

THE ecological landscaper

The Newsletter of the Ecological Landscaping Association

Vol. 15, No. 2

Summer 2008

"Water is life's matter and matrix, mother and medium."

—Albert Szent-Gyorgyi, Nobel Prize winning physiologist

FROM THE EDITOR

• Kat Good-Schiff

Landscapers and other "plant people" have many opportunities to both use and conserve water. In this issue of *The Ecological Landscaper*, you will find ideas for minimizing runoff with a green roof or rain garden, and ways to save water with xeriscaping and rain sensors. Most importantly, you will find a variety of ideas for making the most of what we have without overuse.

Whether you work on the micro or the macro level, all living things

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show us water's value. As both the climate and politics continue to demonstrate, water is more precious now than ever. May you bring more awareness to both your personal and professional use of water while enjoying the bounty that summer offers.

NATIVE VEGETATION IN STREAMSIDE LANDSCAPING

The following is an excerpt from An Abbreviated Guide for Selecting Native Riparian Plants in the Catskills, published by Cornell Cooperative Extension of Ulster County, NY. The entire guide is available as a PDF from <http://www.esopuscreek.org/>

Vegetated riparian zones facilitate stream bank stability by providing a rooted structure to protect against stream bank erosion and flood damage. The stems, branches and foliage of riparian plants serve to slow flood waters when pulled under water, decreasing the erosive potential. Landowners can offer nature

a helping hand by actively restoring riparian vegetation ... Native plants are more naturally integrated into a local ecosystem. The more natural the streamside vegetation, the more natural it will look and the better it will perform its job.

Four Reasons for using native vegetation in streamside landscaping:

- **Aesthetics:** Native plants can be ornamental and will more closely fit the [local landscape].
- **Horticulture:** [Native plants] are well adapted to the conditions they will be planted in (i.e. acidic, clayey and rocky soils as well as our unique climate). These plants will grow more successfully for less experienced gardeners and landscapers.
- **Ecology:** Native plants fill ecological niches in the ecosystem providing habitat and food for wildlife. Native plants, birds, butterflies and wildlife are well matched.
- **Conservation:** Native Plant populations are in decline and depend on other natives to survive and thrive.

————— NATIVE continued on pg. 2

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NATIVE continued from pg. 1

One example is the New York State Ironweed. Native plants are constantly being out-competed by invasive species, so replanting bare or disturbed banks with natives before exotic plants are able to become established is the most cost effective way of battling invasive plants. If invasives are already in place, remove them and dispose of them properly.

Including a mix of different plants

provides a more diverse habitat for wildlife as well as a multi-function riparian buffer.

RIPARIAN PLANTINGS DETER CANADA GEESE

• Penny Lewis and Kat Good-Schiff

A frequent question of shoreline homeowners is how to clear their property of the ever present, unwanted Canada Geese. In addition to the problems related to droppings (up to one pound per bird, per day), there are problems related to the noisy and territorial behavior of the geese, especially during nesting. By clearing the landscape down to the water's edge and installing large expanses of manicured lawn, homeowners have inadvertently created very desirable habitat for geese.

A riparian buffer of vegetation along the edge of a pond, lake, or stream will deter geese from accessing adjacent land. The buffer makes moving from the water to a food source much more difficult and makes the geese uncomfortable by limiting their line of sight and escape path.

While deterring the geese, riparian buffers also provide a host of ecological

advantages. They contribute to water quality by filtering out nitrogen, phosphorous, toxins, and heavy metals from surface runoff. They provide bank stabilization and erosion control, and provide natural flood control by slowing down stormwater runoff. Equally important, riparian buffers provide increased habitat for amphibians, reptiles, and a variety of aquatic and semi-aquatic plant species.

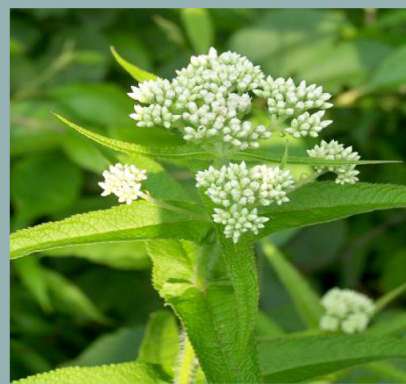
It is important when actively re-vegetating stream banks that native plant species are selected, and spaced properly to be effective. Plant spacing should be: Shrubs 3-5 feet apart, small trees (25 feet at maturity) 15 feet apart, large trees 25 feet apart and perennials 1-3 feet apart and should result in a dense buffer at maturity. Larger trees help to establish a canopy over the stream providing the water with shade, improving the overall water quality for aquatic insects, which in turn enhances trout populations as well as other stream critters. Smaller perennials help to slow rising waters allowing storm water to be filtered.

When installing a riparian buffer, care must be taken to introduce non-invasive, native plant species appropriate to the site. All plant layers should be considered: grasses, perennials, shrubs, and

trees. Planting trees along the bank will help to stabilize soil, create additional habitat, and provide shade to lower the water temperature.

For more information, visit the following websites: www.audobon.org, www.animalalliance.ca, www.ctriver.org

Boneset (*Eupatorium perfoliatum*)



Landscaping at the Water's Edge: An Ecological Approach

A Manual for NH Landowners and Landscapers

No matter where you live, the actions you take in your landscape can have far reaching effects on water quality. Why? Because we are all connected to the water cycle and we all live in a watershed, the land area that drains into a surface water body such as a lake, river, or wetland.

ELA's 2008 Annual Meeting

ELA recently held its Annual Meeting at the Sudbury Valley Trustees, Wolbach Farm. Dennis Collins, ELA President, reported on ELA's many accomplishments during the past year. Through the ongoing dedication of many volunteers, ELA has continued to develop as a leader in environmental education and stewardship. Following the Annual Meeting, an appreciation potluck dinner provided the opportunity to thank the many volunteers that have contributed to the ELA efforts throughout the year.

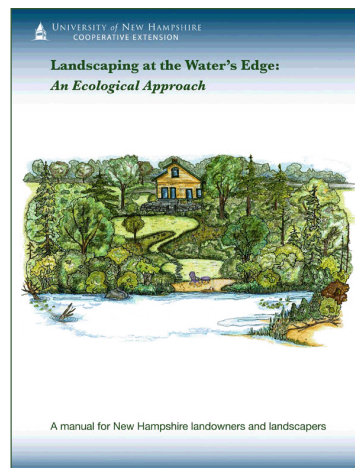
Thanks to Andrea Knowles, Penny Lewis, and Kathy Sargent-O'Neill for helping to organize this year's Annual Meeting.

2008 Ballot Results

The slate of ELA officers for the upcoming year is: Dennis Collins, President; Kathy Sargent-O'Neill, Vice-President; Chris O'Brien, Treasurer; Andrea Knowles, Secretary. Incumbent Board members elected to serve additional terms are: Sandy Vorce and Bruce Wenning. Newly elected to the Board are: M.L. Altobelli and Trevor Smith. Board members serving existing terms are: Sue Storer, Maureen Sundberg, William Jewell, and Robert Levite.

Landscaping at the Water's Edge: An Ecological Approach is a new publication for landowners and landscapers that will explain how our landscaping choices impact surface and ground waters and demonstrate how, with simple observations, ecologically-based design and low impact maintenance practices, you can protect, and even improve, the quality of our water resources.

Authors are UNH Cooperative Extension specialists and educators with expertise in horticulture, water resources, turf grass, entomology, planting and maintaining landscapes and home lawn care. These educators partnered with a sustainable and ecological designer and other experts to provide information and expertise to help landscapers and property owners living along lakes, ponds, rivers



and streams make decisions about landscape design and maintenance that will reduce pollution and environmental degradation.

Landscaping at the Water's Edge: An Ecological Approach is fully illustrated with photos and sketches on almost every page. These illustrations provide

clear examples of the concepts presented. The sections of the book specific to NH only are the appendices containing information pertinent to NH state regulations.

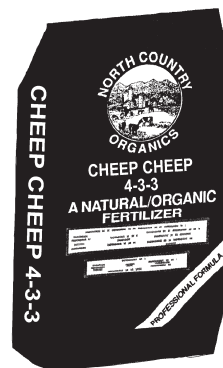
To order, mail \$20 to UNH Cooperative Extension: UNH Cooperative Extension Publications Center, Nesmith Hall, 131 Main St., Durham, NH 03824 or visit the website at: <http://extension.unh.edu>.



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LUSH YARDS WITH LESS WATER

Reprinted from Greentips: Environmental Ideas in Action, an e-newsletter from Union of Concerned Scientists.

About one-third of all residential water use goes toward lawns and gardens, according to the U.S. Environmental Protection Agency. Unfortunately, much of this water is wasted through runoff, evaporation, over watering, or inefficient landscape design.

Reducing water use in your yard does not mean resorting to rock

needs in different areas. Consult your local nursery to find plants that can thrive in each of these areas with as little supplemental watering (i.e., what you need to provide in addition to rainfall) as possible. In most cases, native, non-invasive plants are best because they are natu-

rally adapted to regional temperature and rainfall patterns. Grouping plants that have similar water needs can also help minimize the need for supplemental watering.

Soil: Ideally the soil in your yard should store water yet drain quickly, reducing the need for supplemental watering while promoting healthy plants with deep roots. Adding organic material such as compost to your soil can help improve its quality.



Paxistima canbeyi

Mulch: Mulching around plants with coarse compost, wood chips, shredded leaves, or straw further reduces the need for supplemental watering by keeping the soil cool and moist. It also prevents erosion, blocks competing weeds, and provides the soil with nutrients. Mulch should be no more than a few inches deep, and will need to be replenished periodically as the old mulch breaks down.

Supplemental Watering: When you do need to supplement the water your yard already receives in the form of rain, infrequent but deep watering is best because it promotes deeper roots, making plants more drought-resistant. Soaker hoses and drip-irrigation systems are ideal for delivering water slowly and directly to the roots of the plant—unlike typical oscillating sprinklers that waste water through both evaporation and runoff.

—All photos courtesy Dennis Collins

“Water is the true wealth in a dry land.”

— Wallace Stegner, *Beyond the Hundredth Meridian*

gardens—by adopting some simple landscaping techniques known as “xeriscaping” (from the Greek *xeros*, meaning dry) you can create a beautiful lawn or garden that uses up to 60 percent less water, requires less fertilizer and pesticides, and saves you time and money.

Planning and Design:

A single yard can often have a variety of terrain and exposure to sunlight, which translates into different water

Grass: If there are areas of your lawn that go unused, consider replacing the grass with less water-intensive plants



Liriope spicata

BUILD YOUR OWN RAIN GARDEN

The following article is reprinted courtesy of Applied Ecological Services, Inc.

WHAT IS A RAIN GARDEN?

A Rain Garden is simply a shallow depression in your yard that is planted with native wetland or wet prairie wildflowers and grasses. It is designed to naturally collect water that runs off from your roof or is discharged from your sump pump. Rain Gardens are gaining popularity for three reasons:

1. Rain Gardens make good use of stormwater runoff, conserving precious water supplies and helping protect water quality in downstream lakes and streams.
2. Rain Gardens are planted with beautiful, hardy, low-maintenance native perennial plants.
3. Rain Gardens provide food and shelter for birds, butterflies and beneficial insects, such as mosquito-devouring dragonflies.

SIMPLE, STRAIGHTFORWARD CONSTRUCTION

It's not complicated. Just follow these easy steps:

1. Dig a shallow depression with a level bottom, as large in circumference as you'd like.
2. Direct your downspout or sump pump outlet to your Rain Garden, either by digging a shallow swale – a linear depression designed to channel water – or by routing it through a buried 4" PVC pipe.
3. Plant the native plants recommended.
4. Water your planting every other day for the first few weeks, until plants are growing and well-established. Once your native Rain Garden plants are established, they'll thrive well without additional watering. Fertilizers are not necessary.

LOCATION, LOCATION, LOCATION

Pick a naturally low spot in your yard – at least 10 feet from your house – and direct water from your downspout or sump pump into it. Full sun is best, but make sure the site gets at least a half-day of sunlight.

During heavy rains, your rain garden may fill up and overflow. Make sure this overflow drainage follows the drainage pattern originally designed for your lot. Test this by filling your depression with a garden hose and watching the overflow. If needed, dig a shallow swale to direct overflow water toward the street, road or other downhill areas away from buildings.

DIGGING IN

A depression of two to six inches will suffice. Slope the sides gradually from the edge to the level bottom. Deeper rain gardens in heavy clay soils will hold water longer. Test this with a garden hose. French drains can be installed to aid infiltration.

MORE TIPS

- Hand weed biweekly until native plants are established.
- Avoid using lawn fertilizers near the Rain Garden. Fertilizers will stimulate weed competition without benefiting your native plants.
- Don't worry about mosquitoes. Most rain gardens will not hold water long enough for mosquitoes to reproduce. Even so, dragonflies, swallows and other natural control processes will keep them in check.
- Come spring, mow and remove dead vegetation. Or simply burn it off if your fire department regulations allow it. Native plants thrive under fire management.
- Place natural rocks, birdhouses, a bench or garden ornaments in and around your Rain Garden – be creative! You'll learn and have fun in designing your own backyard landscape.
- Add plenty of native sedges and

grasses to physically support taller species and provide a visually textured background that ties the garden together.

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Moss steps

—Photo courtesy Tom Smarr

Rain Garden Design Guide Available

A new University of Connecticut publication about rain gardens is available free upon request. The 12-page, full color brochure addresses the following topics:

what is a rain garden
common concerns
placement of the rain garden
soil suitability
sizing your garden
installation
planting

Rain Gardens in Connecticut: A Design Guide for Homeowners is available by contacting the Resource Center Store at (860) 486-3336 or store@uconn.edu. You can also download a PDF version at <http://sustainability.uconn.edu/>



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Turf Tips

• Bruce Wenning, Land Stewardship Manager, Land’s Sake, Inc.

Most people either over water their lawns or under water them. Over watering floods the soil and depletes soil oxygen, which contributes to root death. It also encourages fungal diseases. Watering in late morning or late afternoon extends the wetness period of the overnight dew period, which increases disease susceptibility. I see this every year with clients that have automatic watering systems.

Light and frequent watering only wets the top inch of soil. You get the best result from any lawn when you water at least one inch per week if there is no rain. I try to get clients to water their lawns only one inch per week, de-

pending on rainfall, and to use a hose and sprinkler the old fashioned way. This helps them become more aware of turf grass watering needs for proper turf grass health. I suggest that clients time their watering between noon and 3 pm so the grass can dry off before the next dew occurs that night.

As for seed types, I have found that the fine fescues are more drought tolerant than bluegrass. People should always seek out new and improved turf grass cultivars, especially any that require less watering or have good drought resistance. For more information, visit the National Turfgrass Evaluation Program at www.ntep.org

Follow these cultural methods to promote turfgrass growth and establishment, reduce insect and disease problems, and conserve water:

Management Practice	Positive results	Negative results
Mow High: adjust cutting height of mower to be 2.5 to 3 inches. Mow grass when it is dry.	Promotes deeper roots with larger carbohydrate reserves. Taller grass blades capture more of the sun’s energy to make food for the roots in the form of carbohydrates and other cell building compounds. The taller the grass, the deeper the roots. Taller grass helps shade out weeds.	Mowing too short (<2”), draws on carbohydrate reserves (food) stored in the roots. Roots become limited in carbohydrate storage capacity. This action causes roots to grow slower. It also reduces the turfgrass blade’s ability to make food by the process of photosynthesis. Short grass thins out and allows better weed growth and establishment.
Leave grass clippings on lawn.	Grass clippings are more than 90% water; acting as a mulch conserving soil moisture and decompose rapidly serving as a substrate for microbial activity releasing nutrients back to the soil. Improves / maintains soil structure.	Removing or bagging clippings reduces natural organic matter that could feed the soil / turfgrass roots. Reduces soil enrichment.
Water deeply and infrequently. Water 1 inch every 5 to 8 days depending upon rainfall.	Promotes deeper roots. Deep roots have better establishment and more carbohydrate storage capacity contributing to better drought resistance. Better resistance to root feeding and blade feeding insects and disease organisms.	Frequent or light watering causes roots to grow close to the soil surface. Shallow or small roots have less resistance to root feeding insects (e.g. white grubs). Smaller roots have less carbohydrate reserves and less drought resistance in hot weather. Too much water promotes root and crown diseases and depletes soil oxygen in soil pore spaces for proper plant growth.

Potential Exposure to Lead in Artificial Turf

Recent announcements from the Centers for Disease Control and Prevention (CDC) have included mention of specific types of artificial turf. Tests by the New Jersey Department of Health and Senior Services (NJDHSS) of artificial turf playing fields made of nylon or nylon/polyethylene blend fibers have detected levels of lead that pose a potential public health concern. The study noted that some of the fields with elevated lead levels in dust and/or turf fiber samples were old and visibly worn. For additional information, visit <http://www.cdc.gov/nceh/lead/artificialturf.htm>.

The Greening of Golf?

“At the end of the day, for golf to go green and accommodate itself to the real world, it’s simply going to have to be much more brown.” So says Frank Deford, a commentator on National Public Radio, referencing a recent article in Golf Digest about ways the industry is trying to adopt more environmentally friendly practices. The article features interviews with turf specialist, a course superintendent, and a landscape architect, and can be viewed at <http://www.golfdigest.com/magazine/environment>

Paradise Found!

An ecological paradise is a landscape where natural systems are at work and there is little to no waste or pollution. It is also a place of beauty where plants, insects, animals, and humans coexist. Paradise comes in many forms: a colorful wetland of native flowers, a peaceful shade garden, or an edible yard in place of a lawn—just to name a few examples. This issue's featured garden is a haven for butterflies. Read on to discover how to create a lepidopterist's paradise...

BUTTERFLY GARDENS

• Nanette Masi

The gentle fluttering of a colorful butterfly as you immerse yourself in a bed of wildflowers can totally make your day. Getting up close and watching her long tongue reach into the nectaries of a coneflower is rather a thrill—for me anyway. Yet butterflies



Backyard wild area landscape

are not only beautiful to observe; they also play a special role within the complex web of plant and animal interactions. As caterpillars and as winged adults, they provide an important food source for many birds.

Providing backyard habitats for butterflies is becoming more important than ever. Migrating butterflies such as the monarchs are losing habitat at both ends of their travels, which puts a squeeze on their populations.

As global warming causes some plant species to die out and habitats to change, butterflies dependent on these species will also falter.

Butterflies know absolutely what they like and do not like. They have co-evolved with native plants over thousands of years. Butterflies' different life cycle stages often require different plants as well as different feeding opportunities throughout several seasons. For example, a chewing Spicebush caterpillar eats only spicebush leaves, molts into a chrysalis, and then undergoes metamorphosis to transform into a winged being with a long sipping tongue that dips into a number of native nectar-producing wildflowers.

Many of us studied in school the relationship between milkweed, with its toxic chemical makeup, and monarch butterflies. Only Monarch butterfly caterpillars have developed immunity to the milkweed toxins, which stay in their system when they become beautiful adults. These toxins are distasteful or sickening to birds, which in turn protects the monarch from

predation.

A butterfly-friendly habitat includes nectar-rich flowers, caterpillar-feeding foliage (much of which gardeners consider weeds), shallow water (they love mud puddles), wild areas of so-called weeds, warm basking spots, shelter, and minerals.

Offer a buffet of native plants within various ecosystems (as much as possible) and you are bound to attract a butterfly that is partial to one

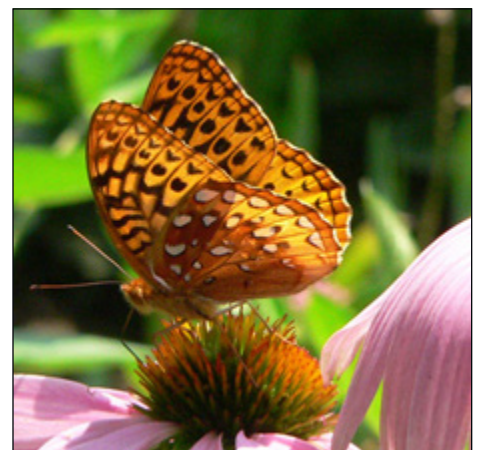


Black swallowtail on parsley

or a few of your plants. If they can get breakfast, dinner, and dessert at your place, they will stick around in your garden. My garden is a mass of wildflowers, and visitors are always amazed at the diversity and number of butterflies they see floating about over the summer. Caterpillars may do some damage to some of my plants' leaves, but I love taking their pictures. They can be very strange-looking, colorful, and even beautiful.

Wildflowers such as coneflower and turtlehead are always inviting to many adult butterflies. Carrot family species such as dill, parsley, and Queen Anne's lace are what Black Swallowtail caterpillars prefer. Violets are the favorite food of the great Spangled Fritillary's spiny caterpillar. Mourning Cloak caterpillars seek out nettles, willow, and birch. The Tiger Swallowtail caterpillar feeds on cherries, poplar, birch, and basswood and then shelters in their leaves.

Some other plants that are fun to



Butterfly on Coneflower

PARADISE continued on pg. 8

par·a·dise (pär' ə -dīs, -dīz') *n.*
A place of ideal beauty or loveliness.

use to attract butterflies include bottle-brush buckeye (*Aesculus parviflora*) for nectar for many butterflies; little bluestem (*Schizachyrium scoparium*) as a host plant for skip-

per species and shelter for overwintering stages of other species; goldenrod (*Solidago* spp.) attracts

lots of butterflies including American Lady, Monarch, Fritillaries, and Sulphurs; ironweed (*Vernonia* spp.) nectar attracts Monarch, Great Spangled Fritillary, American Lady, Spicebush and Eastern Tiger Swallowtails.

Butterflies prefer shallow water and are used to playing in mud puddles where they can also get the minerals they need as they drink. To provide water for butterflies, leave an open space with a shallow dip or indentation in the soil so that a puddle forms when it rains. I have also made shallow butterfly feeders with school kids where we poured cement into a small trash can lid and then set the can itself into the middle. You may press colorful stones, sea glass, and any other interesting finds into the cement for decoration (for the kids, of course, I don't think the butterflies really notice). When it has dried and you pull out the can, you have what looks like a flattened bird bath with a wide rim and very shallow basin.

Consider a few other elements to attract and keep butterflies in your garden. It is important to protect butterflies from pesticides. Pesticides only serve to kill the caterpillars that would have become butterflies. Let the natural predators have some of them for dinner and create an even greater wildlife web

within your garden. Learn to tolerate some insect damage or caterpillars chewing on your leaves. Cluster plants so the butterflies will notice them with

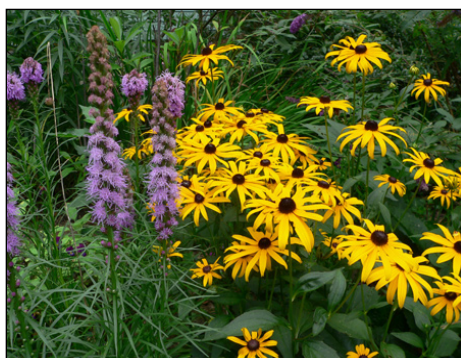


Hummingbird clearwing larvae

their compound eyes, which do not have clear focus from a distance. Create a sheltered, sunny basking

spot away from the wind (a warm rock or plant) to allow the butterflies' body temp to reach 82-100 degrees. This is what enables them to fly well.

A carefully planned butterfly garden will reward you with a garden full of caterpillars and butterflies, plus other wildlife to enjoy throughout the season.



Liatris and Rudbeckia

Nanette Masi is a landscape designer and educator living in Amesbury, Massachusetts. She founded "Back to Nature" in 2003 as an educational source for healthy, ecologically sound landscaping principles, and to provide a healing alternative to traditional landscapes. Nanette's designs focus on native and sustainable plant communities to attract birds and butterflies. For more information, visit her website: www.bringnaturehome.com

—All photos courtesy Nanette Masi

**Have you found
paradise?**

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**Your garden
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RAIN SENSORS CONSERVE WATER AND MONEY

• Penny Lewis and Kat Good-Schiff

Does your sprinkler system know if it's raining? It will if you add a simple device known as a rain sensor. The rain sensor determines whether or not enough rainfall has occurred in order to skip an irrigation cycle. For this reason every lawn sprinkler system should have a rain sensor.

There are three basic types of rain interrupters. They all serve the same purpose: keeping your system from over-watering the turf or garden. It works by interrupting the electrical connection between the sensor and sprinkler system controller when a certain amount of rain triggers the device. This ensures that electricity cannot flow to the sprinkler valves (or to a pump start if your system is on a well without a pressure tank).

One type of sensor breaks the connection by weighing the water in a rainfall collection cup. The problem with this type is that leaves, sticks, or the occasional lizard will find its way into the collection cup and thereby turn off the system. Another type of sensor uses electrodes to determine how much water is in the collection cup. This also has the problem of collecting things other than rainfall in the collection cup.

The expansion disk type seems to be the most popular. This kind of sensor uses cork disks that expand when wet, so there is no collection cup to worry about. A pressure switch breaks

the electrical connection. The sensor can be adjusted by increments of .25 inches to the desired rainfall setting. These adjustments can be configured to kick in when 1 to 1.5 inches of rain has fallen.

The most important aspect of installing a rain sensor is where to place it. It should be installed in an area

Timing Irrigation for Water Conservation

Plants require more water in summer than spring or fall, so program your irrigation timer accordingly, rather than always keeping the irrigation timer on the same setting. This will promote water conservation, as will watering at the right time of day. If you set irrigation timers to go on early in the morning, you will lose less water to evaporation than if you were to irrigate in the heat of the day. To further conserve water, override the irrigation timer of your automatic system if your area receives heavy rains the night before the system is programmed to run. For best results, install a rain sensor.

unobstructed by trees, roof overhangs, or anything else that might block rain from getting to the sensor. If it is a wired sensor, placement is generally near the sprinkler controller. The wires should be connected inside the controller's valve wiring panel. This allows for easier electrical

trouble-shooting of the system since the sensor can be easily disconnected.

As technology improves yearly, wireless FM sensors have become more popular. Although they are more expensive than wired devices, the ease of installation and increased placement options offset the cost. Most units come with bypass switches built into the device. Some digital controllers also offer bypass options for both wired and wireless rain sensors.

Whatever the type of rain sensor that you choose, it will offer many advantages over not adding this detector to your automatic sprinkler system. Some of the immediate and long term benefits include:

"Among these treasures of our land is water fast becoming our most valuable, most prized, most critical resource."

– Dwight D. Eisenhower

Monetary Savings

Whether you pay for city water or spend electricity running a pump, the money you save over time will more than pay for the rain sensor.

Extended System Lifespan

Sprinklers are made up of gears and other parts that move. The less the sprinkler parts are used, the longer they last.

Resource Protection

By limiting overuse of your sprinkler system, rain sensors reduce excess runoff that carries fertilizers and pest control chemicals into the water supply.

Water Conservation

Less water is wasted when less supplemental water is used.

How much money can be saved by installing a rain sensor? According to a recent study in Florida, the use of a rain sensor averaged a 45% savings in water for single-family residential water usage. This will vary based on the water source (city, re-claim, or well) and geographical location (water costs, electrical rate, climate). Here is one example that demonstrates the benefits listed below:

Location: Seminole County, Florida

System Description: Designed to irrigate a quarter acre of grass. Programmed to apply .5 inches of water every time the system runs.

Water usage: 6,788 gallons per irrigation cycle.

Cost of city water: \$2.30 per thousand gallons.

Cost savings with rain sensor: \$15.61 each time the sensor interrupts a sprinkler cycle.

The next time you see a sprinkler system running in the rain, you'll know it doesn't have to be that way. Rain sensors save money, help our environment, and conserve water.

RAIN BARRELS

• Penny Lewis and Kat Good-Schiff

Collecting rainwater in rain barrels or other depositories for use during dry months is an ancient, traditional practice. Historical records show that people in Thailand collected rainwater in simple clay containers as far back as 2,000 years ago. With much of the United States facing the rising price of municipal water and drought restrictions during the summer months, more and more homeowners in our own modern society are turning to the harvesting of rainwater to save money and protect this precious natural resource.

It is a common belief in many parts of the world that water is an infinite resource to exploit as needed, but as the saying goes, “you don’t know the value of water until the well is running dry.” This is especially true in arid parts of the US where most of the municipal water comes from overstressed underground aquifers. Whereas rainwater is considered a renewable natural resource, many aquifers are being “mined,” that is, communities are drawing out more water than the aquifer receives naturally to recharge it.

As drought and aquifer mining begin to call attention to an increasing water crisis, people are seeking ways minimize impact on their municipal water supplies. Rain barrels can be part of the solution. Using a barrel to catch the water from your gutters is one of the simplest and most inexpensive ways to collect water for later use. Rain barrels help conserve water by storing it for when you need it most: during periods of little or no rainfall. This provides a good supply of free, non-chlorinated water, ideal for lawns



and gardens. Just look outside your window the next time it rains and imagine all the water that’s running off your driveway being put to beneficial use later.

The amount of water that can be collected with a rain barrel depends on the amount of collection area emptying into the rain barrel. For example, one inch of rain falling on

1,000 square feet of collection area adds up to 623 gallons. When rain water is collected from the roofs of houses, it usually carries very little contamination. Roofs should be kept clean of debris and potential contaminants to maximize purity. Roof material is also important in how much contamination the water will carry.

Rain barrels should include the following components:

- Durable, UV-stable polyethylene, food-grade plastic.
- An overflow port and hose to divert water away from the house.
- A screen to remove sediment and particles as water enters the barrel (this will also prevent mosquitoes and other insects from getting to the water).
- A high-quality, durable spigot for connection to a garden hose, located low on the barrel to drain the majority of the water.
- Aesthetic features compatible with the landscaping plan.
- A child- and animal-proof lid.



As the 21st century begins, the concept of “waste” water is beginning to disappear. The reason is simple: we have no water to waste.

—from *Water: H₂O = Life*, an exhibition that originated at the American Museum of Natural History

GREEN ROOFS— A GROWING TREND

• Penny Lewis and Kat Good-Schiff

When large commercial properties replace forests or farm fields with acres of buildings and impervious surfaces, the runoff from rain or melting snow and ice carries untreated pollutants directly into lakes and rivers. One answer to the grow-



Garage with green roof— Getty Villa, Los Angeles, CA
(photo courtesy Dennis Collins)

ing problem of impervious surfaces is green roofs, also known as roof landscaping, where flat tar or rubber membrane roofs are replaced with shrubbery, grasses, and wildflowers. According to Rodney Swill, a green roof water expert based in Sydney, Australia, "This water connection is seen as one of the big ... advantages of green roofs and green walls—as a climate change response all of us can address. We know that the best architects these days are first considering water storage in a new or retrofit building design, whatever the size of the building, so that green roof maintenance is assured."

Green roofs are more easily installed in Europe, where construction standards are generally more stringent than the United States. Some US building codes must be adjusted to accommodate the increased weight load of a green roof, but some existing structures, such as apartment housing and government buildings, al-

ready meet the standards necessary to support the load of a green roof. Also, current components of a green roof are much lighter and last longer than preexisting ones.

Many homes would need to be tested before residential roof landscaping could be considered, but new homes and especially new business buildings could and should be constructed to take advantage of the benefits of a green roof. Nearly all types of roofs—sloped, curved, or flat—can have green roofs installed. Usually a rubber membrane is laid down and covered with a waterproof membrane. Drainage and soil components are placed, the soil is seeded, and the owners start to reap the benefits of their new roof immediately.

The soil on a green roof offers insulation and protects the roofing materials from the harsh elements. Rainwater is captured and feeds the plants before the excess is slowly released to collection cisterns. The resulting sheet flow is greatly reduced and fewer pollutants are carried to lakes and rivers. During the summer, a conventional roof can add up to 158 degrees of heat to the air, as opposed to 77 degrees for a green roof. Heat and wind can destroy conventional roofing material in a matter of two decades, while green roofs can offer an additional decade to that.

As a member of Green Roof Australia Inc., Rodney Swill notes the added advantages of a great reduction in fossil energy use (7% to 30% per building) due to superior insulation, and improved efficiency for solar power collectors sited above cooler green roofs (20 to 25% in Australia). There are also psychological benefits to humans, since greenery reduces stress and promotes earlier recovery

in hospital wards.

For the construction project that incorporates green roofs, additional benefits can be realized by replacing the acres of parking lot macadam with porous pavement. Green walkways to and from retail stores could have fountains and irrigation fed from underground cisterns of collected and cleaned rainwater. There are many examples in Europe and a few in the States that already use stormwater capture, clean, and recycle systems.

WELCOME NEW EDITOR

It is a pleasure to finally introduce our new editor for the Ecological Landscaper. With this issue of the newsletter, we mark the beginning of what we hope will be a long and rewarding relationship with Kathryn M. Good-Schiff (better known as Kat), who was hired in May. She comes to us with an intriguing mix of talents and experiences. As an accomplished writer who has spent the past few years in communications and marketing for educational, business and non-profit organizations, Kat would seem a good choice for the position on that basis alone. However, she has also worked as a professional in ecological landscaping, making her especially well-suited for the job.

I hope you will enjoy the results of what turned out to be a long and challenging task for our search committee. We had a number of candidates with very strong credentials and were impressed with many of them. May I also thank the folks who stepped in to help produce the past four issues of the newsletter while we searched for a new editor. I am sure they are as relieved and happy with this announcement as anyone!

—Dennis Collins, ELA President

gleanings

The California Sustainability Alliance has released a study entitled *The Role of Recycled Water in Energy Efficiency and Greenhouse Gas Reduction*, which estimates the **potential carbon and energy benefits of accelerating and increasing the development and use of recycled water** in the state of California. It concludes that using secondary and tertiary recycled water supplies could save enough energy to power 150,000 homes. The study also contains additional findings on the cost of recycled water, measures that can be taken to accelerate its use, and the benefits of accelerated implementation. To read the study in its entirety, visit http://sustainca.org/content/recycled_water_2.



A new book from Ecowaters profiles more than 30 successful ecological wastewater recycling systems that use plants to stabilize, clean, filter, and use up wastewater (and its nutrients and carbon) or discharge it to be used again to flush toilets, nourish plants, provide fuel, and more. **Reusing the Resource: Adventures in Ecological Wastewater Recycling** by Carol Steinfeld and David Del Porto is available directly from the publisher at www.ecowaters.org/rtr.html.



Water: H2O = Life, an exhibit that originated at the American Museum of Natural History in New York City, may be coming to a museum near you. Currently scheduled stops on the **international tour** include: the San Diego Museum of Natural History (July to November 2008); the Science Museum of Minnesota (January to April 2009); the Field Museum of Natural History (June to September 2009); Great Lakes Science Center, Cleveland (November 2009 to April 2010); the National Museum of Australia, Canberra (January to June 2010); and the Royal Ontario Museum (March 2011 to September 2011). Other dates and locations will be announced at a later date. For more information, www.amnh.org/exhibitions/water/



For a pint-sized look at the watershed issue, check out the **educational, environmental puppet shows** of Massachusetts resident Meredyth Babcock. *The Water-*

shed Waltz combines actors, puppets, and original music to educate and entertain as it tells the story of the watershed. Though the target audience is quite young, this program is a joy for all. A video clip from a recent performance can be seen on the Westfield River Watershed Association's website: <http://www.westfieldriver.org/>. For more information, contact Meredyth Babcock through her website: www.mar-maladeproductions.com.



The **California State Assembly** recently passed a resolution that calls on various state departments to address unresolved health, scientific, and efficacy issues surrounding the Department of Food and Agriculture's eradication plans for the **Light Brown Apple Moth**. The Assembly also passed the **Invasive Pest Planning Act of 2008**, which would require the DFA to create a list of invasive animals, plants, and insects that have a reasonable likelihood of entering California for which an eradication or control program might be appropriate. These two bills address environmental and health concerns by putting in place a pest planning process for the future. The bills will now move on to the Senate for consideration. For more information on the Light Brown Apple Moth issue, including key documents, correspondence, and news, visit <http://democrats.assembly.ca.gov/members/a27/moth.htm>

As a follow up to the passage of the LBAM bill, the CA organization Stop the Spray reports that while there will be **no aerial spraying of pesticides in populated areas**, forested areas may be sprayed and ground spray may be used in neighborhoods. The group has asked for a written clarification of what measures will be taken, and they encourage Bay Area residents to get involved in this issue. Visit them at www.stopthespray.org



Over the past ten years or so, a stinging ant (*Myrmica rubra*) has begun to spread through parts of New England. Pat Vittum, turf entomologist at UMass, needs to receive specimens to get an idea of the distribution of these **ants in Massachusetts**. If you believe you may have these ants, please consider sending specimens as soon as possible. For more background information on the ant and the project, and for instructions on how to package and send ants, visit [\[turf.org/mangement_updates/2008_archive/08_jun_04.html\]\(http://turf.org/mangement_updates/2008_archive/08_jun_04.html\)](http://www.umass-</p></div><div data-bbox=)



The Northeastern Integrated Pest Management Center publishes the *NE IPMC Monitor*, a comprehensive list of recent **research results, publications, and conferences, as well as summer and fall IPM workshops** in various regions in the US. To read the *Monitor*, visit <http://www.NortheastIPM.org/Monitor.cfm>



NPR Covers Debate Over Lawns

On July 22, 2008, the National Public Radio broadcast of the program On Point featured a debate between opposing views on the use and management of lawns in the American Landscape. Entitled "Turf Wars and American Lawns," the show featured Paul Robbins, professor of geography at the University of Arizona and author of "Lawn People: How Grasses, Weeds and Chemicals Make Us Who We Are" and Trey Rogers, professor of turfgrass management at Michigan State University and author of "Lawn Geek: Tips and Tricks for the Ultimate Turf from the Guru of Grass."

While landscape professionals may find the debate a bit thin on technical details, the conversations between host Tom Ashbrook and his two guests, and the comments of listeners calling in to the program, provide a fascinating glimpse into the competing perspectives now forming in the public's consciousness. Long-time ELA members may wonder at the fact that this debate took 15 years to reach the mainstream media. Yet many who helped bring it to the public's attention will celebrate what may be a significant milestone.

For those who missed the broadcast, which aired on different NPR stations around the country at different times, the podcast can be downloaded from the program's website at: http://www.onpointradio.org/shows/2008/07/20080722_b_main.asp

events



Northeast Organic Farming Association's 34th Annual Summer Conference

Friday–Sunday, August 8–10, 2008
University of Massachusetts, Amherst, MA
This year's NOFA Summer Conference will feature keynote speakers Mark McAfee and Arden Andersen as well as over 150 workshops on a wide range of topics. The weekend will also include a family contra dance, zydeco drumming, an old-fashioned country fair, live music, a farmers' market, games and fun! For more information, visit <http://www.nofamass.org/> or call (978) 355-2853.

NOFA Organic Lawn & Turf Course

Aug. 14 at Duke Farms in Hillsborough, NJ
Aug. 19 at UMass Dartmouth in Dartmouth, MA
Aug. 21 at Manchester Community College in Manchester, CT
\$150 for the first person from firm/town; \$125 each additional person.
Full-day intensive organic turfgrass management course covering basics to advanced and the transition to organic.
For more info and to register: www.organiclandcare.net.

Vegetable Growers Field Day

Thursday, August 14, 2008
Penn State Southeast Agricultural Research and Extension Center, Manheim, PA
Includes a presentation by **Natural Resources Conservation Service** on how to apply for conservation funds to support adoption of **Integrated Pest Management**.
Contact Tim Elkner (tee2@psu.edu) for more information.

Attracting Butterflies and Hummingbirds to Your Garden

Saturday, August 23, 2008, 9am–1pm
Hitchcock Center for the Environment, Amherst, MA
\$75 members, \$80 non-members
Bill Benner and Ted Watt lead this multifaceted class in first understanding host plant gardens that attract butterfly larvae and then designing individual gardens. The class will include a field trip to see the plants in bloom and view many butterfly species as well as a hummingbird banding demonstration.
Pre-registration required at registrar@new-englandWILD.org.

Integrated Ecological Restoration of Rivers and Streams Including Design of Native Vegetation for Water Quality, in Floodplains, Riparian Zones and Waterways

October 5–11, 2008, Humboldt Institute, Steuben, ME
This seminar/workshop is designed to dig deeply into the concepts of waterway restoration from the broader ecological context and in the mode of Ecological Restoration. The focus is on vegetation and native plant community issues as they relate to waterway corridors, rather than on strictly mechanistic and engineering oriented channel design. Participants will learn the vital relationships between watershed land cover, vegetation, stormwater, and the waterway, and how to design plans for the ecological restoration of the waterway corridor. While some bioengineering concepts will be included in the seminar contents, they are not the sole focus of the session. Problem areas or restored waterways will be subject of field trips.
For more information: www.eaglehill.us

Restore Americas Estuaries – 4th National Conference on Coastal and Estuarine Habitat Restoration

October 11–15, 2008, RI Convention Center, Providence, RI
Estuaries and coasts are an important part of America's economy, history, and living culture. This is the only national conference focused on the goals and practices of coastal and estuarine habitat restoration. We will explore the state-of-the-art in all aspects and scales of restoration through field sessions, plenary sessions, expert presentations, special evening events, workshops, a poster hall, and a Restoration Exposition.
For more information: www.estuaries.org

Ferns of Massachusetts at Wildcat Reservation

Friday, September 12, 2008, 9am–12:30pm
Boxford Town Hall, Boxford, MA
Ferns are some of the most common herbaceous plants found in New England, yet their variety frequently makes them confusing. It is critical to know the difference between cinnamon and interrupted fern, yet even experienced experts often mistake one for the other. This workshop will teach you about the numerous varieties of common and unusual ferns in Massachusetts. This new AMWS workshop has been

requested for years, and is being taught by expert John Dick (Hancock Associates).
For more information: administrator@amws.org

UMass Extension's **Green School** is now accepting registrations. Green School is a comprehensive 11-day certificate short course for green industry professionals, taught by UMass Extension Specialists and University of Massachusetts faculty. Designed for landscape professionals, lawn care specialists, arborists and other horticultural practitioners, the course provides students with the knowledge needed to make environmentally appropriate decisions related to turf and plant selection, arboriculture, plant maintenance, and pest and nutrient management. Green School is held 1-2 days per week from November 6–December 18, 2008 in Milford, MA. For more information, visit: http://umassgreeninfo.org/programs/green_school.html

Did you miss the ELA Conference?

2008 Conference
Proceedings
Booklets for Sale

Copies of the 2008 Conference Proceedings Booklet, which contains speaker handouts, are available for purchase for \$20 (includes postage and handling).

For booklet orders please send your check, made payable to *Ecological Landscaping Association* and send to:

**1257 Worcester Rd., #262
Framingham, MA 01701**

Please be sure to include your return address with your order.

SAVE THE DATE!
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Well Water Connection, Inc. provides practical, cost-effective and environmentally conscious solutions to water-related problems experienced by green industry professionals and their clients. Our unique approach combines professional project management with water well, pump, filtration and stain removal services. For immediate service or more information, contact John Larsen at 978-640-6900 or jlarsen@wellwaterconnection.com.

WILL YOU HELP ELA?

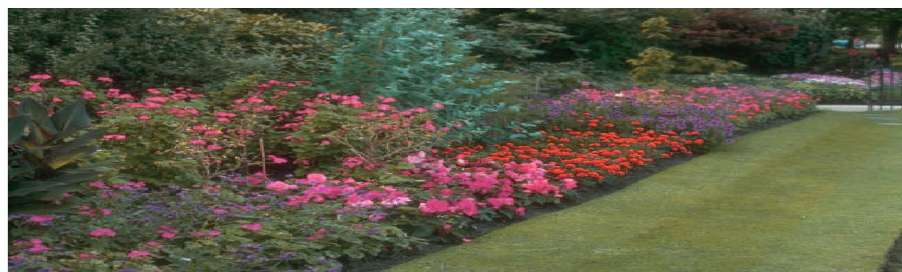
ELA is about to embark on its 17th year and there has never been more need for the ELA mission to educate and promote environmentally responsible landscaping and horticultural practices. In the upcoming year, there are many projects and committees, as well as positions on the ELA Board, that could benefit from your enthusiasm and background. If you can spare a few hours, we would love to have your help. Please call (617) 436-5838 or drop us an email: ela.info@comcast.net.

ELA advocates for environmentally responsible stewardship of land and natural resources in the landscaping and horticultural practices of professionals and the public. Through education, collaboration, and networking, ELA promotes the design installation, and maintenance of landscapes that are guided by a knowledge of, and respect for, natural ecosystems.



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