



Native Plant News

Newsletter of the N. C. Native Plant Society

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Measuring the Effects of Air Quality with Lichens

Gary Perlmutter

Lichens are symbiotic organisms, which include a fungus that provides shelter and an alga that makes the food. As one lichenologist put it, lichens are “fungi that discovered agriculture.” These small, often colorful organisms live on rocks, trees and other surfaces in our environment, drawing nutrients directly from the air and from rain. That direct absorption of atmospheric nutrients makes lichens vulnerable to the effects of air pollution. Overall, more species are found in cleaner environments as demonstrated by a study conducted by the US Forest Service here in the Southeast in the early 1990’s. While many species are sensitive to air pollutants such as sulfur dioxide (SO₂) and nitrogen oxides (NO_x), some are tolerant and others even thrive under elevated nitrogen environments, such as those in cities. These latter are known as nitrophilous lichens.

In Raleigh, I have completed a pilot study for the North Carolina Division of Air Quality examining the effects of air pollution by the patterns of lichen communities on trees in city parks. Like with the larger pattern above, the city park trees, when compared to a stand in a natural forest some 22 miles west in the North Carolina Botanical Garden’s Mason Farm Biological Reserve, have fewer lichens growing on their trunks. More telling is the predominance of pollution tolerant and nitrophilous lichens on the urban trees, and their near-absence on the forest trees. Deep in protected forests lie rare, pollution-sensitive dog lichens that are not encountered in more exposed areas.



Candleflame Lichen (*Candelaria concolor*), a nitrophilous lichen common on urban trees.



A dog lichen, *Peltigera phyllidiosa*, sensitive to air pollution and found only in protected forests.

For more information on a similar program currently underway in the Washington DC area, go to: <http://mason.gmu.edu/~jlawrey/CUE/>.

President's letter

Tom Harville

Greetings in the New Year! The year of “change”! With all the brouhaha that we have to endure from the media, I am a bit worn down about how wonderful change is—improve yes—but if “it ain’t broke...” Sure there’s plenty to work on so I’m in synch with the “get out and do something” words that I heard all day today.

So when I look at our Society and what we’re doing, I feel that we are on a good foundation and our mission of **promoting the enjoyment and conservation of North Carolina’s native plants and their habitats through education, protection, propagation, and advocacy** is on target. We are doing more and more to get the “native” word out to the public but honestly, I am stunned by some of the things I hear and read. It tells me in no uncertain terms that while we are doing more, there is plenty of room for even more effort.

Why don’t you sit down and write down what you do that helps our environment and then specifically what you do to help your society. I was really surprised at how a lot of the things I started doing during the drought have stuck.

Follow that with what could I do. Now don’t make a list a mile long because the next step is where you should really think hard.

Now pick one or two things that you will do. I’m betting that you can find something that will make a difference for yourself, your neighborhood and your society.

Now please go to <http://ncwildflower.org/chapters.htm>, find your local chapter and call your chapter chair and tell them what you want to do. Oh! No chapter in your area—you could start one. Note that the circles are roughly one hour driving circles and are merely guides.

But really the most important thing you need to think about is you. Above all, we want you healthy, happy in this New Year!

See you in the woods.

Tom



Chapter news...

NW Sandhills Chapter

I would like to report that the NW Sandhills Chapter had its first meeting on January 11th with 12 people in attendance. Many items were discussed including membership recruitment and future activities for the Chapter. Those present at the meeting showed interest in affiliating ourselves with Weymouth Woods Sandhills Nature Preserve. The staff at Weymouth Woods has agreed that this would be a good partnership as funding for projects has decreased. The preserve has started a native plant garden near the visitors center which the Chapter hopes to enhance and expand through plant rescues from sites slated for development. In addition, the Chapter will help control invasive species throughout the preserve. Those present at the meeting showed enthusiasm for these and other projects and hopefully this enthusiasm will spread to others! Our next meeting will be on Sunday February 22nd at 2pm at the Visitors Center for Weymouth Woods Nature Preserve.

Tracy Rush, Chapter Chair
tracy@ncwildflower.org

Triad Chapter

Chapter member Dr. Emily Nekl with High Point University is offering two lectures for the group:

Physiological Control of Flowering (Feb 4)

Flowering is essential to complete the life cycle of the plant system. There are specific environmental cues that plants must identify in order to know when is the best time to flower, otherwise they can compromise the production of progeny. This talk will begin by discussing the rich history of flowering based studies and begin to answer the following questions: How do plants keep track of the seasons of the year and the time of the day? What

are the environmental signals that control flowering, and how are those signals perceived by the plant system? Finally, how are these environmental signals transduced to bring about the developmental changes that are associated with flowering.

Light Control in Plant Systems (March 4)

While light is a key component to the growth and development of plant systems, it is also a serious hazard. There is a delicate balance between enough and too much light that plants must be able to adapt to. We will discuss the various types of light and how plants discern light variations and undergo physiological responses as a result. The two major types of physiological players, the phytochromes (red-light receptors) and cryptochromes (blue-light receptors) and how they are able bring about the developmental changes of growth and development will be a primary focus of the discussion.

NCNPS members are welcome to join us. Contact kathyschlosser@triad.rr.com for meeting location and directions.



Hexastylis minor

Spring Trip: May 1—3 Stoney Creek & South Mountains area

Vein Mountain, Golden Valley, Atomic Rd. and Thermal City: all are rather exotic names of areas in Rutherford County, North Carolina, the site of NCNPS's spring outing slated for May 1-3.

Once the site of gold mining and the principal supplier of all gold in the U.S. Treasury at the beginning of the 1800's, Rutherford County's landscape also contains many wonderful pockets of native plants, "gold" to plant lovers, due to the thermal belts and climatic conditions called isothermals, resulting in land protected by moderate temperatures, in spite of elevations up to 3,965 feet.

Save the date and plan on joining fellow native plant lovers as we travel Candy Rock Rd. to Stoney Creek on the northern edge of the county and the next day visit a private portion of the South Mountains. There will be speakers and door prizes, as well as a plant auction, so come prepared to hike, learn, and buy! Details and registration information coming in the next newsletter.

Lynda Waldrep

The Blue Ridge Mountains to the north and Smokey Mountains to the west provide shelter from extreme weather conditions in winter, and offer cool mountain breezes in summer. This level moderation contributes to pleasant year-round living conditions.

Average annual temperature: 59.9 F

Annual maximum average: 67 F

Annual minimum average: 44 F

Average rainfall: 49.91 inches mainly in spring and fall

Average humidity: 65%

Average snowfall: 2.74 inches

Located in the Isothermal Belt, there are 200 frost-free days in the growing season

(see following page for information on isothermal belts)



Trillium rugelii (L) and *Galearis spectabilis* (R) Known to be present in Stoney Creek area

Thermal Belts in North Carolina...

For many years the expression "isothermal belt" or "thermal belt" has been used to describe certain sections of North Carolina which enjoy a more equitable climate than neighboring regions of comparable altitude and latitude. The questions "what are these isothermal belts?" and "why do they exist?" arise frequently and not all are clearly answered.

In Rutherford County, the town of Rutherfordton enjoys a thermal belt climate, and a nearby community is named Thermal City. Smaller thermal belt areas across western North Carolina are favored locations for apple orchards.

W. N. Hutt, former horticulturist for the State of North Carolina, wrote in the article, "Thermal Belts from the Horticultural Viewpoint,"** that, until he came to North Carolina in 1906, he had never heard of a thermal belt or of a verdant zone. Fruit growers used the terms, and Mr. Hutt wrote:

"Practical men who make their living from Mother Earth in fruits, vegetables, grains or other products are close observers of nature and her laws. They may not always be able to correctly interpret her ways and define her laws, but if they have observed any phenomenon and formulated any practice from it you may be pretty sure there is something in it, and you will be unwise if you disregard it without investigation."

Mr. Hutt made a lengthy study of thermal belts and verdant zone, which appears as an appendix to the U.S. Dept. Of Agriculture's Monthly Weather Review Supplement No. 19, published 1923, on "Thermal Belts and Fruit Growing in North Carolina."

Mr. Hutt described the thermal belt as being similar to a will-o'-the-wisp, which always seemed to elude his grasp, but he did draw the conclusion that thermal belts are a reality and that North Carolina seems to have a monopoly on them. He advanced the explanation that this was due to the fact that one-third of the state's area is made up of rolling Piedmont hills stretching up to another third that contains the highest elevations east of the Mississippi River. His preliminary survey resulted in the U.S. Weather Bureau's setting observation stations at 16 western North Carolina areas where apples, grapes or peaches are grown, and making a study of frost pockets, high top freezes, and the fact that sometimes, in a year when weather conditions were so unfavorable over the state that it would seem impossible that any fruit could survive, some section, or some orchards in a section, would bear a

phenomenal crop.

H. E. Kichline, meteorologist and climatic section director for the North Carolina Weather Bureau, Raleigh, wrote in 1941 that "thermal belts, which are probably more pronounced here than at any other place in the eastern United States. Frequent observations have shown temperature inversions of 20 degrees or more along some mountainsides."

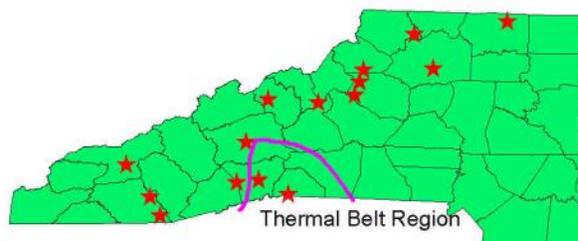
Inversion is the term used to describe a condition occurring when on certain cool nights the temperature is relatively high on the slope of a mountain -- much higher than at the base.

Over a period of four years, records kept by the U.S. Weather Bureau on six selected long slopes (having a vertical height of 1,000 feet or more) showed a total of 860 inversions for the six slopes together in one year (1913) and in no year did the number fall as low as 800. Inversions occur most frequently in the spring and autumn, and August generally has the smallest number.

*W. B. No. 796, U.S. Department of Agriculture Weather Bureau, MONTHLY WEATHER REVIEW SUPPLEMENT NO. 19., "Thermal Belts and Fruit Growing in North Carolina" and "Thermal Belts from the North Carolina areas where apples, grapes or the Horticultural Viewpoint," Government Printing Office, Washington, D.C.

From: Isothermal Community College in Spindale and Columbus, NC.

http://www.isothermal.edu/thermal_belts_in_north_carolina.htm



★ Temperature stations (1913-1916)

NCNPS Annual Picnic... and Photography

Saturday, June 13th

Hagan Stone Park, south of Greensboro

David Blevins earned a PhD in forest ecology from the University of British Columbia. While studying, he spent his spare time taking photographs of the Boundary Bay area, continuing his lifelong interest in observing the natural world. Those photos illustrate two books by Anne Murray: *A Nature Guide to Boundary Bay* and *Tracing Our Past: A Heritage Guide to Boundary Bay*.

Now back home in North Carolina, he is a full time photographer and web/graphic designer. He is also serving on the board of directors for the Friends of Plant Conservation.

David will join us at our annual picnic and, at 10:00, will present a mini-workshop on using your camera to capture the plants that you see when out in the field and forest.

Put the date on your calendar now so you won't miss this special event. (Directions will be included in the April/May newsletter)

When you are packing up your favorite picnic foods to share with NCNPS friends, and plants for the auction, be sure to tuck in your camera and arrive at Hagan Stone Park at 10:00 a.m. for inspiration and lessons from David Blevins.

The picnic will begin at 12:00.

You can see samples of David's work at

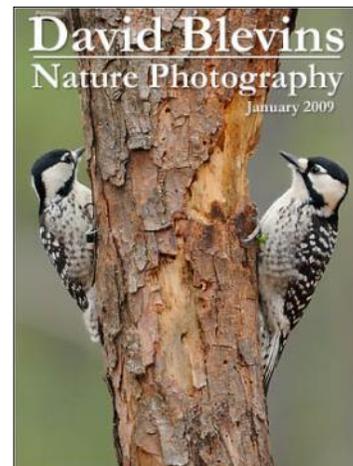
www.blevinsphoto.com



Glacial erratic in Drayton Harbor, WA. c. David Blevins



Parnassia grandifolia, Bigleaf Grass-of-Parnassus, Clay County, NC. c. David Blevins



The 2008 Fires in NE North Carolina

Charles and Marilyn Racine, Edenton, NC

In early June 2008 a lightning strike ignited pocosin shrub bog vegetation near New Lake in Hyde, Washington and Tyrell County's Pocosin Lakes National Wildlife Refuge (Evans Road Fire). At the same time a fire was ignited in the Dismal Swamp along the Virginia-North Carolina border presumably by accident from machinery being used to clear trees blown down by Hurricane Isabel in 2003. By the time the fires were out in late September over 40,000 acres had burned in the Pocosin Lakes area (west of highway 94) and 4500 acres in the Dismal Swamp. Because of



Fireline in December 2008 along Evans Road which stopped the 2008 fire (right side of the photo).



Satellite image on June 25, 2008 showing the two fires burning

Pocosin bogs? The clearing of downed trees in the Dismal Swamp was part of a USFWS project to restore Atlantic White Cedar (*Chamaecyparis thyoides*) a tree that has been almost eliminated from these swamps by logging and fire? The Pocosins are composed of shrubs (many ericads), gallberry hollies, titi and trees such as pond pine, bay (*Persea*) and *Gordonia*. We visited the Pocosin Lakes fire this winter to evaluate fire effects and revegetation 5 months after fire and saw severe burning down into the peat, undermining the roots of pond pine and shrubs in many areas. All of the above ground woody stems were charred and dead, some still upright and others fallen.

the deep peats in both areas the fires continued to burn and smolder far into the summer. Smoke from both fires drifted into cities along the Virginia, North Carolina and Maryland shore as well as the NC triangle area

Several million dollars were spent to fight these fires. A wide fireline was bulldozed on the west side of the burn along Evans Road (for which the fire was named) to contain the fire. By pumping water from Lake Phelps into the interconnected ditch lines it was hoped that the water table could be raised enough to help extinguish fire burning deep into the peat layer in places over 6 ft thick. Several communities were evacuated but no homes burned



Fireline in December 2008 along Evans Road which stopped the 2008 fire (right side of the photo).

The surface of the burn was black and in places there were deep 2-3 ft pits and depressions where the fire had burned into the peat. Only a few spots of mineral soil were obvious where all of the peat had been burned. Of note were tremendous rhizomes or 'bulbs' of *Smilax lauri-*

What was the impact of this fire on the rich native wetland flora which inhabits the Dismal Swamp and

2008 Fires in NE North Carolina continued...

folia. Most of these appeared dead but sprouts from deeper parts of these rhizomes were common. The root system of many trees and shrubs had been undermined by the fire and there was no sign of re-sprouting even by pond pine, known to re-sprout after fire. Ericaceous shrubs and hollies on smaller patches of scorched peat were re-sprouting from their base with 2 ft tall stems. Seedlings of *Smilax* were also common in scorched areas and occasional pond pine seedlings in deeply burned pockets along with bracken fern and moss- perhaps *Ceratodon purpureus*. With the help of A.J. Bullard we were able to collect and identify most of the sprouts: gall berry (*Ilex glabra*) was most common followed by *Gaylussacia frondosa*, *Smilax laurifolia*, *Ilex coriacea*, *Lyonia lucida*, *Persea borbonia* and *Zenobia puerulents*.



Pitted burn surface (left) re-sprouting shrubs on scorched surfaces 5 months after fire.

Although wildfire has always played a role in these wetlands and the plants and animals are adapted, the severity of natural fires was much less than today with less burning of the organic soil and undermining and killing of tree and shrub roots. Although Pocosin bogs and plants are fire adapted, the combined effect of lowered water table from a network of drainage ditches, drought during the past few years and long intervals between fires- allowing the buildup of fuel- burning can be so severe as to kill plants that would otherwise re-sprout from stem bases. Deep burning might also eliminate seeds buried in the peat. It remains to be seen how many additional species germinate this spring from buried seed or from new seed arriving at the surface.

Drainage and canal building in both areas (Dismal Swamp and Pocosin Lakes) began almost 200 years ago and drainage networks were extended in the early to mid 1900s particularly in the Pocosin Lakes area. The last time a large fire swept through the Pocosin Lakes area was 1985- far too long a fire interval. If controlled burns could be conducted at shorter intervals and the water table raised, fire severity would be much lower. It is impossible to control drought. Private lands and agricultural enterprises also surround both areas and it is important to protect these areas from flooding. The Fish and Wildlife Service has been installing water control structures on some of the ditches to help rise the water table. However, the deep peats have low hydraulic conductivity and raising the water table will be a slow process.



Article and photos by Charles and Marilyn Racine Edenton, NC

200th Anniversary of Darwin's Birth...

The wish, that of the living whole
No life may fail beyond the grave,
Derives it not from what we have
The likest God within the soul?

Are God and Nature then at strife,
That Nature lends such evil dreams?
So careful of the type she seems,
So careless of the single life;

That I, considering everywhere
Her secret meaning in her deeds,
And finding that of fifty seeds
She often brings but one to bear,

I falter where I firmly trod,
And falling with my weight of cares
Upon the great world's altar-stairs
That slope thro' darkness up to God,

I stretch lame hands of faith, and grope,
And gather dust and chaff, and call
To what I feel is Lord of all,
And faintly trust the larger hope.

* * *

'So careful of the type?' but no.
From scarpèd cliff and quarried stone
She cries, 'A thousand types are gone:
I care for nothing, all shall go.

Thou makest thine appeal to me:
I bring to life, I bring to death:
The spirit does but mean the breath:
I know no more.' And he, shall he,

Man, her last work, who seem'd so fair,
Such splendid purpose in his eyes,
Who roll'd the psalm to wintry skies,
Who built him fanes of fruitless prayer,

Who trusted God was love indeed
And love Creation's final law—
Tho' Nature, red in tooth and claw
With ravine, shriek'd against his creed—

Who loved, who suffer'd countless ills,
Who battled for the True, the Just,
Be blown about the desert dust,
Or seal'd within the iron hills?

No more? A monster then, a dream,
A discord. Dragons of the prime,
That tare each other in their slime,
Were mellow music match'd with him.

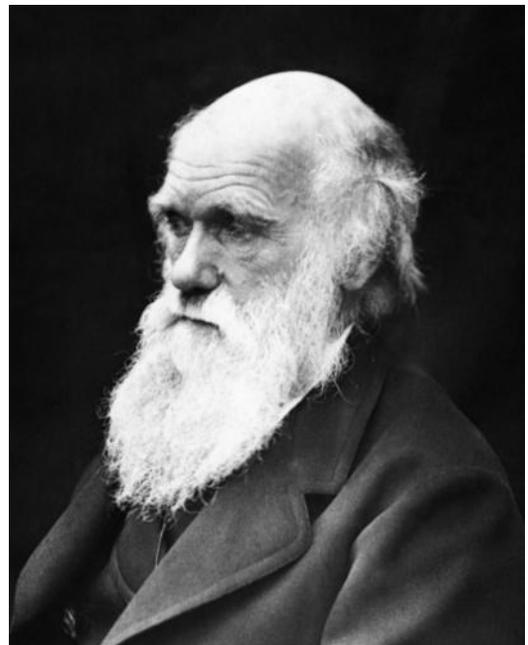
O life as futile, then, as frail!
O for thy voice to soothe and bless!
What hope of answer, or redress?
Behind the veil, behind the veil.

Canto LV and LVI, *In Memoriam*
Alfred, Lord Tennyson (1849)

This year, and this month, mark the 200th anniversary of Charles Darwin's birth. Since no writer, no scientist, works outside the influences of the society, it might be interesting to give some thought to the Victorian era, charged with debate over science and theology, that Darwin faced. Tennyson's *In Memoriam* defines that debate. Published 10 years before Darwin's *On The Origin Of Species* (1859), Tennyson's elegy, written after the death of a friend, attempts to reconcile the science of evolution and Biblical stories of creation.

"Are God and Nature then at strife," writes Tennyson, who bemoans Nature's arbitrary power, "So careful of the type she seems, So careless of the single life..."

Born February 12, 1809 in Shrewsbury, England, Darwin's youth was molded by the interests of his grandfather, Erasmus Darwin, a physician and writer, and his father, also a physician. Erasmus Darwin had written extensively on evolution (see *The Botanic Garden* and *The Temple of Nature*).



Charles Darwin. Feb. 12, 1809—April 1882

The Botanic Garden is composed of two long poems, one of which—'The Loves of the Plants'—elucidated Linnaeus's system of plant classification. Since Linnaeus had introduced the concept of the 'sexuality' of plants, Erasmus Darwin explored the connections between humanity and plants, suggesting that both are of the same natural world with sexual reproduction at the heart of evolution. He also addressed issues of slavery (he opposed), the French Revolution (he supported), and further argues that human emotion evolves from physiology rather than theology, a theme later explored by Charles Darwin in *The Expression of the Emotions in Man and Animals* (1872). It was too much for conservative Britons, and Erasmus Darwin took much criticism.

Though Erasmus died seven years before the birth of his grandson, Charles, most assuredly Charles was exposed to, and heavily influenced by, his grandfathers ideas and writings. He was aware, too, of the political and social leanings of his contemporaries. Enrolled at Edinburgh to study medicine, Charles Darwin soon found that he would be unable to manage such a profession, repelled as he was by the notion of surgery, especially without benefit of pain-numbing drugs. He transferred to Cambridge where he enrolled to study for the ministry. There, he was befriended by a biology professor, John Henslow, who arranged for an invitation for Darwin to travel aboard the *Beagle* with Capt. Robert FitzRoy. Initially intended as a 3 year adventure, the travels extended to 5, with Darwin eventually named at the ship *Naturalist* and launched in a career that would guide his life and the future of science.

Already convinced that life on earth had not been created whole and unchanged, he focused his attention on what the process was that produced change .

Darwin was influenced by others as well, most notably Malthus' *Essay on Population*:

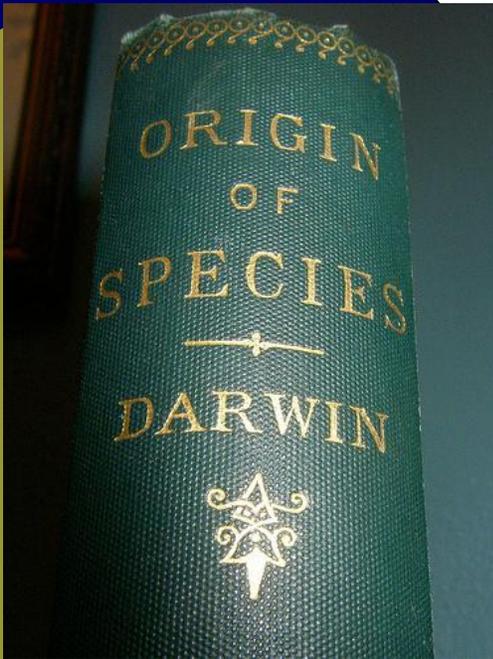
When Avarice, shrouded in Religion's robe,
Sail'd to the West, and slaughter'd half the globe:
While Superstition, stalking by his side,
Mock'd the loud groan, and lap'd the bloody tide;
For sacred truths announced her frenzied dreams,
And turn'd to night the sun's meridian beams.—
Hear, Oh Britannia! potent Queen of isles,
On whom fair Art, and meek Religion smiles,
Now Afric's coasts thy craftier sons invade,
And Theft and Murder take the garb of Trade!

'The Economy of Vegetation' Erasmus Darwin
l.ii.414-423

"In October 1838, that is fifteen months after I had begun my systematic enquiry, I happened to read for amusement Malthus' Population, and being well prepared to appreciate the struggle for existence [a phrase used by Malthus] which everywhere goes on from long-continued observation of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed. The result of this would be a new species. Here then I had at last got hold of a theory by which to work."

Twenty years after Darwin began to form his ideas, and at the age of 51, he was ready to publish, spurred on by a manuscript sent to him by Alfred Russell Wallace, who came to the same conclusions as Darwin after a fitful night in which the idea of natural selection came in a dream.

Noting the criticism of his grandfather's ideas, and the critics of evolution in general, Darwin took care present his theory in a meticulous, scientific manner. He did not want to risk serious consideration of his ideas by being rejected before being read, so his careful preparation for publishing his ideas nearly cost him a place in history.



His friends came to his rescue by working out an agreement with Wallace that the two works (Wallace's was far less detailed than Darwin's) be presented simultaneously. Because of the depth of Darwin's work, and his continuing research and writing, he emerged as the preeminent proponent of the theory of natural selection.

Darwin's work was a sell out. Still, he got the criticism he expected from many scientists as well as lay people, all unable to accept that the stories in Genesis might be myth.



This French caricature was typical of many that appeared after the publication of *On The Origin of Species*.

Tennyson's work expressed the emotions of many of Darwin's readers, from the wrenching acceptance that evolution is indifferent —

Who trusted God was love indeed
 And love Creation's final law—
 Tho' Nature, red in tooth and claw
 With ravine, shriek'd against his creed—
 to the human need for faith —

Strong Son of God, immortal Love
 Whom we, that have not seen they face,
 By faith, and faith alone, embrace
 Believing where we cannot prove.

Tennyson's poem is an evolution itself, reflecting a slow acceptance of science over theology (keep in mind that the poem was written over a 20 year period). And, as in many arguments, he moves full circle, as despite his intellectual acceptance of science, he could not completely reject faith as an answer to human pain—

Whereof the man, that with me trod
 This planet, was a noble type
 Appearing ere the times were ripe,
 That friend of mine who lives in God,

That God, which ever lives and loves,
 One God, one law, one element,
 And one far-off divine event,
 To which the whole creation moves.

Darwin wasn't writing an assault on religious doctrine—he was recording 20 years of observation and research started on his journey aboard the *Beagle*. Knowing that he faced at least the same criticism his grandfather experienced, he took care to present serious science.

A gentle and humble man, who once considered a life in the ministry, he was an agnostic. In a curious twist of events, he was buried in Westminster Abbey, near Sir Isaac Newton. It was intended as an honor bestowed by his countrymen, and that is where he rests, despite his desire that he be buried in a simple, unadorned coffin in his home village of Down.

"I feel most deeply that the whole subject [God] is too profound for human intellect. A dog might as well speculate on the mind of Newton," wrote Darwin in a letter to Asa Gray.

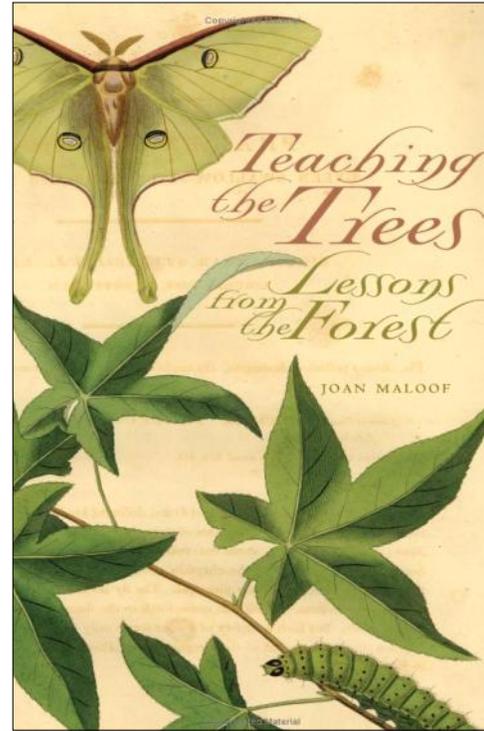
Off the Shelf.....

On a cold, rainy day I opened Joan Maloof's *Teaching the Trees; Lessons from the Forest* and began an enjoyable guided tour of the woods outside my window. For although she writes of eleven trees from the Eastern Shore of Maryland, I have seen most of them in the woods behind my house and know that the others grow in our area. Maloof writes almost poetically about the trees and glides into simple, interesting explanations of the science of the interrelationships between each tree and the plants, insects, and animals that depend upon it. Who knew that the potato leafhopper, (that is partial to sycamores) "an insect that looks like a green sesame seed with wings - a thing so small it cannot fly against the wind" uses the wind to travel up to six hundred miles because it cannot survive freezing temperatures?

Another interesting aspect of the book is that the illustrations that appear in the book are black and white prints of paintings that John Abbot, an artist naturalist, painted over two hundred years ago.

Even if you were not passionate about trees when you opened the book, it would be hard not to absorb some of Maloof's passion and if you already are passionate about them, you will meet a kindred spirit in Maloof.

Pat A. Jackson
Triad Chapter



University of Georgia press, Athens, Georgia, 2005



Abbot's orange white-spot moth and its host plant, black oak (1797)

Off the Shelf.....

Rain Gardening in the South: Ecologically Designed Gardens for Drought, Deluge & Everything in Between

by horticulturalists Helen Strauss and Anne Spafford

You've asked about it. You've waited for it.

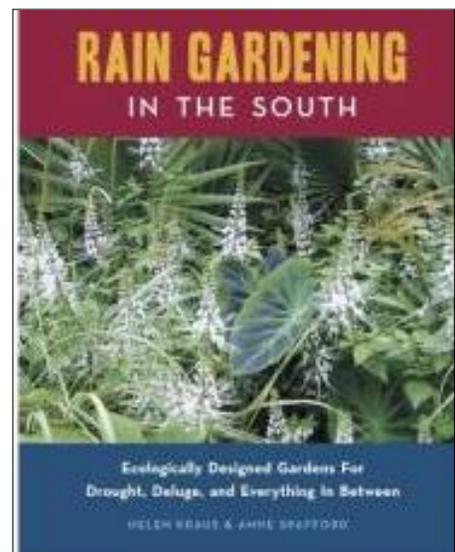
Rain Gardening in the South will be on bookstore shelves soon! You may wonder, how does my garden and landscape affect the environment, specifically our water supplies? Home gardens and landscapes contribute substantial amounts to water pollution—but they also can be part of the solution. Rain gardens to the rescue! These specially designed gardens capture rainfall flowing through your yard (known as runoff), store that water to nurture its plants, and cleanse runoff, thus removing the pollutants it carries with it. Sounds good, doesn't it! Ready for more good news? Rain gardens are fairly easy and inexpensive to create having a defined structure made up of only five basic components. Learn about the next great gardening practice that will define a landscape as being both beautiful and water-wise. Be the first house in your neighborhood to create one!

Rain Gardening in the South is a user-friendly guide, offering a solid introduction to this important gardening movement, as well as an easy reference. Complete with design strategies, construction tips, plant selection guides, and even a troubleshooting section,

Rain Gardening in the South is a "must-have" on any environmentally responsible gardeners bookshelf. Published by Eno Publishers, a nonprofit regional publishing group, Rain Gardening in the South is a fun read, that specifically addresses problems that arise in southern gardens.

Rain Gardening in the South is illustrated, four-color, soft-cover, 144 pages, 7 ½" x 9 ¼". Its retail price is \$19.95 (ISBN: 978-0-9820771-0-8). It will be available at local bookstores in April, or you can take advantage of Eno's prepublication offer and order it for \$16 at www.enopublishers.org

Retail outlets contact John F. Blair at 800-222-9796 or www.blairpub.com.



Review submitted by publisher.

Friends of Plant Conservation...



A New Organization

The Friends of Plant Conservation Foundation has recently been formed to assist the NC Plant Conservation Program (NCPCP) in advancing the protection, restoration, conservation, preservation and long term management of North Carolina's imperiled native plants. Further, the Friends group will assist the NCPCP in increasing the public's understanding and appreciation of NC native plants and their habitats through advocacy, science-based public education, and fundraising and development.

Members of the public are invited to join the Friends group (\$25.00 annual dues), which will put you on the mailing list for newsletters, educational seminars, visits to NCPCP sites, and volunteer opportunities directly related to North Carolina's imperiled plants.

The N.C. Native Plant Society is well represented on the board of directors for the Friends:

Tom Harville: Membership committee

Mark Rose: Policy & Governance committee

Kathy Schlosser: Secretary and Communications committee

**You Are Invited To Join Your Friends
in this New Organization.**

Contact: tom@ncwildflower.org

Cataloochee's Elk

A story in the *Smoky Mountain News* (Dec. 2008) reports good news of particular interest to NCNPS members who went on the field trip to Max Patch and the Cataloochee Valley area several years ago. On that trip, we ventured into Cataloochee late in the day, hoping to catch sight of some of the elk that have been re-introduced into the Great Smoky Mountains National Park.

Before 1900, elk roamed the southern Appalachian Mountains and elsewhere in the eastern United States. Over-hunting and habitat loss eliminated herds from North Carolina, and reduced them to near extinction elsewhere.

In 2001, 25 elk were brought to the Great Smoky Mountains area, and 27 more were added in 2002. A subsequent ban on importing more, and a poor survival rate among calves gave little hope that the experiment would succeed.

At the time we visited the area (2003 or 2004??) we spotted a few elk off in the distance, across a broad meadow and at the edge of the woods. It was an exciting sight.

There have been losses from natural causes, vehicle incidents, and bear predation. However, the news has gotten better. In 2008, 19 calves were born and 16 survived, a far better survival rate than in the past, and making a herd that now stands at 95. Only five of the current calves are female. However, several young females are expected to give birth in the spring, and a few males will be coming of age in time for the mating season.

“Next fall the rut should be quite a contest as we have quite a few bulls which are nearing 10 years of age, which is when they develop the largest antlers,” Joe Yarkovich, elk project manager for the Smokies, said. “So if the food supply is good we



Ken Wilson. <http://www.nps.gov/grsm/naturescience/elk.htm>

Willfully approaching within 50 yards (150 feet), or any distance that disturbs or displaces elk, is illegal in the park. Violation of this federal regulation can result in fines and arrest. Do not enter fields to view elk—remain by the roadside and use binoculars, telephoto lens, or a spotting scope to view the animals.

Elk consume grasses, forbs, and acorns; bark, leaves, and buds from shrubs and trees.

have the potential for even more spectacular racks to be seen next year. There are also a few rather aggressive younger bulls that will be gaining weight and antler mass, so competition during the 2009 rut should certainly be exciting.”

If you have time, a visit to the area might be fun!





For details, see:

<http://www.eeweek.org/>

North Carolina Native Plant Society

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Sizes: Small, Medium, Large, X Large, XX Large

Colors: Pine green, White, Tan Azalea pink, yellow, cranberry, sky blue

\$15.00 (+ \$3.00 shipping)

Send your order (make checks to NCNPS):

Katherine Schlosser
1402 Bearhollow Road
Greensboro, NC 27410

Newsletter Contributions

Would you like to share your experiences and knowledge with members of the NCNPS? Do you know of an interesting natural site in NC to visit? Are you willing to share this?

Do you know someone doing good work in the fields of native plants or plant conservation? Will you send us a few words about that person?

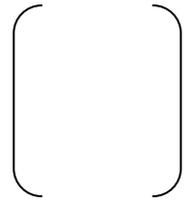
Know of an event or educational opportunity?

Your input into this newsletter is welcome and encouraged. Just send your information to:

Kathy Schlosser
1402 Bearhollow Road
Greensboro, NC 27410

Or email to: kathyschlosser@triad.rr.com

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❧ North Carolina's Native Plant Society since 1951 ❧



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