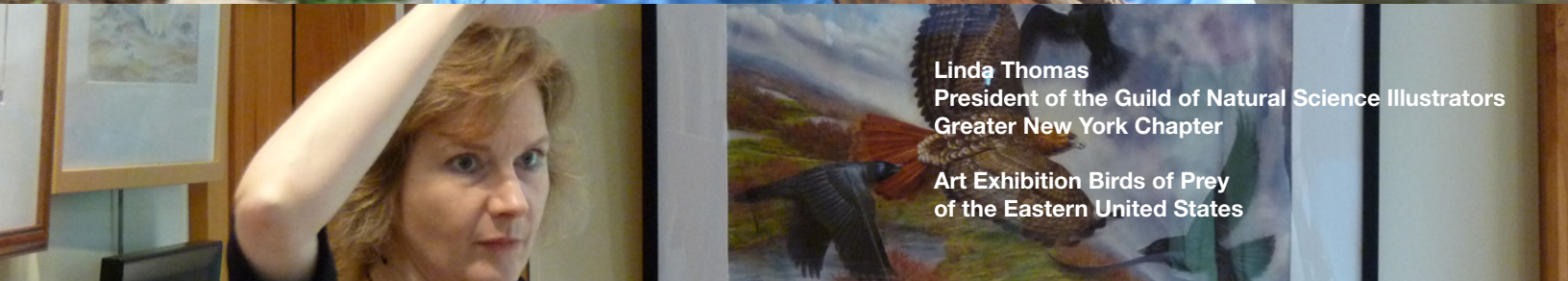
Eric Chivian, M.D.  
1985 Nobel Peace Prize Recipient

How Human Health Depends On Nature



Chris Davis, Master Falconer

Birds of Prey of the Eastern United States



Linda Thomas  
President of the Guild of Natural Science Illustrators  
Greater New York Chapter

Art Exhibition Birds of Prey  
of the Eastern United States