

# THE ecological landscaper

The Newsletter of the Ecological Landscaping Association

Vol. 15, No. 4

Winter 2009

## Digging In: The Theory and Practice of Ecological Landscaping

### FROM THE EDITOR

• Kat Good-Schiff

Never before has ecological landscaping been so widely promoted and sought after. This is just in time for the 15th Annual Conference and Eco-Marketplace of the Ecological Landscaping Association. Whether you are new to the field or have been with ELA since the beginning, the conference provides many opportunities to meet with professionals, share ideas, and be inspired. As you know, the choices we make in our landscapes and our lifestyles profoundly affect local and global ecosystems. There has never been a better time to dig into ecological landscaping.

### DIGGING INTO ECOLOGICAL LANDSCAPING BY FOLLOWING NATURE'S LEAD

• Kate Hartnett, Mary Tebo, & Marilyn Wyzga

As evidence of extreme weather and ecological stress become more obvious, ELA's mission to "promote the design, installation and maintenance of landscapes that are guided by a knowledge of and respect for natural ecosystems" becomes more relevant. People are becoming more motivated to change their ways. But, how can we sort through the complexity of information coming at us, to understand and effectively work with that complexity in managed

landscapes? We can take our cues from a system that evolved over 3,500 million years, and "follow nature's lead" to create energy efficient, ecologically diverse, environmentally healthy, and aesthetically pleasing landscapes for municipal, residential, and commercial settings.

*"The principles inherent in natural systems serve as both a framework and a justification for mimicking nature in our landscaping practices."*

"Following nature's lead" allows us to beneficially tap into the energy flow that influences everything from climate to built landscapes to wildlife habitat and movement.

Since the theme for the ELA 2009 conference is "Digging In: The Theory and Practice of Ecological Landscaping," we would like to briefly explore emerging opportunities for

— FOLLOWING continued on pg. 2

### contents

- 1 Following Nature's Lead
- 4 15th Annual ELA Conference Details
- 6 Greenhouse Warming and Landscape Care
- 8 Viburnum Leaf Beetle Detected in New Massachusetts Counties
- 9 Sustainable Sites Initiative in Draft Stage
- 10 Gleanings and Events



Plant systems mimic combinations found in nature, incorporating layers of vegetation, and provide many benefits including habitat for wildlife in all seasons.



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Write to us! We welcome comments, letters, articles, topic ideas, and opinions. Send to Newsletter Editor at the address above.

Also send all other ELA business, including address changes, to the address listed above.

The ELA board meets throughout the year in various locations in eastern Massachusetts. All members are welcome. Contact us for specific dates and locations.

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———— FOLLOWING continued from pg. 1

integrated design of buildings and grounds, and then describe how we are connecting the theory and practice of ecologically-based landscaping in a new book, *Integrated Landscaping: Following Nature's Lead*.

**LANDSCAPING IN CONTEXT**

Although many clients may think of landscapes and gardens as their own, they are part of a larger regional environment. How often do your clients recognize the landscaping around homes, businesses, schools, and community centers as more than just planting flowers, shrubs and trees, and moving soil and rocks? Much landscaping, informed primarily by aesthetics, significantly alters ecological function and services of the local ecosystem, the region, and all who share in its future, including ourselves. Landscaping in context, that follows nature's lead, protects the existing ecological services that:

- reduce stormwater runoff, recharge groundwater, and purify surface water
- moderate site conditions (shade and breeze in summer, sun and light in winter)
- purify air
- make food and fiber
- pollinate and disperse seeds
- control insect populations
- take up and sequester carbon
- decompose wastes
- screen views and reduce noise

As we begin to see ourselves and our landscapes as part of the natural world instead of separate from it, we can begin to make the kinds of choices that support native ecosystems and maintain the look and feel of our home settings.

The Ecological Landscaping Association would like to thank the following for their generous help in sustaining our mission through the Annual Appeal:

Daniel Hildreth  
North Country  
Organics  
Chris O'Brien  
Trevor Smith  
Maureen Sundberg

Thank you as well to our many valued supporters who wish to remain anonymous.

**A NEW MANUAL ON  
INTEGRATED LANDSCAPING:  
A HOLISTIC APPROACH**

Most landscape manuals address the functional, aesthetic, and budgetary goals of property owners by describing a linear sequence of processes: design, plant selection, installation, and ongoing maintenance. *Integrated Landscaping: Following Nature's Lead* takes a nonlinear, holistic approach to these recognized practices, using natural ecosystems as models, by studying the fundamental processes of nature and applying them to the landscapes we create around our homes, workplaces, and public spaces. The principles inherent in natural systems serve as both a framework and a justification for mimicking nature in our landscaping practices.

**1. Diverse forms of life live and work together independently.**

In natural systems plants are always found living together with animals.

———— FOLLOWING continued on pg. 3

**2. Soils are covered and protected from the impacts of excessive wind, sun, and rain.**

In natural systems, soils are typically covered and protected, with layers of vegetation serving as the first line of defense, beginning with the tallest canopy of overstory trees, followed by shrubs, herbs, and groundcovers.

**3. Rainfall is filtered, conserved, and available when needed.**

Natural systems allow rainwater, already reduced to fine sprays by multiple-canopy layers, to sink slowly into the ground. After being transformed into thin films of water by the litter layers, water moves through the topsoil.

**4. Soil organisms are fed by the cycling and recycling of nutrients.**

In natural systems, a great variety of decomposing organisms consume organic matter as a food source, leaving behind humus, the stable remnant (due to its chemical composition and chemical bonds) of decaying organic material.

**5. Humus holds fertility reserves within the upper layers of soil.**

In the Northeast, plant litter doesn't accumulate but decomposes quickly with the help of numerous decomposers.

**6. Diversity builds over time, keeping plant pests and diseases in check.**

Natural systems sustain themselves as organisms live, grow, die, and decay together.

**7. Plants supply fresh air above and below the ground, as well as cool shade.**

Both fresh air and cool, moist soil

promote growth of root systems and populations of microorganisms.

**8. The subsoil provides inorganic compounds required for living and nonliving processes.**

In undisturbed natural systems, subsoil lies below the upper layers of soil. Formed by the weathering of parent material, the subsoil provides inorganic compounds (mineral matter) to the soils and plants above.

**9. Natural systems are dynamic and will change over time.**

Natural systems undergo succession, the progressive change from one dominant plant community to another.

**10. Humans experience sensory, intellectual, emotional, and spiritual stimulation, opportunities for learning, and insights into the wonder of complex natural processes.**

Natural systems engage all our human senses.

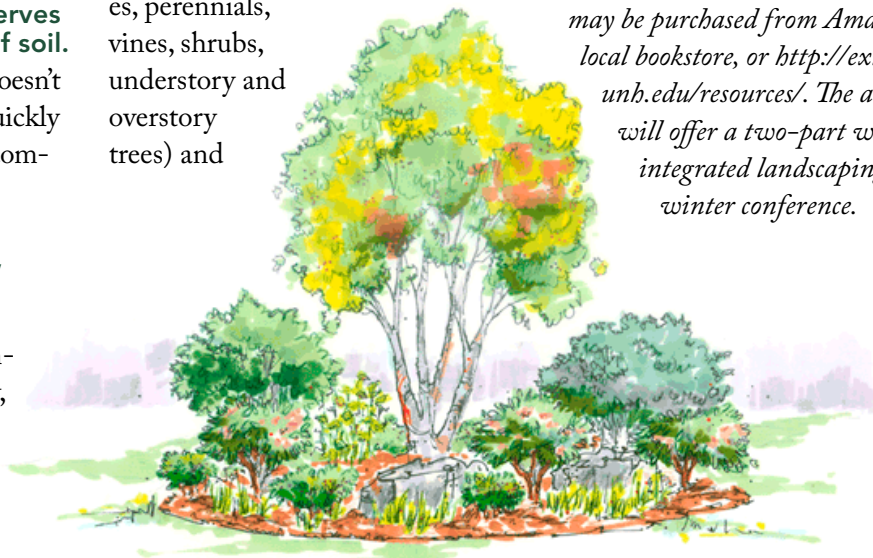
The holistic practices used in Integrated Landscaping include working with “plant systems” rather than individual specimens. A plant system unites diverse plants (some combination of groundcovers, grasses, perennials, vines, shrubs, understory and overstory trees) and

animals with nonliving components of the environment to interact and function as a whole. Because they mimic combinations found together in nature, the plant systems of integrated landscapes can:

- Offer year-round habitat and food for wildlife.
- Provide a variety of aesthetic landscape qualities.
- Enhance local character.
- Resist pollution, pests, and drought.
- Minimize maintenance.
- Provide ecological services essential to human quality of life.

All of this helps soil regenerate, plants thrive, and wildlife flourish in real-world situations, while reducing energy inputs and saving money. By following nature's lead, we also can discover additional aesthetic appreciation, recreational opportunities, intellectual stimulation, and a spiritual connection to the life support system of the beautiful planet.

*Lauren Chase-Rowell, Kate Hartnett, Mary Tebo, and Marilyn Wyzga are the authors of Integrated Landscaping: Following Nature's Lead, which may be purchased from Amazon, your local bookstore, or <http://extension.unh.edu/resources/>. The authors will offer a two-part workshop on integrated landscaping at ELA's winter conference.*



This plant system is designed for drought and salt situations; selection of suitable plant materials minimizes the need for maintenance.





Celebrate it – It's a Fact!

Ecological landscaping in all its forms is **HOT**

## **Digging In:**

The Theory & Practice  
of Ecological Landscaping

**The 15th Annual Conference  
& Eco-Marketplace**

February 27–28, 2009



## **DIG IN AT THE ECO-MARKETPLACE**

An essential part of the ELA conference is the Eco-Marketplace. We invite you to visit with the exhibitors to explore new options in supplies and services that will improve your skills and your bottom line.

**Here are just a few of the great exhibitors and organizations that will be in the Eco-Marketplace this year:**

**Fertrell Company**

Natural organic fertilizers including a wide range of minerals.

**Groundscapes Express, Inc.**

Compost tea and compost products for erosion control, topdressing, and mulching.

**North Country Organics®**

OMRI-listed natural pest control, blended and custom organic fertilizers, compost, bio-stimulants, seed, and other products. They also offer quality soil testing services.

**North Creek Nurseries, Inc.**

Provider of native perennials, ferns, grasses, and vines.

**NOFA/OLC**

Provides information on organic landcare training and organic farming and gardening.

**Project Native**

Growers of high quality organic native plants and seeds. They also raise awareness of indigenous plants and habitats through education and outreach.

The Ecological Landscaping Association proudly presents our  
15th Annual Conference & Eco-Marketplace

## **Digging In: The Theory and Practice of Ecological Landscaping** February 27–28, 2009

### **Get the Theory**

- Designing and building gardens with diversity and native populations in mind
- Developing healthy soils in as many places as possible
- Minimizing water use and maximizing water percolation
- Educating our clients and our communities on sustainable landscape options
- And much more

NEW ENGLAND  
**WILD**  
FLOWER  
SOCIETY



*ELA Conference Co-Host*

### **Meet the Practitioners**

- Our speakers and exhibitors have real life experience with ecological, sustainable, and organic landscaping
- Over 16 sessions feature well-known speakers David Yarrow, Jeff Lowenfels, C.L. Fornari, and others

### **Tell the Story**

- The choices we make in our landscapes and in our lifestyles profoundly affect local and global ecosystems

### **Friday Night Keynote:**

## **Expanding the Story of Ecological, Sustainable, and Organic Landscaping**

**—Peter Forbes, Center for Whole Communities**

The art of story, practiced by us all in our daily lives, has untapped potential in the field of conservation. Indeed, telling the stories of our relationships to land could be the key to effecting social change around

**Meet new people!**  
**Be inspired!**  
**Exchange ideas!**

conservation values. Whole Communities is about deep diversity and a commitment to inclusively — to work on behalf of all people and all ecosystems so that all may thrive.

*To review the full brochure, register online, or download  
a mail-in registration form, visit [www.ecolandscaping.org](http://www.ecolandscaping.org).*

For more information, call:  
(617) 436-5838 (attendees)  
(978) 874-1373 (exhibitors)

## GREENHOUSE WARMING AND LANDSCAPE CARE

• Kevin T. Smith

Climate change is one of the few truly planetary processes that influence the assessments and actions of governments and of everyday citizens. Principles and practices of ecological landscaping fit well with concern about the effects of climate change.

Models of complex weather patterns indicate that as the planet increases in overall temperature, global patterns of circulation in the atmosphere and in the oceans change as well. These changes in large-scale patterns can influence local precipitation, the timing of budbreak and frosts, and the frequency of extreme weather events. We know that climate change is nothing new and there is evidence of extreme change prior to the development of modern society.

“Greenhouse warming” distinguishes global change caused by human activity from long-term climate cycles that are independent of human activity. Concern for greenhouse warming has centered on “greenhouse gases.” Greenhouse gases make life possible on earth by trapping some of the heat produced by solar energy that reaches the earth’s surface.

The current greenhouse warming problem stems from the release of huge amounts of greenhouse gases such as carbon dioxide ( $\text{CO}_2$ ) from the burning of fossil fuels as well as other gases from animal agriculture and other industrial sources. The term “carbon footprint” refers to the direct and indirect release of  $\text{CO}_2$  to meet some need. This increased production of greenhouse gasses is coupled with the decreased capture of  $\text{CO}_2$  and reduced storage of carbon in living trees and soil due to deforestation, forest

fires, and other changes in land use.

Photosynthesis by land and marine plants takes  $\text{CO}_2$  out of the atmosphere, using solar energy to make chemical bonds to form sugar. The sugar is then the fuel and the raw material for plant biosynthesis of organic compounds, compounds that contain carbon. This is the fundamental support for most of the world’s food webs.

Although most organic compounds will be rapidly broken down by organisms and the  $\text{CO}_2$  released back into the atmosphere, some organic compounds are stored or sequestered for long periods of times. Stored carbon does not contribute to greenhouse warming or to the carbon footprint. For the terrestrial environment, much organic matter is stored in woody plants and soils. Ecological techniques that promote healthy landscape plants can have the additional benefit of increasing that stored carbon.

The amount of carbon stored in the wood of healthy trees and shrubs can be increased by tree care practices that reduce wood decay. Wood decay can be reduced by decreasing the frequency and severity of tree wounding. Wounding provides the opportunity for infection by wood decay fungi and their associated microorganisms. Repeated wounding can breach the boundaries of the compartmentalization process, resulting in injured trees.

Compartmentalization resists the spread of infection and results in less decay and increased carbon storage. Proper pruning practices that remove the target branch and leave the stem uninjured favor healthy compartmentalization. Although ecological landscaping techniques should aim to reduce the amount of decay in living trees, the decay of woody mulch and even woody debris can support communities of healthy soil microorganisms.

Most textbooks present soil as a

—— GREENHOUSE continued on pg. 7



Wood decay has reduced the amount of carbon stored in the center of this red oak stem.



— GREENHOUSE continued from pg. 6

physical mix of clay, silt, and sand with a little humus (decayed organic matter). This model is good for predicting some soil properties such as porosity and permeability. In contrast, an ecological approach presents soil as *alive*, with the living roots, microorganisms, and micro fauna all playing key roles in plant nutrition. Much of the carbon stored by plants is below ground in the root system and is not readily visible. Healthy roots in natural environments release carbon macromolecules into the soil that improve soil texture and that support communities of beneficial microorganisms. These communities alter the chemical forms of essential elements, making them more available for plant uptake and growth.

Ecological landscaping techniques can increase the storage of carbon directly through encouraging the development of healthy root systems and living soil and indirectly through reduced consumption of energy-intensive landscape treatments. Meeting the goal of healthy root systems can involve physical and biological soil amendments, especially for impoverished urban soils. The carbon added to the soil through the addition of organic amendments also increases carbon storage. The slow breakdown of that organic matter can help fuel the development of healthy communities of soil microorganisms.

Probably the landscape treatment with the largest carbon footprint is nitrogen fertilization. Although our atmosphere is rich in nitrogen gas, that essential element is taken up by plants in other forms such as nitrate. Most nitrogen fertilizer is produced by an industrial process that consumes large amounts of electricity. Development of that process was a tremendous boost to modern agricul-

ture. The rapid response of landscape plants to nitrogen fertilizer encouraged its use, which rapidly became widespread. Now, fertilization of landscapes with industrial nitrogen is one of the most common practices in traditional landscaping. In addition to the large carbon footprint, the rich succulent growth encouraged by nitrogen fertilization can also be prone to attack by pests and pathogens. Some of these problems can be reduced through increased pesticide use, which unfortunately also increases the carbon footprint.

An unintended consequence of nitrogen fertilization is the suppression of natural communities of microorganisms in healthy soils. These communities can take nitrogen gas and produce nitrate and other forms to fertilize landscape plants. Nitrogen and phosphorous fertilization also suppress the formation of healthy mycorrhizae. Mycorrhizae are symbiotic associations of plant roots and beneficial fungi. The fungus component greatly increases the surface area of the function root system of the plant and is more effective than the plant alone at taking up certain essential elements such as phosphorous. Mycorrhizae naturally form in most families of higher plants, especially trees and woody shrubs. Healthy mycorrhizae and natural communities of soil microorganisms reduce the need for industrial fertilizers. Reduced fertilizer use lowers the carbon footprint of the landscape through reduced

energy consumption in the formation and transportation of the manufactured materials.



Mycorrhizal root of red oak showing the sheath of beneficial fungus, proliferation of root tips, and aggregation of soil particles.

New commercial products and techniques are being developed to meet the goals of healthy plants and soils while reducing the carbon footprint. Some will be more effective than

others, depending on specific circumstances. Research on the relationships within the biological webs of planted landscapes can provide options and guidance on what we should do to enhance the role of ecological landscaping in reducing greenhouse warming. Although the contribution may seem small with respect to the total problem of climate change, ecological techniques can make alternative approaches available for effective, efficient, and sustainable landscaping.

*Kevin T. Smith is Plant Physiologist and Project Leader for the Northern Research Station of the USDA Forest Service. He will offer two workshops at ELA's winter conference: one on climate change and tree stress, and one on survival strategies and tree connections.*

**Photos by Kenneth R. Dudzik, USDA Forest Service**

The ELA Board of Directors is pleased to announce that, effective January 13, 2008, **Jordan Hall** was elected to serve on the board on an interim basis until the next general election. More details will appear in the next issue of the newsletter.



Egg-laying sites adjacent to leaves damaged by feeding adults. Photo Credit: Paul Weston, Cornell University

## VIBURNUM LEAF BEETLE DETECTED IN NEW MASSACHUSETTS COUNTIES

### A pest alert from the Massachusetts Introduced Pests Outreach Project

**V**iburnum leaf beetle (*Pyrrhalta viburni*), a pest of viburnum species, has been confirmed in three new counties in Massachusetts. In July 2008, new sightings of this introduced pest were reported in Bristol, Franklin, and Middlesex County, and were recently confirmed by Robert Childs, an entomologist at UMass Extension. Eradication efforts at these sites are currently underway. The beetle was first discovered in Massachusetts in 2004, in Berkshire County.

Viburnum leaf beetles attack only viburnum plants. The most susceptible species are arrowwood viburnums (*V. dentatum* complex), European and American cranberry bush (*V. opulus*, including var. *americana*), Possum-haw (*V. nudum*),

Rafinesque viburnum (*V. rafinesquianum*), and Chinese or Taiwanese viburnum (*V. propinquum*). Many other species are also known to be susceptible, including: Black haw (*V. prunifolium*), Mapleleaf viburnum (*V. acerifolium*), Nannyberry (*V. lentago*), Sargent viburnum (*V. sargentii*), Wayfaringtree (*V. lan-tana*), and Wright viburnum (*V. wrightii*).

The adult stage of the viburnum leaf beetle is active in late summer and fall. Adult feeding damage can be seen on viburnum leaves as irregular circular or elliptical holes. The beetles are approximately 5mm long (less than ¼ of an inch) and are brown, with dark markings on and behind the head. Adults feed from July through the fall, until leaf drop occurs, and then lay eggs for the remainder of the growing season. Egg-laying sites are small, brownish-black bumps, about

1-2mm in diameter, that can be found in rows along the terminal twigs of the plant.

With the distribution of this beetle continuing to expand throughout the state, ornamental plantings and nursery stock as well as native viburnums could be at risk. It is important to learn to recognize the symptoms of viburnum leaf beetle damage so that infestations can be detected and dealt with as early as possible. Heavy infestations by viburnum leaf beetle can defoliate shrubs, cause dieback, and eventually kill plants. Shrubs repeatedly defoliated over a period of two to three years are likely to die.

If you think you have seen the viburnum leaf beetle, please report it at this website: <http://www.massnrc.org/pests/>, where you can also go to download a fact sheet

———— VIBURNUM continued on pg. 9

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Your logo and company name  
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**For advertising information:**  
**Call ELA at (617) 436-5838**  
**or email: [ela.info1@comcast.net](mailto:ela.info1@comcast.net)**



about the beetle. A list of known susceptible and resistant viburnum species is available from Cornell University at [www.hort.cornell.edu/vlb/suscept.html](http://www.hort.cornell.edu/vlb/suscept.html).

## SUSTAINABLE SITES INITIATIVE IN DRAFT STAGE

• Dennis Collins, ELA Board President

The landscape community has often toyed with the idea of creating standards and certification programs, which are commonplace in other industries. More than ten years ago, the Ecological Landscaping Association considered implementing such a program. Although the idea continued to generate interest over the years, our organization decided against it simply because of the resources that would be required. Our mission of educating professional landscapers and the general public remains the primary focus of ELA. However, it now appears that such a program will soon be introduced on a national level by an interesting partnership of organizations.

The Sustainable Sites Initiative is a collaboration between the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center, and the United

States Botanic Garden. It was organized to change land development and management practices in a manner similar to the way the LEED® (Leadership in Energy and Environmental Design) rating system changed the way building construction was practiced. The founders hoped that the creation and implementation of clear and rigorous design, construction, op-

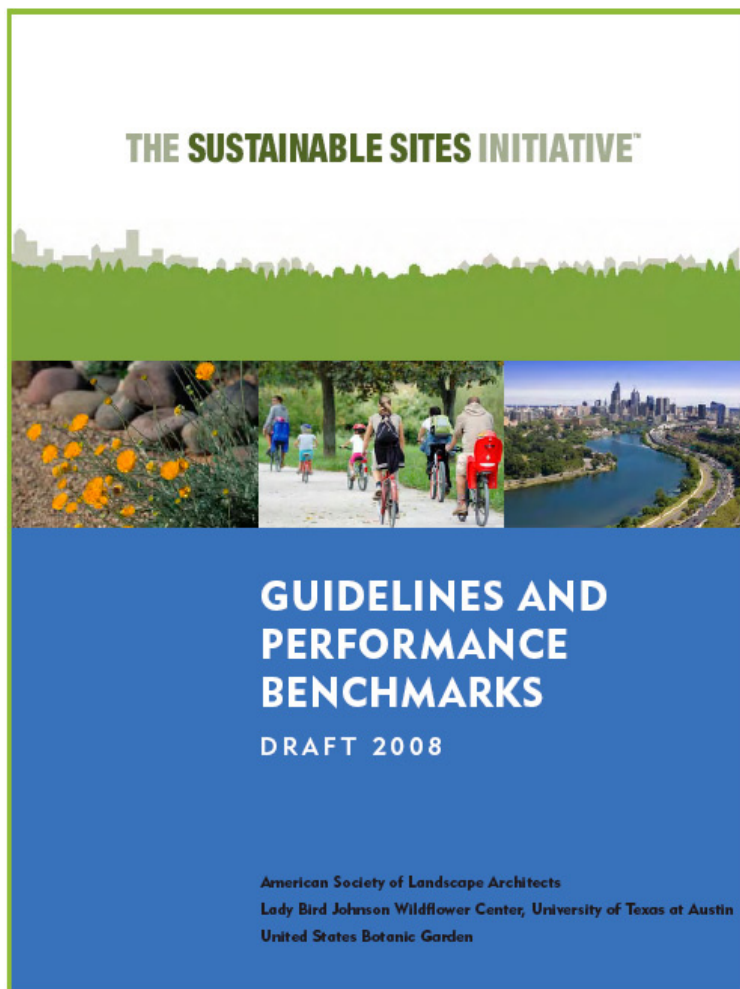
of devising the standards.

The *Sustainable Sites Initiative Guidelines and Performance Benchmarks – Draft 2008* was published in November and SSI is now seeking feedback before the deadline of **January 20, 2009**. It is the product of more than two years of work by a diverse group of experts in soils, hydrology, vegetation, materials, and human health and wellbeing.

The report focuses on measuring how a site can protect, restore, and regenerate ecosystem services – benefits provided by natural ecosystems such as clean air and water, climate regulation, and human health benefits. It contains prerequisites and credits that cover all stages of the site development process from site selection to landscape maintenance. SSI hopes the document will develop sustainable land practices that “enable built landscapes to support natural ecological functions by protecting existing ecosystems and regenerating ecological capacity where it has been lost.”

The document can

be downloaded in PDF format from the SSI website at: <http://www.sustainablesites.org/report/>. In addition to your thoughts on this draft, SSI is looking for actual job sites where testing and evaluation can be done. Please visit them on the web and share your views on the initiative.



States Botanic Garden. It was organized to change land development and management practices in a manner similar to the way the LEED® (Leadership in Energy and Environmental Design) rating system changed the way building construction was practiced. The founders hoped that the creation and implementation of clear and rigorous design, construction, op-

## gleanings

### Environmental Fellowships

The Robert and Patricia Switzer Foundation invites applications from graduate students in New England and California for Switzer Environmental Fellowships for the 2009-2010 academic year. At least 20 fellowships of \$15,000 each will be awarded to students in a range of environmental science and related fields. This year they have converted to an online application system available at <http://www.switzernetwork.org/fellowship-guidelines.html>. Application deadline: **February 1, 2009.**



## events

### NOFA Five-day Courses in Organic Land Care

Cover all aspects of organic landscaping installation, maintenance, and management. January and February, 2009, throughout the Northeast. Fee: \$550 (accreditation optional). For more information, contact Kathy Litchfield at (413) 773-3830 or [kathylitch29@yahoo.com](mailto:kathylitch29@yahoo.com), or visit: [www.organiclandcare.net](http://www.organiclandcare.net).

### Northeast Aquatic Plant Management Society Annual Meeting and Conference January 19-21

For more information, visit: [www.neapms.net](http://www.neapms.net).

### Massachusetts Congress of Lakes and Ponds Winter Workshop January 24

For more information, visit: [www.macolap.org](http://www.macolap.org)

### Let's Talk Turf: Organic Lawns January 28

An interactive roundtable discussion with Chip Osborne and Bernadette Giblin, cosponsored by ELA and the NOFA Organic Land Care Program. Appropriate for professionals in the field. Doyle Conservation Center, Leominster, MA. Call (617) 436-5838 to pre-register. Walk-ins are welcome. Cash or check only at the door. Pesticide credits have been requested for the New England states. CEU credits from ALCM, MNLA, MAA, and NOFA (others pending). For information, visit [www.ecolandscaping.org/conf\\_roundtable.html](http://www.ecolandscaping.org/conf_roundtable.html).

### New England Grows February 4-6

**Boston Convention & Exhibition Center**  
Business advice from industry experts. Tips and tools for green industry businesses. Deals on products and materials for horticulture professionals. Visit [www.NEGrows.org](http://www.NEGrows.org) or call 508-653-3009.

### Ecolandscape 2009 Conference and Trade Show February 7

**Samuel Pannell Community Center, Sacramento, CA**

For information or to register: [www.ecolandscape.org](http://www.ecolandscape.org).

### Ninth Annual Land Ethics Symposium: Creative Approaches for Ecological Landscaping February 19

**Sheraton Bucks County Hotel, Langhorne, PA**

Sponsored by Bowman's Hill Wildflower Preserve, 215-862-2924.

### Fifth Annual Residential Design and Construction Convention and Trade Show April 1-2

**Seaport World Trade Center, Boston, MA**

For more information, visit: [www.rdcboston.com](http://www.rdcboston.com)

ELA welcomes 2009 and wishes you a happy and prosperous New Year.

The ELA membership year is January through December and that means **it's time to renew!**

Remind yourself why ELA is important to you and why you want to be a part of this organization. Invite others to join and enjoy the benefits of membership as well.

This year, please consider the Professional, Supporting, and Sustaining levels of membership.

Let's strengthen and grow our organization in 2009. Join or renew now! Visit [www.ecolandscaping.org](http://www.ecolandscaping.org) to print the membership brochure and get further information.

Ecological Landscaping Association  
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### As a member, you:

- Receive the quarterly ELA newsletter
- Are listed in the "Find an Eco-Pro" online directory to maximize your business visibility on the web (Professional level and above)
- Network with professionals, non-professionals, and others supportive of ecological landscaping
- Receive the printed ELA Membership Networking Directory
- Learn more about sustainable landscaping practices, and speak with those that use them
- Are on the forefront of a nationwide movement
- Make a positive change in yourself, your community, the environment, and the world