# CONNECTICUT Woodlands



# **SENTINELS OF THE ENVIRONMENT** AMPHIBIANS, BATS, BIRDS, AND BEES STRUGGLE

The Magazine of the Connecticut Forest & Park Association

Spring 2011 Volume 76 No. 1

About Connecticut Forest & Park Association and Connecticut Woodlands Magazine



Connecticut Woodlands is a quarterly magazine published since 1936 by CFPA, the private, non-profit organization dedicated to conserving the land, trails, and natural resources of Connecticut.

Members of CFPA receive the magazine in the mail in January, April, July, and October. CFPA also publishes a newsletter several times a year.

For more information about CFPA, to join or donate online, visit our newly expanded website, www.ctwoodlands.org, or call 860-346-2372.

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Jay Kaplan/Roaring Brook Nature Center

A green frog getting ready to make the worn-banjo-string sound of spring.

### **Connecting People to the Land**

**Our mission:** The Connecticut Forest & Park Association protects forests, parks, walking trails and open spaces for future generations by connecting people to the land. CFPA directly involves individuals and families, educators, community leaders and volunteers to enhance and defend Connecticut's rich natural heritage. CFPA is a private, non-profit organization that relies on members and supporters to carry out its mission.

**Our vision:** We envision Connecticut as a place of scenic beauty whose cities, suburbs, and villages are linked by a network of parks, forests, and trails easily accessible for all people to challenge the body and refresh the spirit. We picture a state where clean water, timber, farm fresh foods, and other products of the land make a significant contribution to our economic and cultural well-being.

### **Connecticut Woodlands**

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# connecticut Woodlands

The Magazine of the Connecticut Forest & Park Association

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On the Cover Bees like this honey bee on a squash flower are suffering. Scientists are testing the pollen.

Kim Stoner/Connecticut Agricultural Experiment Station



## EXECUTIVE DIRECTOR'S MESSAGE

# Connecting to conservation with bats



CFPA Executive Director Eric Hammerling

BY ERIC HAMMERLING

ver since Merlin Tuttle, the founder of Bat Conservation International, visited me and my colleagues at the National Fish and Wildlife Foundation in 1993 with a little brown bat (*Myotis lucifugus*) and a hoary bat (*Lasiurus cinereus*) in his coat pockets, I have been a huge fan of bats. Holding those bats in my hand and learning about their ecological values spurred a pilgrimage the next year to central Texas where bats literally take over the sky between March and October as they emerge at dusk for feeding.

The first night in Austin, we took a tour boat to get the best view of the world's largest urban bat colony (estimated at about 1.5

million Mexican free-tailed bats) streaming from beneath the Congress Avenue Bridge. We were warned to keep our mouths closed just in case, but it was hard to comply. We thought that this was the entrée of our trip, but learned the next night it was merely the appetizer. We visited Bracken Cave on the suburban fringe of San Antonio to visit the world's largest bat colony, which is thought to contain as many as 20 million Mexican free-tailed bats.

Bracken Cave holds one of the largest concentrations of mammals on earth, and it is now "safe" through the efforts of BCI to protect the cave and almost 700 acres of surrounding Texas hill country. Here, it was literally impossible for me to keep my mouth closed as millions of bats streamed out of the cave like a tornado for about 15 minutes (though it felt like much longer), feasted on more than 1,000 pounds of insects in the skies above and beyond us, and then dove back into the cave with military-like precision. This precision is absolutely essential as the adult bats forage and then have to re-locate their babies and other family members they left in the cave. Part of this is done by sight, but most is done by sound. Miraculously, they find their families each night despite the speed of their reentry and the close quarters where they roost.

Just to give a sense of the richness of that ecosystem: Several snakes hung at the top edge of the cave and picked off a few bats as they emerged and returned.

Holding a bat in my hand and viewing their emergence from caves and bridges en masse hooked me as a FoB (Friend of Bats) for life. Connecticut Forest & Park Association works every day to "connect people to the land" to conserve Connecticut. Find a way to get outdoors and stay connected to the land in Connecticut in a meaningful way. Even in far-flung places, you never know what amazing critters and inspiration you might find over the next hill or under a mossy log.

Eric Hammerling lives in West Hartford.

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## PRESIDENT'S MESSAGE

# ISSUE

## SENTINELS OF THE ENVIRONMENT

As I prepare to send off to the printer this issue about how the struggles of amphibians, bats, birds, and bees ripple outward, the devastation in Japan is spreading far beyond the epicenter of the 9.0 earthquake and tsunami in March.

At least 6,000 people have died, and the circumstances of these drownings as they tried to escape the rushing water horrify us all equally, no matter where we live. The effects of the disasters have hit the world's food supply, wildlife, and economy.

At least 12 percent of Japan's rice fields were inundated with salt water just weeks before what would have been the spring plantings. The tsunami sent the Pacific ocean rushing as far as 6 miles inland on Japan's main island, causing destruction we can imagine from the horrible photos. As it headed east, the tsunami killed tens of thousands of birds on Midway Atoll near Hawaii, including 1,000 rare Laysan albatrosses and their chicks. Two nuclear power plants have suffered core damage on a scale approaching that of the Chernobyl disaster and sending detectable radiation (considered very low levels, but there nonetheless) as far away as southern California.

It has been the worst kind of reminder of how small the globe really is, how connected our food and manufacturing are, and how no damage occurs in isolation. No rebuilding or planning takes place in isolation, either. In difficult times, the globe's communities must draw closer.

> -Christine Woodside, Editor Connecticut Woodlands

## COMING IN THE NEXT ISSUE OF CONNECTICUT WOODLANDS

LAND CONSERVATION ISSUE The Fenton River, a gem Conservation Hall of Fame: Sam Dodd A Tale of Two Trails

## Aiming for 2,011 members in 2011

BY DAVID PLATT



CFPA President David Platt A s I near the end of my third term as president of Connecticut Forest & Park Association, I find myself reflecting on CFPA's many accomplishments of the past several years. We have a fine board of directors steering CFPA, and an equally fine staff leading the charge and running our programs. If I've learned one thing over the years, it is not to take such blessings for granted. CFPA is fortunate to have such a fine infrastructure of dedicated volunteers and professionals.

CFPA's accomplishments over the past few years are many, as we vigorously pursue our mission, *conserving Connecticut by connecting people to the land*, and honor our more than 100-year history of getting things done.

Education: We have upped our game in the environmental education area, teaching an ever-increasing number of kids about the wonders of the natural world, and thus helping to develop the next generations of environmental stewards. Our lifelong learning philosophy is well served by our programs such as Project Learning Tree and WalkCT family rambles.

Trails: We continue to expand and maintain our more than 800-mile Blue-Blazed Hiking Trail System, which is subjected to ever-increasing pressures from the sprawl of development and abuse. Our trails, miles of which exist on private lands because of the generosity of volunteer landowners, are a priceless asset. We have, literally, an army of dedicated trail volunteers caring for them.

The 2009 dedication by President Obama of the New England Trail—the newest of the national scenic trails—represents a major accomplishment for CFPA and the others who lobbied hard for the attention given to this key trail. More people seem to be appreciating the trails every day, whether on their own or as the result of CFPA programs that connect people to these trails.

Land conservation: Acre by acre, and mile by mile, we make steady progress in permanently protecting key working forestlands and trail corridors. No organization is better at partnering with other stakeholders to conserve the Connecticut landscape as opportunities arise.

Our voice at the Capitol: It has never been stronger or more respected, as CFPA continues to weigh in on every meaty issue of the day. We pride ourselves on providing unbiased factual information to legislators, and invariably we are rewarded by receiving the ears and respect of such legislators as they tackle critical conservation issues.



You will not be shocked to be reminded that all of our programmatic accomplishments come with a price, a price that you as our members help us to afford. We support our programs with cost control, development, and membership efforts that are critical to our success. And it seems to be working. Like every other nonprofit organization, CFPA was hard hit by the recession, and we took responsibility for making the fiscal adjustments that we needed to make, however painful that process was. On the flip side, we have redoubled our efforts to raise money to support our cause, and these efforts clearly are gaining traction.

For example, in 2010, we increased the size of our membership base by 14 percent. We now have approximately 1,700 members and are shooting to crack the 2,000 level by the end of 2011. I say, 2011 members by the end of 2011! Please help us get there by asking a friend to visit www.ctwoodlands.org and join!

David Platt, an environmental lawyer, has served as board president for three years. He lives in Higganum with his family.



A Jefferson salamander must make the slow trip each spring to breeding pools. If a road is in the way, hazards await.

# **ONLY SEEING THE FOREST FOR THE TREES**

Habitat loss remains the greatest threat to amphibians in New England

## BY HANK J. GRUNER

he left the confines of the short-tailed shrew burrow where she had spent the winter, and crawled slowly, but with the determination borne of an evolutionary drive to reach a small pool of water located nearly 1,000 feet away in a forest in rural Connecticut. She had made this nighttime trip each spring since reaching the age of two or three, just as her ancestors had done since the retreat of the last glaciers and the reestablishment of deciduous forests 8,000 to 9,000 years ago.

In some years, she began this journey with the temperature barely above freezing and found ice on the pool. Not this year. As she made her way through the leaf litter, a warm rain fell and the air temperature approached a balmy 50 degrees. But it was not the warmer March weather this year that would surprise her but a change in terrain. She sensed it immediately as

## SHE HAD MADE THIS NIGHTTIME TRIP EACH SPRING SINCE REACHING THE AGE OF TWO OR THREE, JUST AS HER ANCESTORS HAD DONE SINCE THE RETREAT OF THE LAST GLACIERS AND THE REESTABLISHMENT OF DECIDUOUS FORESTS 8.000 TO 9.000 YEARS AGO.

she made her way down what seemed to be an exposed ledge in her path.

I parked along the side of the newly constructed cul-de-sac and hurried out of the car. The weather was ideal for the spring breeding migration of amphibians, and, truth be told, I have never lost my wonder nor youthful exuberance for such adventures. I pulled on a light raincoat, thankful for the mild conditions as I anticipated a long night recording data.

Almost immediately, my eyes caught a glint of wet skin and a slight serpentine movement illuminated by streetlight. I watched as a Jefferson salamander, bluegray in coloration and approximately seven inches in length, descended from the newly installed curb onto the road and stop. She raised her head high in a distinctly "lizard-like" profile and remained motionless in that position for a full 12 minutes. I remember my first impression that night. I even recorded it in my field notes: "She knows something's different." Was it the lack of a forest canopy and the openness of this new expanse? Was it the change in substrate from forest litter to asphalt? Or perhaps it was the artificial light? When she resumed her movement she no longer followed a direct path, rather, as my field notes revealed, she "wandered on the road extensively until making her way up a driveway break along the curb."

In the end, she had spent more than a

half hour on the road and had traveled 45 feet perpendicular to the curb before reaching the entrance to the driveway. Once up this break in the curbing she continued on her way, angling directly toward the vernal pool. She made brief pauses here and there as she moved not through forest, but among bare, rocky soil that within a year would be newly seeded lawn. She eventually reached the narrow strip of uncut forest left as a buffer around the perimeter of the pool.

I followed her no more because I knew the remainder of the story. She would enter the pool, mate, and deposit a cluster of eggs encased in a gelatinous envelope, most likely attaching the cluster to a submerged branch. I returned to the road to collect data on other individuals that I knew were destined to make this same journey throughout the course of the night.

### 

I was working on a project evaluating the impact of different road curb designs on the movement of migrating amphibians. As a group, amphibians have been identified as among the most vulnerable organisms to environmental degradation, and they serve as excellent indicators for assessing overall environmental quality. Although amphibian species throughout the world face many challenges, ranging from disease and pollution to the impacts of introduced plants and animals on native populations, habitat loss remains the most serious challenge. This is certainly true here in New England. An estimated 45 to 50 percent of Connecticut's native amphibian species are vulnerable to habitat loss and other factors associated with poor landuse planning and development.

The amphibians I was watching that night were navigating for the first time through a 15-lot subdivision located along a cul-de-sac. The development was built in a mixed hemlock-deciduous forest. Although the developer had not cleared extensive areas of forest, the location of the road and several of the lots near the vernal pool presented a potential problem for the resident amphibian population. The vernal pool was a breeding habitat for a population of Jefferson salamanders, a state-listed Species of Special Concern. The pool also supported breeding populations of spotted salamanders, marbled salamanders, wood frogs, spring peepers, and gray tree frogs.

Although we tend to think of amphibians as denizens of aquatic environments, the fact is that 68 percent of the species found in Connecticut live mainly on land, and most of those live in forests. Yes, many of these species require wetlands for their reproductive life cycle, but they spend the majority of their lives living within the forest among a larger faunal community that includes small mammals, a host of invertebrates, and several reptiles.

Unfortunately, the development scenario that I described is common throughout Connecticut. Although we recognize their value and have in place regulations to protect wetlands and seasonal watercourses such as vernal pools, when it comes to site reviews, the ecological function of these wet areas, in relation to the larger forest ecosystem to which the are connected, is rarely considered. We look at the immediate wetland in question and a small area of upland surrounding it as the focus for our consideration, not the larger mosaic of forest, other adjacent wetlands, ledges, or other features that together support a healthy forest ecosystem.

Most of us are familiar with the saying, *Couldn't see the forest for the trees*, a common way of noting that people can be so focused on the immediate surroundings that they fail to see the bigger picture. We should aim to avoid this limited perspective, but we should also



## BETTER CURBS FOR FROGS AND SALAMANDERS

When an amphibian encounters a standard curb, such as the top drawing, on the way to a vernal pool or pond, it can't make it up. It will then crawl along the road at the curb's edge looking for a way over, often falling into a catch basin.

But it can make it up a Cape-Cod-style curb, bottom.

not fall victim to a case of *only seeing the forest for the trees in it.* We can and need to do a better job of planning development in a way that also conserves the health of Connecticut's precious forest ecosystems. These forests have played an important role in the history of Connecticut, and they remain an important resource for the future of Connecticut.

So what can be done? Towns can work to inventory and map forested tracts of land and their interconnected habitats, such as vernal pools. Towns can integrate this information into their plans for conservation and development to assist in guiding local land use planning. Municipal commissions and private developers can make use of various published "best development practices" that focus on developments associated with forest and wetland habitats to assist in site design and review.

For example, in the Jefferson salamander project I have described, the developer installed Cape Cod-style curbs along a section of the road where it crossed the migratory path of the salamanders. Cape Cod curbs are low and angled and enable salamanders to more easily climb over them instead of being turned back onto the road or diverted along the curbing.

It was just after dark and a light rain had begun to fall when she emerged from the pool to begin her return journey. Her body was noticeably thinner now with loose folds of skin along her sides as she moved. She had deposited her eggs in the pool, and if they survived a gauntlet of challenges that awaited them, one or more of her offspring would begin a similar journey in a few short months. Back to the forest she would identify as home.

Hank Gruner is the vice president of programs for the Connecticut Science Center and a herpetologist who continues to work with state agencies, environmental consultants, conservation organizations and private developers to support the conservation of Connecticut's amphibians, reptiles, and their habitats.

# BATS

## SUCCUMB TO A SILENT KILLER

White-nosed syndrome will affect insects and therefore farms and forests

## BY JENNY DICKSON

A silent killer has moved through the Northeast leaving an unprecedented conservation crisis in its wake. It appeared quietly and with precious little warning. It's one many people would overlook, wondering if it was really such a bad thing and not realizing how it affects each of us. What is this crisis? Something called white-nose syndrome (WNS), which affects bats. Though this problem has been given a name, the questions far outweigh answers.

First reported as an anecdotal observation from a single cave in 2006, New York wildlife biologists confirmed a white fungus on the noses, ears, and faces of a small number of bats during surveys conducted in 2007 of winter sleeping areas for bats (also called hibernaculas). Some dead bats were observed, and New York alerted neighboring states to check their hibernaculas for this odd fungus. That year, Connecticut checked all of the known bat-roosting places and did not find anything unusual. The Northeast region had no other reports. In 2007, New York biologists visited their hibernaculas again in 2008 and were shocked at what they found: thousands of affected bats, large numbers of dead and dying bats, and many more affected sites than in the previous year. Bat biologists throughout the Northeast quickly began comparing notes and monitoring the hibernaculas in their states.

Unfortunately, Vermont, Massachusetts, and Connecticut all confirmed the presence of this fungus in their hibernating bats. WNS has now spread from New England south to Tennessee and west to Oklahoma, north to two Canadian provinces and has recently been reported in Indiana.

This mysterious condition was named for the white fungus, *Geomyces destructans*, that is only visible on bats under the specific temperature and humidity conditions found in the hibernaculas. The fungus has served as an indicator for an affliction responsible for the deaths of millions of bats in the United States and Canada. Bats have been observed coming out of hibernation in the winter cold, emaciated, extremely dehydrated, and often with severely dry or damaged wings. These bats have made futile daytime attempts to find food and water. Few have survived. The fungus has been genetically linked to a fungus in Europe and may be the latest exotic invasive species to appear on our landscape.

Many more questions than answers surround WNS. Bats that have succumbed to WNS have been examined by wildlife pathologists in many states and at a variety of academic institutions and federal laboratories. Although the fungal bloom that appears on the faces of bats is the most obvious impact, it is now thought that fungal invasion of the wing tissue may actually trigger illness and ultimately death in affected bats. The fungus alters a bat's normal arousal patterns during hibernation, thus reducing stored fat reserves and triggering dehydration. Bat wings are amazing, not just for flight, but because they help regulate body temperature and blood pressure. They are also critical for water balance, circulation, and gas exchange. Anything that affects these critical functions can have dire consequences.





Above: Pennsylvania Game Commission; below and facing page: Jenny Dickson/Connecticut DEP Above, the solid shaded blocks on the map show confirmed cases of white-nose syndrome since 2007. Below, fungus covers a tri-colored bat. Facing page, an afflicted little brown bat.



We do not know how many bats live in Connecticut, but our summer population used to be hundreds of thousands before WNS. Our winter population is smaller, but in the hibernaculas, 90 to 100 percent of the bats are dying. The impacts observed in Connecticut have been consistent with those in other states in the region.

Connecticut's wintering bat populations are smaller than summer populations because many of the bats we see during a summer evening in Connecticut actually sleep the winter away in New York, Massachusetts, or Vermont, where there are more natural roosting areas. Finally, do bats go to New York, Massachusetts, and Vermont in the winter because there are more caves there, or for other reasons? Suitable caves is the key. They prefer sites that are very stable in temperature (usually in the 40s all winter) and with very specific humidity levels. In Connecticut, our limestone areas are mostly in the northwestern part of the state and that is typically where you find naturally occurring caves. Bats will use old mines and tunnels if they are large enough and the temperatures are stable.

All three states are reporting mortality rates similar to those seen in Connecticut. The numbers of bats dying are just staggering. In New York 100,000 would live in a single winter site, so when you translate that to summer numbers for all sites, it is big.

The ripple effect on our summer bat populations, though difficult to document, has been significant. Some recent population models suggest that the little brown bat, one of our most common and widespread bat species, could become extinct in our region within 15 years.

The complexity and scope of this conservation challenge is astounding, although the ecosystem impacts have yet to be fully assessed. As the single largest predator of night-flying insects, bats have a tremendous ecological impact. They consume vast numbers of insects that are agricultural pests or that are negatively affecting forest health, not to mention some of the insects that annoy people on warm summer evenings.

Bats are part of the integrated pest management plans that farmers and others use. With so many bats dying, those operations will probably buy and apply more pesticides. Nurseries and forestry operations also will struggle to find other ways to deal with larger volumes of insects. Struggling bats ultimately affect all forest products, from timber to maple syrup.

Biologists in Connecticut, along with other states in the Northeast, regularly collect data on bat hibernaculas, but we have begun devoting more time to monitoring summer roosts and reproductive success. The Department of Environmental Protection Wildlife Division is interested in getting reports of bats seen flying outside during cold winter months and in reports of summer roosting colonies. Connecticut will continue to work with other state wildlife agencies, the U.S. Fish and Wildlife Service, the U.S. Geological Survey, several major universities, and conservation organizations such as BCI and the Northeastern Cave Conservancy to solve the WNS mystery. The future of many of the bat species found in the Northeast and the health of the ecosystems they live in is at stake.

Jenny Dickson is a biologist with the Connecticut Department of Environmental Protection.

*Scraping pollen off a flower to test it for pesticides.* Courtesy of Kim Stoner

## BIOLOGISTS TRY TO PINPOINT WHAT KILLS BEES

Experiments look at pesticides in pollen

## BY CHRISTINE WOODSIDE

he mysterious deaths of bees in many states over the past several seasons have worried beekeepers and those who rely on them. Of all the flying insects that pollinate plants, the most important pollinators for food crops are bees. Beekeepers travel around with their hives every spring helping orchards and vegetable operations. When bees die, it means they are coming in contact with something lethal. Do they come in contact with their killers on the plants and trees they pollinate? Is it in the air?

Kim Stoner, a biologist at the Connecticut Agricultural Experiment Station, is working on four studies that, in concert with others, may be able to put together the pieces of the puzzle that likely



Biologists have previously identified a fungus *Nosema ceranea* that has been found in dead bees. But did this kill them, or did some other stressor make them vulnerable to it? Working with a chemist, Brian D. Eitzer, Dr. Stoner is collecting bags of pollen that rubs off bees' bodies in a simple mesh-and-wood pollen trap. Dr. Eitzer tests the pollen for chemicals, finding low levels of many different pesticides, with occasional spikes in amounts, but it does not seem that the levels are high enough to kill the bees, Dr. Stoner said.

A second project goes back to the plants the bees have pollinated. Today farmers often use systemic insecticides, that is, chemicals that work within the plant to kill the insects that eat the plants. "I was interested in the question: when we have systemic insecticides, to what extent do they get into the pollen?" she said. She applied one common insecticide from the group neonicotonoids (related to nicotine), and has found that the chemicals do move into the pollen, but even at high levels, it seems that they alone aren't able to kill the bees.

Dr. Stoner is starting a project looking at other species of bees. There are 400 species of bee in New England. It seems impossible that so many live here, but bumblebees, sweat bees, and others are everywhere. (Wasps such as yellow jackets do not pollinate plants and are not bees.) She is studying honeybees and bumblebees that pollinate squash and pumpkins.

In a more extensive project, she is looking at nesting habits. Squash bees, for instance, nest in the ground; they have been around for hundreds of years, migrating to New England with Native Americans.

The fourth project Dr. Stoner is working on now is a study of flowering plants on vegetable farms, especially cut flowers, herbs, and cover crops.

Dr. Stoner is very busy, but she is studying only a few aspects of the big mystery. This winter,



Jim Cane/USDA A squash bee extends its tongue to collect pollen from the squash flower:



the National Academies of Science published studies showing bumblebees have declined significantly in the United States, Europe, and China. Some species are close to extinct. A colleague of Dr. Stoner's is working with a species of bumblebee that pollinates cranberries in Massachusetts. It was very common until recently; now almost none can be found. Among the theories of what is killing these bees are a discovered pathogen, *Nosema bombi*, and loss of habitat.

These latest problems are part of what is a terrible history of serious problems for bees that started in the 1980s. Remember the parasitic mites that had arrived in this country from abroad? Beekeepers still have to manage for these varroa mites, Dr. Stoner said. The mites suck bees' blood and spread viruses within the hive. Colony collapse disorder is a specific term referring to the disappearance of the adult worker bees; many people use this term more broadly. What's going on there researchers still don't fully understand. Bumblebees, meanwhile, have been struggling for at least 15 years in New England and the Midwest. In Illinois, scientists have been studying their struggles since the 1950s and have concluded that habitat loss is one problem.

Not a cheerful subject, but Dr. Stoner and her colleagues are determined to learn more as the growing season gets underway, as more bees fly into their pollen traps, and squash begin to flower, providing more samples to study in her lab.

Christine Woodside is the editor of Connecticut Woodlands.

This simple trap, made of metal screening and a wooden frame, scrapes pollen off bees as they crawl through it to the hive. Brian D. Eitzer

## FOR MORE INFORMATION

- National Research Council published a report in January 2010 about colony collapse disorder. See www.fas.org/sgp/ crs/misc/RL33938.pdf
- pollinator.org offers much background about bees.
- www.extension.org From this site, which combines research from extension services around the United States, search on bees or pollinators for articles.

## **POLLEN IS NOT ALL THE SAME**

Six samples gathered at two different places on six different days show that pollen is a product of its particular flower and time. BRIAN D. EITZER



Location A July 13



Location A July 31



Location A August 21



Location B May 22



Location B September 18



Location C September 9



# AS SHRUBBY FIELDS DISAPPEAR, TWO BIRD SPECIES STRUGGLE

The future of blue-winged and golden-winged warblers in Connecticut

Blue-wing warbler, above, and golden-wing warbler, right. Drawings by Paul Fusco/ CT DEP-Wildlife.

## BY ROBERT ASKINS

ongbirds are conspicuous and relatively easy to count during the breeding season when males defend their territories by singing loudly. Major environmental Uchanges are therefore often first detected from surveys of songbird populations. When a particular bird species shows a long-term population decline, this may signal a major change in its preferred habitat. For migratory birds, this change may be occurring in either the breeding habitat in Connecticut or in the winter habitat in Mexico, Central America, or some other area in the tropics. Particular species may also decline because of the spread of disease or a decline in their preferred prey, so decreasing numbers of one species are difficult to interpret without intensive study. However, when a large number of species with similar nesting habitats decline in Connecticut, the evidence of widespread environmental changes across the state becomes more compelling.

Many of the songbirds that have declined in Connecticut in the past few decades are associated with open habitats such as farmland, old fields, pastures, and meadows. The decline of bobolinks and other previously common grassland birds is well known, but other open-country species are also in trouble. Species that depend on shrubby fields and thickets are becoming increasingly hard to find in the region as their habitats grow up into forest or are subdivided for housing. Two of these "shrubland species," the blue-winged warbler and the golden-winged warbler, are listed as high-priority species for conservation in Connecticut.

Brown thrashers, Eastern meadowlarks, and many other open-country species were present in Connecticut at the time of the earliest ornithological records and were probably nesting in the fallow fields of Pequot and Mohegan farmers before the first English settlement. This is not true for the blue-winged and golden-winged warblers, however. Both of these warblers are relative newcomers to the state, arriving in the late 1800s. A list of Connecticut birds published by J. A. Linsley in 1843 describes the golden-winged warbler as a rare migrant and doesn't even mention the blue-winged warbler. Blue-winged warblers were probably originally found only west of the Appalachian Mountains, but they colonized the Delaware Valley in Pennsylvania and the Hudson Valley of New York sometime during the 1800s. By the 1870s, blue-winged warblers were common in Old Saybrook but rare in other parts of the state. Golden-wings colonized isolated sites in Portland and New Britain in the 1880s and 1890s, when bluewings were concentrated farther south, along the shore of Long Island Sound.

Golden-winged warblers became common in some localities away from the coast, but these populations didn't last long. Golden-wings were consistently replaced

by blue-wings as the latter expanded their range northward along the Connecticut River Valley and then east and west to all parts of the state. Golden-wings may decline because of hybridization or competition with blue-wings, or simply because the open habitat preferred by golden-wings normally changes as trees mature and the vegetation becomes more dense, resulting in a habitat that is more suitable for blue-wings. Whatever factor or combination of factors drives the change, blue-wings consistently replaced golden-wings within 50 years of the appearance of blue-wings at a particular locality. Breeding golden-wings are now restricted to a few sites in the northwest hills of Litchfield County.

The golden-winged warbler is listed as an endangered species in Connecticut, and some researchers have recommended controlling blue-wing populations in the remaining sites occupied by golden-wings to protect golden-wings from hybridization and competition. It is unclear whether this would help save these relict populations, however, particularly if the habitat is not maintained in the open, almost treeless condition needed by golden-wings. Also, bluewings have shown such steady population declines in the northeastern United States

that conservationists are also concerned about their future as well. The blue-winged warbler is included on the 2002 Audubon Watchlist of species that are in trouble in North America, so eradicating blue-wings to protect golden-wings would be controversial. Probably the best approach to saving golden-winged warblers in Connecticut is to restore and expand breeding habitat in and around the known breeding sites. The basic requirements of this species are well known from the research of John Confer and others. Golden-wing warblers need relatively large openings (larger than 10 acres) with few trees and a mix of herbaceous ground cover (often including grassy areas) and dense, low shrubs. Golden-wing territories typically include some forest edge. Dr. Confer recommends 25- to 100-acre patches of habitat that are kept open by burning every 40 years. Other declining species such as the field sparrow would also benefit from these openings. If the populations at these sites disappear despite efforts at habitat management, then it is probably best to invest in management of this species north of the current range of blue-winged warbler, in southern Ontario and Québec and northern

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## **BIRDS STRUGGLE**

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Wisconsin and Minnesota, regions where golden-wing populations are stable or increasing.

Conservation organizations and agencies in Connecticut may actually have a greater responsibility for ensuring the future of blue-winged warblers because it is estimated that 10 percent of the global population of this species nests in the state. Consequently, Partners-in-Flight (an international organization promoting conservation of migratory birds in the Western Hemisphere) lists the blue-winged warbler as a high priority species for conservation in Connecticut. Blue-wings are still widespread and fairly common in the state, but data from 18 breeding bird survey routes in Connecticut indicate that they declined at a rate of 3.5 percent per year between 1966 and 2007. To halt this decline, we will need to maintain the early successional habitat that they need for nesting.

Like golden-wings, blue-wings do well in forest openings with low herbaceous and shrub cover, but they tolerate a wider range of conditions than golden-wings do. Mr. Confer showed that blue-wings nest in areas with denser tree cover than golden-wings do. However, Benjamin Zuckerberg, Leah Novak, and I found that blue-wings are absent from clear-cuts once the tree canopy begins to close. In our sample of 34 clear-cuts in Connecticut state forests, we found that blue-wings were found at nearly all sites except those where the average vegetation height exceeded 21 feet, at which point the tree canopy begins to close and woodland birds such as red-eyed vireo and wood thrush began to set up territories. In southeastern Connecticut, the canopy height typically reaches this height after 8 to 10 years, so clear-cuts are only used by blue-wings for a short period between the 2nd and 10th years following timber harvesting. Clear-cuts support populations of blue-wings, but they provide ephemeral habitat that must constantly be replenished. Also, we found relatively low reproductive success for blue-wings in clear-cuts, primarily because many males were unmated. This conclusion is based on work during only two field seasons, however, so reproductive success should be studied over a longer period in additional clear-cuts.

One of the key questions we wanted to answer by studying a large number of clear-cuts is whether blue-wings require relatively large forest openings. If this were the case, then the recent shift to creating only small clear-cuts (usually 10 acres or less) in Connecticut state forests could be a problem for this species. However, we found that the density and reproduc-



Courtesy of Robert Askins

Above and below: Robert Askins's students have found healthy populations of shrubland birds like blue-winged warblers in the cleared areas under electric power lines.

tive success did not differ for small and large openings over the range of sizes we surveyed (1.5 to 53 acres). In contrast, several studies show that extremely small openings created by selective cutting of single trees or small groups of trees do not provide habitat for blue-wings. The opening must be at least large enough to accommodate blue-wing breeding territories, which have a minimum area of 0.75 acres.

Forest openings have been managed primarily for biological diversity in some natural areas in Connecticut. For example, fields have been restored to provide habitat for blue-winged warblers and other early successional species of plants and animals at Audubon Connecticut's Bent of the River Preserve in Southbury. Between 2004 and 2008, Christy Melhart (who was working on her doctorate at the University of Arkansas) found high nest success for blue-winged warblers and other species of early successional birds in these fields. This indicates that good nesting habitat for this species can be restored and maintained.

Continual maintenance of shrubby openings is an expensive proposition, however, because it requires periodic burning, mowing, brush-hogging, or selective removal of trees and tallgrowing shrubs. Selective removal of trees by precise application of herbicides to single plants has been perfected by Northeast Utilities and other utility companies in the northeastern United States to maintain low vegetation under power lines along transmission rights-of-way. This method was originally



developed by William Niering and other plant ecologists as an alternative to indiscriminant broadcast spraying of herbicide over an entire power-line corridor. The result is a relatively stable shrubland that only needs to be maintained every few years. Fortuitously, this creates habitat for a wide variety of open-country species that have disappeared from much of the rest of the state. My students and I have surveyed birds along power-line corridors throughout southeastern Connecticut, and we've found high densities of several species of shrubland birds, including blue-winged warblers.

Both the blue-winged warbler and the golden-winged warbler probably moved into Connecticut because the land was cleared and then abandoned, resulting in numerous scrubby old fields. A legitimate question is whether we should be concerned about the decline of these species as the land reverts from artificial old fields to more natural forest cover. These species have probably moved within and among regions throughout their history, taking advantages of early successional habitats following glacial retreat, major fires, and hurricanes. There is no original "homeland" for these species that provides an obvious focus for conservation. Instead, we need to protect them where we find them, and right now, the bluewinged warbler is particularly common in Connecticut.

Reprinted with modifications from an article in Connecticut State of the Birds 2008, which was published by Connecticut Audubon Society. Robert Askins is a biology professor and expert on grassland and shrubland birds at Connecticut College.

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Senior Staff: Dan Peracchio, Phil Caspar, Mark Kasinskas Thomas Walicki and Michael Ferrucci few years ago, I was at a state boat launch on Lake Zoar in Southbury when a motorboat from the Connecticut Agricultural Experiment Station's invasive aquatic plant survey pulled up to the dock. I asked the two staff members—naively, as I later learned—what actions they were taking to eradicate invasive plants.

"We can't eradicate invasives," one of them said. "The best we can do is manage them."

The implications of that struck me. Managing nonnative invasive plants means a neverending struggle to prevent them from overwhelming native species. According to the New England Invasive Plant Center, the spread of invasives is the second-greatest threat to biological diversity and ecosystem function in the United States, after habitat loss.

Besides battling existing invasives such as phragmites and multiflora rose, plant experts are now also using a preemptive approach called early detection/rapid response against new invaders. This method incorporates the following:



BY DIANE FRIEND EDWARDS

Agricultural scientist Gregory Bugbee and his assistant, Mieke Schuyler, from the Connecticut Agricultural Experiment Station look for invasive plants on Lake Zoar in Southbury.

# MAKING PREEMPTIVE STRIKES AGAINST NEW PLANT INVADERS

Scientists are using an approach called early detection/rapid response

**Early detection**, reporting of sightings, and properly identifying them. Many invasives have non-invasive look-alikes.

► *Rapid assessment* of the reach of the invasive, and how to respond to it. Sometimes biologists assess a potential takeover of a plant before it has shown up.

► *Rapid response* to contain or, ideally, eradicate the new invasive.

Both federal and state invasive-plant management plans encourage the use of early detection/rapid response "because it seems to be the best way to prevent new populations from becoming established," said Donna Ellis, a senior extension educator in plant sciences at the University of Connecticut and co-chair of the Connecticut Invasive Plant Working Group.

It's "like treating cancer at stage one rather than stage four, when you can only hope to control it, not cure it," said Melissa Almendinger, executive director of the New Jersey Invasive Species Strike Team, who was one of the presenters at a symposium the Connecticut invasives group held in October. "It's certainly much easier to eradicate one plant than a thousand. But it's a much harder sell. People tell us, 'We're spending all our resources on barberry. We don't have the time or money to learn about these new invasives.' But it might take only an hour now to get ride of an emerging problem. If you wait five years, you'll have a bigger plant problem."

"Where we ought to be putting our money is in early detection and rapid response. If we react early, it costs less and has fewer environ-

mental repercussions," Les Mehrhoff said, speaking at the Connecticut invasives symposium. "We need to keep one eye on the established populations and the other on newly emerging, or possible, invasives."

Mr. Mehrhoff was the director of the Invasive Plant Atlas of New England before he died in December.

### Connecticut's Four "Most Wanted"

Connecticut is watching for four particular plant species, said Logan Senack, Connecticut invasive plant coordinator, who works under a cooperative agreement between University of Connecticut and the state Department of Environmental Protection. The "most wanted" plants are

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## **PREEMPTIVE STRIKES**

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► **Hydrilla** (*Hydrilla verticillata*)—a submerged, aquatic herb that forms dense mats that can shade and crowd out native vegetation

**Kudzu** (*Pueraria montana var. lobat*a)—a rapidly growing vine that can kill native plants by smothering or girdling them; its weight can even topple trees

► Water chestnut (*Trapa natans*)—a floating aquatic plant that has little nutritional value for wildlife and can impede fishing, swimming, and boating

▶ **Mile-a-minute vine** (*Polygonum perfoliatum*)—a rapidly growing vine that can outcompete or damage native plants

These 4 are among 96 plants on the Connecticut Invasive Plants list, which is published and periodically updated by the Connecticut Invasive Plants Council, a group formed by the state legislature. Under state law, most of the listed plants are banned from being moved, sold, purchased, transplanted, cultivated, or distributed in Connecticut.

Of the four high-priority plants, mile-a-minute vine is the most widespread here, Mr. Senack said. The state has created a Web site just for this plant (www.hort.uconn.edu/mam). The site has identification information, photos of the vine as well as similar species with which it might be confused, maps showing its distribution in Connecticut, control options and an online reporting form.

Mr. Senack said he is in the process of setting up a database to track plants that can easily be controlled and are not widespread (yet). He said that this database could be online later this year.

Anyone who suspects they have found one of the four high-priority plants is urged to report it to the state (see sidebar). If you find a suspicious plant, "it's best to confirm the identification," said Ms. Ellis. She recommends taking a photo and sending it to her (donna. ellis@uconn.edu) or Mr. Senack (logan.senack@uconn.edu). Staffers from the DEP or Agricultural Experiment Station would probably go visit the site.

Various state agencies, often working with federal agencies, towns, land trusts and other property owners, have already begun using Early Detection/Rapid Response strategies against the four plants. For example, last year the DEP provided Supplemental Environmental Project funds to the towns of New Milford and Newtown for the removal of mile-a-minute vine. The DEP and UConn conducted a hydrilla control project on the Silvermine River in Norwalk. In addition, the DEP worked with the U.S. Fish and Wildlife Service to remove water chestnut from parts of the Connecticut River and waters flowing into it, including the Hockanum River, and, in the western part of the state, from the confluence of the Still River and Lake Lillinonah.

### How to Report Sitings of High-Priority Invasive Plants

To report mile-a-minute vine, go to www.hort.uconn.edu/mam. Report hydrilla, kudzu, and water chestnut sitings by e-mail to reportinvasives@uconn.edu. For any of the plants, you can call DEP's Donna Ellis at 860-486-6448 or Logan Senack at 860-208-3900.

*From top, mile-a-minute vine, water chestnut, kudzu, and hydrilla.* Top photo by Deidre Moore; water chestnut by Martha Balfour, Courtesy of University of Connecticut; bottom two photos by James H. Miller, USDA Forest Service, Bugwood.org



## **RESOURCES FOR MORE INFORMATION**

Good sources of information about invasive plants and Early Detection/Rapid Response include the following:

▶ Invasive Plant Atlas of New England, or IPANE (http://nbii-nin.ciesin. columbia.edu/ipane), a comprehensive database of invasive and potentially invasive plants.

► Connecticut Invasive Plant Working Group (CIPWG) (www.hort.uconn. edu/cipwg) is an ad-hoc group of government agency staff, researchers, nursery growers, educators, master gardeners, and interested citizens who share information on invasive plants and host biennial invasive plant symposia.

► Connecticut Invasive Plants Council (www.hort.uconn.edu/cipwg/ ipc.html) is the legislatively created body that, among other things, publishes the Connecticut Invasive Species List.

► Connecticut Agricultural Experiment Station (www.ct.gov/caes) has an invasive aquatic plant program and has published "A Guide to Invasive Aquatic Plants of Connecticut" (www.ct.gov/caes/lib/caes/Aquatics\_Guide.pdf). CAES staff members also conduct workshops for interested groups to increase the likelihood that new invasives will be caught early; call or e-mail Gregory Bugbee at 203-974-8512 or gregory.bugbee@ ct.gov to arrange a group workshop.

▶ New England Invasive Plant Center (www.invasivecenter.uconn.edu) is a partnership among UConn, the University of Vermont, and the University of Maine to develop new technologies to address invasive plant problems.

► National Invasive Species Council (www.invasivespecies.gov) ensures that federal programs and activities to prevent and control invasive species are coordinated, effective, and efficient.

Diane Friend Edwards is a freelance writer, nature photographer, and lifelong lover of the outdoors. She lives in Thomaston with her husband, Paul.

## LES MEHRHOFF, 1950-2010

Leslie J. Mehrhoff, a leader in invasive plant documentation in Connecticut, died suddenly at the age of 60 at home in Willington on December 22.

Born March 16th, 1950, in Morris Plains, New Jersey, to Leslie and Jessie Mehrhoff, he leaves behind his beloved wife, Olga; daughter, Jessie; and field-dog, Moxie.

Dr. Mehrhoff received his bachelor of science degree from New England College in Henniker, New Hampshire, and his master's and doctorate degrees from the University of Connecticut in Storrs. Before retiring in July 2009, Dr. Mehrhoff worked for the Department of Ecology and Evolutionary Biology at UConn as the curator of the George Safford Torrey Herbarium.

A naturalist, he sought involvement in organizations including, but not limited to, the Connecticut Botanical Society, New England Wildflower Society, and the Torrey Botanical Club. He also participated in various committees such as the Arnold Arboretum at Harvard University, Connecticut chapter of the Nature Conservancy, and the Connecticut Invasive Plant Working Group and served as one of the project managers of the Invasive Plant Atlas of New England.



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## LISTEN WHILE YOU WALK: THE PEEPING, QUACKING, TWANGING, AND CREAKING OF FROGS AND TOADS



## BY LESLIE LEWIS

he traditional harbingers of spring, for me, are not so much the robins, but the peepers. I know that the season is turning when that evening chorus starts. One or two singers begin, and the whole congregation follows. Peepers are only one of several varieties of frog and toad that serenade us. Keep your ears open and you will hear the others, too.

Walking through the woods in spring may take you near vernal pools, which are depressions filled with melting snow and rain. Until they disappear with warmer and drier weather, vernal pools provide critical breeding habitat for many amphibians. When approaching these wet spots, you may hear what sounds like the quacking of a band of drunken ducks. These are wood frogs looking for mates after the long winter. The loud, repetitive trilling that seems to emanate from thin air is the call of the gray tree frogs, tiny critters that blend in perfectly with their lichen-covered perches.

As the days lengthen and the ponds warm up, other voices will chime in. That twanging like a worn banjo string are the calls of green frogs, which are common throughout the state. The little pond near my house often reminds me of the old "Dueling BanWalkCT. the path to health and happiness







Terri Peters (top left), all others by Jay Kaplan/Roaring Brook Nature Center

Clockwise from top: Green frog, wood frog, spring peeper, American toad.

## Getting to Know Our Frogs and Toads

To learn about Connecticut frogs, toads, and amphibians, visit one of the many great nature centers in the state, such as Roaring Brook Nature Center in Canton (which features amphibian exhibits and a vernal pool adjacent to its building). You can also go online. The Yale Peabody Museum has an excellent Web page, www.peabody.yale.edu/collections/vz/her guide.html, where you can view and listen to frogs and toads. You can also visit the Connecticut Department of Environmental Protection's Web site, www.ct.gov/dep, and search "frogs" to learn more. Identiflyer (www.identiflyer.com) is a great portable sound device that you can take on the trail. Although it primarily focuses on bird songs, it does have a sound card for frogs.

## **Frog Fridays**

Beginning April 8, 2011, Everyone Outside (www.EveryoneOutside.org) will offer a series, Frog Fridays, in the Middletown area. On select Fridays and Saturdays, vernal pools will become the observation ground. You can observe the cycle of wood frogs throughout the spring as first the adults "quack," then eggs are laid in the water, and finally tadpoles grow and mature into frogs.

jos" song from the movie Deliverance. Each frog seems to try to echo and then out-croak his rivals. In the evening, the bullfrogs in my neighbor's pond sound like chain saws starting up. Once in a while, I hear what seems like a creaking door. This is the pickerel frog's song.

The warmest weather seems to bring on more trilling, this time from the American toad. Higher pitched and longer in duration than that of the tree frog, the toad's call combines with the cicada for a classic summer song. To hear the frogs and toads for yourself, consider joining WalkCT family guide Lucy Meigs for a frog adventure—check www. walkct.org for more details—or take your own springtime walk. Our world would be a poorer place without these distinctive voices.

Leslie Lewis of Lyme is the director of the WalkCT program of the Connecticut Forest & Park Association.

## **RECIPE FOR NEW ENGLAND AGRICULTURE**

## BY JEAN CRUM JONES

he American food system is in trouble. Most farms use intensive chemical methods. Our dependence on petroleum to produce and transport our crops is a time bomb waiting to explode. We eat too many overprocessed foods. We are afraid about food safety because of pesticides, antibiotics, and contamination. Development continues to close farms and cover productive croplands with asphalt.

After World War II, America meant well when it tried to make farming more efficient and affordable. These methods have gone wildly awry. The industrialized agribusiness produces cheap commodities around the world but, sadly, America has become a nation of poorly nourished citizens with many overweight people, hungry people, and a population that seems to have lost the ability to grow, preserve, and cook food.

The new local food movement makes clear that it is time to renew our agricultural system. The Northeast is leading the way with a new approach to regional cooperation and self-sufficiency.

As a very amateur historian, I think that we are living through a time akin to last century's New England forest conservation movement. The public was alarmed at how much of our native forests had been destroyed. One of the citizens' responses to that crisis was the formation of the Connecticut Forestry Association, the mother organization of Connecticut Forest & Park Association. Nationally, Congress passed the Weeks Act in 1911, which led to the creation of our system of national forests.

Now, all is not well with our New England agricultural landscape. Profound changes threaten it—climate aberrations, fragmented land use, and the slow nibbling away of crop lands as invasive species take strong hold. Farmlands have shrunk to less than 7 percent of the region's land base. In this region where fruits and vegetables grow so well, less than 10 percent of the produce New Englanders eat grew here.

The New England Governors' Blue-Ribbon Commission on Land Conservation recommended that the six states form a New England Farm and Food Security Initiative. The agricultural officers, universities, conservation groups, and farmers of the New England states are working on the initiative. The commission also recommended in its 2010 report protecting more farmland so that more food for schools and institutions can be grown here. The report called for local facilities to slaughter and process local meat, training for a new generation of farmers, and new policies to make it possible for New England dairy farmers —the anchor tenant of our region's farmland—to make a living wage.

New England residents are demanding more locally grown food and farm products. This has fueled new market opportunities for the region's 33,000 farms and has created a significant increase in new farm businesses. Direct-to-consumer sales in the New England region increased 62 percent from 2002 to 2007, helping to increase by 30 percent the total market value of agricultural products sold.

Today's New England farmers are striving for the highest possible levels of food production in a diverse number of categories to meet consumer demands. Although New England depends on outside regions for most of its food supplies, the fact that New England food producers have consistently met consumer demand for regional foods and products is very encouraging. A New England land ethic runs deep in the caretakers of our region's farms. The nature of New England's small-scale agriculture has made their farms multifunctional and highly productive. And New England farmers are fortunate to be supported by citizens and communities that work to maintain the quality of the agricultural landscape and economy. These facts bode well for a nutritionally secure food future for New England, though there is much to learn and do cooperatively to create a resilient, secure, and healthy food system for all in this region during the next decades.

The choices each of us make will make a difference. If we want a regional food supply, we must support New England farmers now with our dollars, our outspoken words, and our eating activities.

### LEARN MORE ABOUT NEW ENGLAND FOOD

- Blue Ribbon Commission on Land Conservation 2010 Report to the Governors: www.ct.gov/dep/lib/ dep/forestry/2010\_\_clc\_rpt-final.pdf
- Northeast Sustainable Agriculture Working Group: www.NEFOOD.org

### SUPPORT LOCAL FOOD AND EAT BETTER

- Subscribe to a "community supported agriculture" farm. A CSA provides produce weekly for a fee. You support the farmer and get to eat what's in season for the months of the growing season.
- Plant a garden.
- Visit a farmer's market.
- Pick your own fruits and vegetables at a Connecticut farm.
- Learn how to preserve produce for winter.
- Eat at restaurants that support local farmers.
- Enjoy your food. Don't forget about your local produce when Friday night comes and you're thinking of buying a frozen dinner. Cook fresh local produce simply for your family and friends.

Jean Crum Jones is a registered dietitian and, with her family, runs the Jones Family Farms in Shelton.

## **BOOK REVIEWS**

## A NEW COLLECTION BY A MASTER OF PLACE-BASED THINKING

## A CONSERVATIONIST MANIFESTO,

by Scott Russell Sanders. Bloomington: Indiana University Press, 2009. 238 pages.

## BY DAVID K. LEFF

seek to show," Scott Russell Sanders wrote about this book in a note posted on Amazon, "that the practice of conservation is our wisest and surest way of caring for our neighbors, for this marvelous planet, and for future generations." A Conservationist Manifesto covers this ground in the best and broadest sense. Of course, it advocates for land protection and the maintenance and restoration of ecological function in our landscape, but it also urges Thoreauvian simplicity, participation in community life, connection with and healing of the built environment, and caring for other people and creatures. This holistic conservation ethic demands deep commitment, not just a few hours in the woods, sitting on the land trust board, or hoeing our organic gardens.

The book's title may suggest a cohesive, rousing call to action with a strategy to attain harmony between our needs and nature, but this title actually came from one of the 15 essays originally published in a diverse array of journals, magazines, and anthologies. Divided into three sections that deal with worldwide environmental issues, places close to home, and hopes for the future, the pieces are bound by theme but do not appear tied together by design. At worst, Dr. Sanders sometimes repeats himself. At best, his collection requires readers to sew together a whole.

Dr. Sanders is an English professor at Indiana University Bloomington and the author of some 20 books, both fiction and nonfiction. Having read three books of his essays and a smattering of articles in periodicals, I find him one of the most compelling writers about the relationship of people to the places where they live. He is erudite, a fine prose stylist, and clearly cares deeply about the earth and people.

Unfortunately, in this volume his critiques of consumer culture are particularly shrill and say nothing he and others have not already covered. One might well question whether we need to be told that the "American way of life . . . is an infantile dream of endless consumption, endless novelty, and endless play." Regardless of where one stands on such a question, the language is incendiary and does nothing to advance his cause.

As real and serious as they are, sometimes Dr. Sanders' discussions of global climate change and other significant environmental issues leaves a "sky is falling" impression that may turn off, rather than engage those not yet convinced. Descriptions of his low-impact lifestyle, riding his bicycle, and joining the food co-op sometimes risk what Mark Twain called "the annoyance of a good example."

But despite the book's faults, Dr. Sanders is right on in so many ways, often turning a phrase that touches a reader heart and soul. He hits home when he states, "What all of us long for . . . is to love the places in which we live and to live in places worthy of love." He captures the imagination when he observes, "As I walk, spider webs catch on my forehead like stray thoughts."

Original, powerful, beautiful, and worth the price of the book is one of the last essays, a contemplative piece entitled "Stillness." Set in his newly built writing hut at the edge of the woods, it is an elegiac, moving, and deeply personal rumination on the need to cultivate moments of quiet in which



the Junassic World Rate: C. Mitheat

our bodies can rest as our unleashed minds wander without interruption. A kind of Sabbath for the soul, it's about taking time for momentary, deliberate quelling of life's frenetic demands, not as an escape, but as a restorative technique fueling reengagement. "I want to carry back into my ordinary day," Dr. Sanders writes, "a sense of the stillness that gathers into the shape of a life, scatters into fragments, and then gathers again."

Rather than a manifesto, the title essay is an enumerated wish list of 40 suggestions for a sustainable world. It's a mixture of historical cautions, best management practices, moral imperatives, philosophical dispositions, and political advice. The list includes learning from indigenous people; drawing on the wisdom of religious communities; the need for "wonder, gratitude, reason and love;" working for long-term healing of land, people, and culture; slowing the growth of the human population; recognizing that all living things are interrelated; and giving children an ecological education. Not exactly a battle plan, but a delicious stew of thoughts.

Dr. Sanders stands among those writers (of whom Henry David Thoreau, John Muir, Aldo Leopold, and Rachel Carson are the giants) whose words have the power to inspire and rally multitudes to a conservation ethic. "Every community, every watershed needs people who feel responsible for that place," he writes, "who know its human and natural history, who speak resolutely on behalf of it." A Conservation Manifesto might not be a complete cookbook for an ecological way of life, but Dr. Sanders certainly offers some good recipes.

## FOSSIL GUIDEBOOK IS MORE THAN A HISTORY OF DINOSAUR STATE PARK

WINDOW INTO THE JURASSIC WORLD, by Nicholas G. McDonald. Rocky Hill, Connecticut: Friends of Dinosaur State Park and Arboretum, Inc., 2010. 106 pages.

## BY DAVID K. LEFF

he first dinosaur footprints ever described were found in the Connecticut Valley. No place on earth has a larger collection of tracks left by these ginormous, endlessly fascinating reptiles. The epicenter of Jurassic tread is Dinosaur State Park in Rocky Hill, where an aluminum geodesic dome protects some 600 tracks frozen in sandstone after being left in the soft sand of an ancient lakeshore 200 million years ago. Serving as a handbook for park visitors, this volume is also a springboard for more general exploration of the world of fossils and the age of dinosaurs.

Beautifully laid out and lavishly illustrated, the book also rewards a cover-to-cover read. Nicholas G. McDonald, a geology and biology instructor at Westminster School in Simsbury, vibrantly chronicles the creation of the Connecticut Valley, the lives of dinosaurs, the importance of fossils and the adventure of finding them, and the heroic efforts to protect and to preserve these fragile prehistoric records.

An excellent guide, the book will enrich even a casual visit to the Park. But it is much more. Mr. McDonald clearly and concisely describes the process of fossil creation and fossils' value in explaining the history of life on earth, including their importance in documenting extinctions. His account of complex geologic events is remarkably lucid. He provides insight into the continuing evolution of scientific thinking about fossils and earth history since the time teenager Pliny Moody uncovered the first slab of tracks in 1802 while plowing his family's South Hadley, Massachusetts farm.

No reader will again pass a Connecticut Valley sandstone outcrop without contemplating the possibility of finding tracks, fish scales, plant impressions, and bone fossils lying hidden in the layers. Whether it's Mr. Moody or bulldozer operator Edward McCarthy, who in 1966 had sense and curiosity enough to dismount his machine to look at some odd rocks at the site that would become the Park, fossil discovery is serendipitous and not exclusively the province of experts.

Mr. McDonald weaves an excellent story about efforts to create a park and preserve the trackway despite bureaucratic delays, budget woes, and technical failures such as the collapse of the original park building, a fabric bubble held up by air pressure. It's also a tale about the hard work and dedication of many people, but especially of Richard Kruger, a geologist who, over three decades, transformed the park from a rough construction site to a world class educational facility that includes an arboretum of plants reminiscent of early Jurassic forests.

*Window into the Jurassic World* will enable readers to see vastly more in even a cursory glance whenever they're in the Connecticut Valley. The book also provides a fuller appreciation of the significant role this small, seemingly ordinary patch of ground has played in our understanding of the planet's deep past.

David K. Leff is a writer, former Connecticut Department of Environmental Protection deputy commissioner, and a member of the Board of Directors of CFPA. Visit him at www.davidkleff.com.

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## **ON THE TRAILS**

## A NATIONAL SCENIC TRAIL FOR NEW ENGLAND COMMUNITIES

## BY CLARE CAIN

A sour first year of trail activities draws to a close, there is much to celebrate about the New England Trail and many volunteers and partners to thank. We made progress in every important trail category this year: reaching out to trail communities and businesses; involving more youth and families; welcoming users with new interpretive kiosks and a new online interactive map; partnering with landowners, communities, and conservation organizations to preserve the trail; and honoring all the volunteers who contribute to continually improving the trail experience. Thank you for journeying with us.

## The Trail Ahead

Our primary goal for 2011 is to provide the best possible experience for everyone on the New England Trail (NET). Getting to that goal in will include the following:

- ► Trail walks, trail building, and creative events for new trail users, volunteers, and the 39 NET communities in Connecticut and Massachusetts
- ► Improved outreach to the NET community, including the NET's more than 600 landowners
- Additional skills training opportunities for volunteers
- Completion of the first phase of the NET's trail mapping and management database
- ► Enhancement, preservation, and improved access to the NET.

## NET Stats for 2010

- ► Total trail length: 220 miles
- ▶ New/enhanced trail: 2.5 miles
- ▶ New connector trails: 1.5 miles



Cover of the report on the New England Trail, available at newenglandtrail.org.

- Enjoying the trail: 5 thru-hikers and countless others
- Caring for the trail: 225 volunteers
- ▶ Giving time to the trail: 9,124 volunteer hours
- ► Valuing volunteer time: \$184,761 worth
- Community partnerships: \$361,175 for support of trail land protection and maintenance

To see the 2010 Annual Accomplishments Report for the NET please visit www.newenglandtrail.org

Clare Cain is the trail stewardship director of the Connecticut Forest ぐ Park Association.





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## **OBITUARIES**



Christine Woodside Birge Dayton, right, with John Greacen, building a bog bridge in Pachaug State Forest in 1992.

## BIRGE DAYTON: BELOVED TRAIL BRIDGE DESIGNER AND WORKER

**D** irge L. Dayton, a longtime trail volunteer for the Connecticut Forest & Park Association, died January 15. He was 80 years old and had lived in Coventry. Mr. Dayton was highly respected within the CFPA trails community for his ability to design and build all manner of backcountry bridges and to teach others to do the same, all with great humor. For decades, he was ubiquitous at trail workshops and on CFPA trail crews both indoors and on the Blue-Blazed Hiking Trails. He clearly loved every minute of it.

He was born in Worcester, Massachusetts, in 1930 and worked for 37 years at Pratt & Whitney before retiring. He is survived by two daughters, Deborah Smith of Battle Creek, Michigan, and Linda Dayton of Coventry; his son, Robert Dayton of El Kart, Indiana; six grandchildren; and two great-grandchildren. A memorial service took place January 20.

> — Christine Woodside Sources: Death notices, CFPA

# DICK BLAKE: Longtime trails volunteer For CFPA



CFPA Archives Dick Blake at a CFPA meeting.

Richard Franklin Blake, a longtime trails volunteer volunteer, former chairman of the Connecticut Forest & Park Association Trail Committee, and CFPA Honorary Board Member, died January 23 in Milford at the age of 92. Mr. Blake was active on the trails until just months before his death.

Born in 1918 in Florida, he grew up a farm boy in Southville, Massachusetts. He earned a bachelor's degree in chemistry from the University of Massachusetts, a master's degree in education from Boston University, and a degree in administration from Fairfield University. He taught science, headed the science department, and was assistant superintendent during his 35-year career in the Stratford public schools.

He maintained trails for CFPA and became iconic within the association for his often-reprinted article in Connecticut Woodlands, "Painting Blazes: Goofs I Have Made." He also did much impor-

tant work for the Connecticut chapter of the Appalachian Mountain Club, the club that maintains the section of the Appalachian Trail in this state.

In 2005, the Appalachian Trail Conservancy named him a volunteer of the year for New England for his work coordinating volunteer work along the AT in Connecticut since the 1980s, as well as for leading the project to design and build the first segment of the AT that is accessible to people with disabilities and wheelchairs.

The idea to redo part of the trail came to Mr. Blake in the 1990s, when he was patrolling land owned by the National Park Service near Falls Village. As the volunteer overseer of about 7,000 acres adjacent to the trail, he knew the land well. Near the banks of the Housatonic River, he scrutinized an overgrown horse racetrack that was part of a fairground 100 years ago. Long ago, the forest grew up over it, but he could see that the oval still was level. It also was located near a road and parking lot. The result was a 1.1-mile loop that included part of the AT. One of the first people to use it was Mr. Blake's wife, Alice Gill Blake, who later in life had limited ability to walk and to whom Mr. Blake was devoted.

Travel, gardening and enjoying his grandchildren and great-grandchildren were some of his favorite pastimes. Mr. Blake is survived by his son, Bruce F. Blake of Milford; four grandchildren; and two greatgrandchildren. In addition to his wife, Mr. Blake was predeceased by their daughter, Susan Blake, and his sister, Eleanor Lutz. Mr. Blake's memorial service was on January 29 in Milford.

> - Christine Woodside Sources: Death notices, CFPA

For another obituary, please see page 19

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## BY DICK BLAKE

### Reprinted from a 1986 edition of Connecticut Woodlands.

I have had a rare opportunity for a trail maintainer. I started blazing trails before I knew anything about trail maintenance. I made almost every mistake possible and have learned to correct many of them. I should like to share some of these so that other trail maintainers might correct errors before painting them into a trail.



I thinned the paint quite a bit. This made it run into the crevices of the bark and made the paint go a lot further.

**Problem**: It also made the paint run down the crevices so that the blazes had small beards. The blazes also faded rapidly so I had the fun of painting them again the next season.

**Solution**: Do not thin the paint.

**2** I used a 2-inch brush so that I could make a neat 2-inch blaze in one easy stroke.

**Problem**: When one paints with a 2-inch brush it spreads to 3 inches with just a bit of pressure on the tree. Furthermore, since trees are curved, the brush hits in the middle first and the edges touched further down the tree, making an oval blaze.

**Solution**: Use a 1-inch or 1 1/2-inch brush.

**3** I am 6 feet tall so it was easy to place blazes 7 feet from the ground. This height made them easy to see from a distance and kept them above the undergrowth.

**Problem**: Many hikers are women, children, or little old men who get sore necks looking up. Furthermore, lots of hikers have to watch where they put their feet.

**Solution**: Put blazes at about eye level, a little lower on steep uphill slopes and a little higher on downhill slopes.

I found it very convenient to put blazes on both sides of a tree. I only needed to stop half as often, and the blazes were about the same distance apart from both directions.

**Problem:** A tree that is conspicuous going north is often screened by another tree or bend in the trail when going south. I have also realized that it is comforting to look back when in doubt and see the blaze for the other direction at some intermediate point. Furthermore, when a tree with two blazes falls, I have a double loss.

**Solution**: Paint the northerly blazes when going north and the southerly blazes when going south. Ditto for east and west.

**5** I put lots of blazes on the trail so that a beginner would not get lost. **Problem**: My trail looked like a picket fence.

**Solution**: Limit blazes so that you can see just one blaze ahead. When it is impossible to get off a trail, blazes are needed less often. In areas of turns, side trails, or other confusing places it is reassuring to see two blazes.

**6** I saved paint, left the woods looking more natural, and blazed the trail quickly by putting blazes only where they were really needed. **Problem**: My friends (both of them) told me that they followed my trail for quite a way but then lost it and had to find another way back. **Solution**: See number 5.

I put some blazes on the rocks and ledges under foot. These are good and permanent, and I could put the blaze right in the middle of the trail to avoid confusion.

**Problem**: Even the lightest snow hid these blazes completely. By the way, a bit of moisture on a paint blaze makes it as slippery as ice. (I have the bruises to prove it!)

Solution: Put blazes on vertical surfaces at about eye level.



**Problem**: Some hikers became confused when two trails crossed and the trail appeared to go in four directions. Some hikers were disappointed to end up on the opposite side of the forest from their car when they thought that they were on a loop trail.

**Solution**: Use different paints or distinctively different shapes for different trails. For access trails or short side trails, use the same blaze with a contrasting 1-inch dot in the center.

**9** One of my trails led to a spectacular waterfall deep in the forest. After arriving at the waterfall and enjoying it as long as he wished, the hiker was expected to return by the way he came.

**Problem**: Some hikers spent much time trying to find where the trail went from there. Some became frustrated and returned by the same trail. Some got lost!

**Solution**: Use three blazes, two above and one below, to mark the end of a trail.

**10.** Occasionally as I reblazed a trail, I became aware that there was a long distance between blazes and added one to improve hiker confidence.

**Problem**: Often, a few more steps made the next blaze obvious so I had two blazes in a very short distance.

**Solution**: Always walk until you find the next blaze and then go back if another blaze seems needed. Or, have a friend who will keep some distance ahead to identify blazes that will appear shortly.

Occasionally I found a better route and made relocations and covered up the old trail and blazes. It made me feel good to improve the trail.

**Problem**: Sometimes I came back and found that someone had reopened the old trail. They had seen an old blaze down in the woods and had "helpfully" cleared a way to it.

**Solution**: Eliminate all old blazes by scraping or by covering with a black-brown paint or flat black from a spray can.

12 I found it much easier to blaze a trail in the late fall or winter when I could see the trail direction for some distance.

**Problem**: In the late spring or summer many of the blazes that were so clear in the winter were completely hidden by leaves.

**Solution**: Check every trail in the late spring and replace hidden blazes with others in better locations or trim the brush to make all blazes visible.

I intend to continue maintaining trails and will undoubtedly make new goofs. Many who read this article maintain trails and have made clever and original goofs. If you share them and your solutions with me, I should be pleased to put them together and write a sequel to this list. Either way, we maintainers should keep on working for "the person who never made a mistake never did anything else either."



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