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Images on pages 28 and 30 of Vol. 120, No. 3 (Fall 2014) are courtesy of Jada Best.







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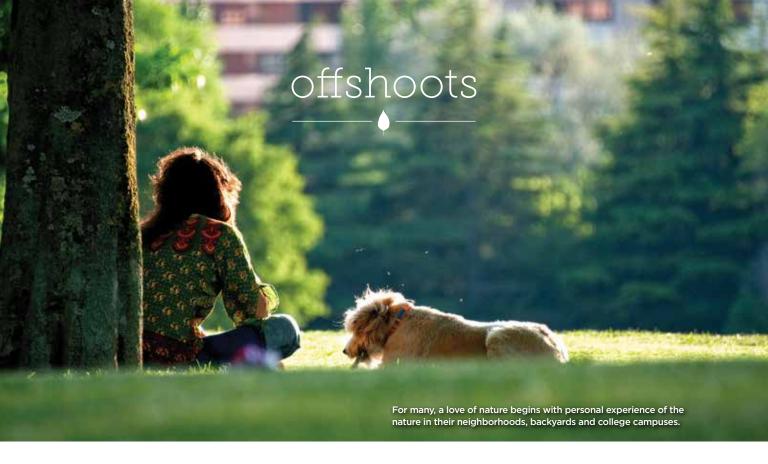
Bu Tate Williams How did Boston win its battle with Asian longhorned beetle, and will it stick?

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### **Connecting People to Forests**

BY SCOTT STEEN

"American Forests restores threatened forest ecosystems and inspires people to value and protect urban and wildland forests."



Our board of directors recently made an important change to American Forests' mission statement. Our old mission, "to protect and restore

forests, for the health of the planet and the good of its inhabitants," focused on our important work in the field. Our new mission, which appears above, changes the focus a bit and encompasses several other components of our work, including what is perhaps our greatest and most important challenge.

According to 2010 U.S. Census Bureau data, 80.7 percent of the U.S. population now lives in urban areas. With an increasing number of Americans having little exposure to the natural world, inspiring people to care about forests - particularly wildland forests

that seem worlds away from the reality of most city dwellers — is increasingly challenging. At the same time, it is also becoming increasingly more important.

Forests, of course, are a major source of fresh water and clean air, as well as the primary source of terrestrial biodiversity. They also provide a tremendous natural carbon sink,

removing CO, and other dangerous greenhouse gases from the atmosphere. But while these benefits are essential for life, they seem abstract, too big to relate to in a personal way. So how can we inspire people to value and protect forests if we can't make the connection to people's everyday lives?

Like many people, my connection to forests came by way of personal experi-

ence. During my college years, I spent countless hours hiking through the hundreds of acres of woods and trails that surrounded my small, New England college. During warmer weather, a rocky outcropping overlooking a woodland pond became one of my favorite spots to study. I loved the sensory explosion that these woods



American Forests hosts Walkabouts through urban forests, like this one in Central Park's North Woods, to help people discover nature in their city.



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> American Forests' mission is to restore threatened forest ecosystems and inspire people to value and protect urban and wildland forests.

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provided in autumn: the spectacular colors of mixed hardwoods, the crunch of dried leaves underfoot, the intensified smell of fall. I walked these woods in winter, followed the tracks of deer and fox and squirrels, filled with wonder by the glistening ice-coated branches and the depth of quiet. During this time, I learned to feel at home in the forest, discovering that these woods made me feel more alive, more attuned to my senses and more fully human than any other experience I had previously known.

What many of us have long known from personal experience is increasingly being proven by scientific research. A study released in late 2013 by the American Chemical Society showed that exposure to nature increased happiness



Forging a relationship with nature can be as simple as a day in the park.

and decreased mental illness. Previous studies have shown that spending time in nature or even imagining oneself in nature improves vitality, increases energy levels and strengthens one's immune system.

As we work to inspire people to value and protect our forests, creating ways for urban dwellers to have firsthand experiences with nature is an important part of the equation. We are pursuing this objective in a variety of ways. Last year, American Forests hosted more than 20 volunteer events across the country, held Walkabouts in the urban forests of major cities and introduced Forestscapes, expeditions to some of the most beautiful forest ecosystems on the continent.

In February, a group of American Forests' supporters will be heading to Yellowstone for a rare opportunity to see America's first national park in winter. We will head out into the wilderness in search of bison, elk, bighorn sheep, coyote and, of course, wolves. I have little doubt that the huge blue skies, the snow-covered forests and fields and remarkable, close encounters with wildlife will leave an indelible mark on the lives of those who travel with us. Even more important. we hope that those who participate will gain a profound understanding of both the importance and fragility of these irreplaceable ecosystems.

The problem with this is that we can't take everyone with us to Yellowstone. We can't bring everyone to a volunteer event or urban forest Walkabout. In fact, the best way for us to inspire the most people possible to value and protect urban and wildland forests, is to inspire those who already understand the importance of forests to share their love and knowledge. We need you to act as advocates, educators, and ambassadors. So take your kids camping, invite friends to go for a hike or just ask someone to go for a walk in a city park. Share your love of nature, because together, we really can make a difference.







### **ASK A CONSULTING ARBORIST**



### Cypress on Ice

Q: I am trying to plant a bald cypress — in Iceland! It may seem weird because it's typically a southern swamp plant, but it's actually not that cold here. Typical winter days are just a tad below freezing. It's very windy, but bald cypress are reported to be a wind-hardy tree. I have lots of swampy areas fed by persistent underground streams.

I read that the reason they don't naturally grow this far north is because their seedlings are prone to ice damage which doesn't hurt mature trees. Will my bald cypress grow here?

A: Bald cypress should be able to survive winters that only get down to 5 degrees. We have them here in Ohio and they do quite well. They are suitable for Plant Hardiness Zones four through 10. According to my research, Iceland's typical winter lows fall within this range, but you might want to check on this directly.

If you got these seedlings from a nursery in Iceland, I would assume they will grow there. If not, I would visit a nursery and ask a lot of questions! You might also drive around looking for other cypresses. If you see them, you should be assured that your trees will also do well.

Answered by Consulting Arborist Tom Mugridge of Cleveland Heights, Ohio; www.forestcitytree.com; (216) 381-1700

### Of Willows and Woodpeckers

Q: Our weeping willow has wood chips that are appearing from a branch on the ground. At first I thought it might be neighborhood boys, but they have been out of town. I don't see insect damage that is obvious and some chunks are as large as a footprint and an inch thick. Any ideas?

A: The damage you describe — large chips cut out of a branch to the point of a hollow being formed — is consistent with that of a pileated woodpecker working on a tree branch or trunk. To confirm this, you can search the Internet for pictures of hollows created by pileated woodpeckers to see if they match. You can also use a wildlife camera (with motion detector) to take photos of the location and see what wildlife is revealed.

Answered by Consulting Arborist John Harris of Hollywood, Fla.; www.landscapeeconomics.com; (954) 986-9405





### Leaves That Won't Leave

Q: The leaves on my Japanese maple here in Pennsylvania shriveled up by December, but have not fallen off the tree despite several winter snow

storms. Is this a problem for the health of my tree? How will the new leaves be able to bud in spring?

A: Some deciduous tree species are prone to retaining their leaves over winter even though they have withered and are no longer functioning. This naturally occurring phenomenon is called marcescense, and it can vary in extent from year to year. Most likely, nothing is wrong with your tree, and these leaves shouldn't inhibit new growth in the spring, as they typically fall out by then. However, one disadvantage of marcescence in the Pennsylvania region is that snow and ice can adhere to the additional surface area of the leaves, and the added weight can result in limb failure. If the tree is small enough, removing the leaves by hand in the fall or removing snow and ice loads from the branches after storms can reduce this risk.

Answered by Consulting Arborist Jon Schach of Harrisburg, Pa.; www.goodstreecare.com; (717) 564-1995

### **Blue Spruce Blues**

Q: I have big blue spruce trees at my home in Vermont that have been losing more and more needles on the lower branches over the last couple of years. Do you know of any solutions?



Blue spruce with Rhizosphaera

A: Over the past five or six years, I have seen a major outbreak of Rhizosphaera needle cast disease, and blue spruce seems to be the most susceptible. Rhizosphaera is a fungal pathogen that infects the newly emerging needles in early spring without showing any symptoms until late winter or early

spring, when the infected needles turn brown and drop from the tree, producing spores that infect the newly emerging needles, starting the cycle all over again. If the tree is not too severely defoliated it can be given preventative treatment, in the spring as the new needles are emerging, with an appropriately labeled fungicide according to label instructions. Expect this to be a long-term project; it will take several years of treatment before the tree looks full again.

Answered by Consulting Arborist Dennis Panu of Thompson, Conn.; www.DennisPanuArborist.com; (860) 923-3066

### Oak Soak

Q: We have the most beautiful grand old oak tree on our property in Los Angeles and are very worried about it because a number of leaves are turning brown. Do you think the drought is causing



The polyphagous shot hole borer is a member of the group of beetles commonly called ambrosia beetles.

this? If so, should we supplement with water?

A: I can't be certain what is causing your oak's leaves to turn brown, but there are many insects that can appear sporadically on California native oaks. We usually don't spray for these insects, as they are a part of the oak's ecosystem. There is a new, imported pest, however, that is threatening many trees throughout southern California: the polyphagous shot hole borer.

Oaks have evolved to withstand periods of drought, but in light of the shot hole borer, which can prey on stressed trees, I suggest giving your tree a long soak once a month through April, wetting the soil at least 2 feet below the surface. You can use a garden hose set on a slow drip, leaving it overnight and then moving it to another side of the tree. It is important to keep the area under the tree's canopy free from surface-type (e.g., sprinkler) irrigation as oaks are susceptible to root rot.

Answered by Consulting Arborist Cy Carlberg of Santa Monica, Calif.; www.cycarlberg.com; (310) 453-TREE

American Forests thanks the American Society of Consulting Arborists for responding to readers' tree care questions. Ask your questions at www.americanforests.org/consulting-arborists.



FOREST FRONTIERS

### Forest Hydrologist Dr. Paul Barten

DR. PAUL BARTEN IS A PROFES-SOR of forestry and hydrology at the University of Massachusetts Amherst and former associate professor at the Yale School of Forestry and Environmental Studies. He earned an M.S. and Ph.D. in forest hydrology and watershed management from the University of Minnesota. His contributions to the field include co-authoring "Land Use Effects on Streamflow and Water Quality" (CRC Press, 2007) with Avril

de la Crétaz and developing and teaching a popular undergraduate course, Forests and People, at the University of Massachusetts Amherst.

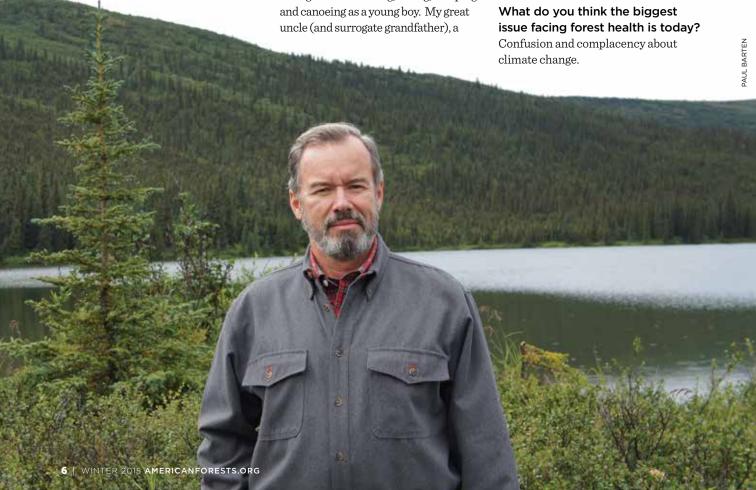
### Why did you choose to go into forest hydrology?

The profession of forestry and the sub-field of hydrology have always been a good fit for my interests, skills and sensibilities. My father set the stage for a career focused on forests and water by taking me trout fishing, hiking, camping and canoeing as a young boy. My great uncle (and surrogate grandfather), a

forester, carefully planted the seed when he suggested the New York State Ranger School to me as a young teenager.

### What aspect of American Forests' work do you hope to engage with?

Water is the most essential forest product for many people and communities and can serve as the impetus for conservation. I coined the widely used phrase "from the forest to the faucet" 15 years ago to highlight this imperative. Protecting or restoring the "regulation of streamflow" by forests was one of the primary motives for the 19th century forest conservation movement in which American Forests (then the American Forestry Association) played such a large role. This aspect of forests is as important, if not more important, in the 21st century.





### Do you have a favorite story from your years in the field?

About 20 years ago, I was working on a watershed study in southern New England. Having used up my budget for electronic sensors, I needed to recycle an older mechanical instrument to measure water-level fluctuations in a forested wetland. These older precision instruments used a clock-driven drum fitted with special graph paper and a very sensitive float and counterweight mechanism to drive a pen filled with bright purple ink. If this ink were to leak in your field vest it would go through many layers of clothes and leave a purple blotch on your skin that will not wash off for a month or more. So, I left it in the locked plywood shelter. Some time later, a black bear came out of hibernation and - with a sense of smell seven times more acute than a bloodhound's - smashed the heavy plywood shelter, chewed up the plastic bottle of faintly sweet-smelling ink (I found it about 100 feet away) and ended up with a bright purple mouth and muzzle for the next several months. Note to self: put the ink in a Ziploc bag and bring it back to the lab.

### If you weren't a scientist, what would you be and why?

I would probably still be a land surveyor in the Catskill Mountains region of New York. The historical aspects and the technical and physical challenges all come together when you retrace a boundary line up a mountain, find the old stone-onend corner referenced in the deed, notice the ancient chestnut oak with the faint scar of an axe blaze, take in the beautiful view and realize the last person on this spot was likely to have been the first surveyor (with a name like Wynkoop or Van kleeck) in the late 1700s. \*

For an extended interview with Dr. Paul Barten, visit americanforests.org/magazine.

PARTNERS

### **Joining Forces** for Yellowstone

by Banrock Station, volunteers join **American Forests** to plant naturally disease-resistant whitebark seedlings.

In an event sponsored

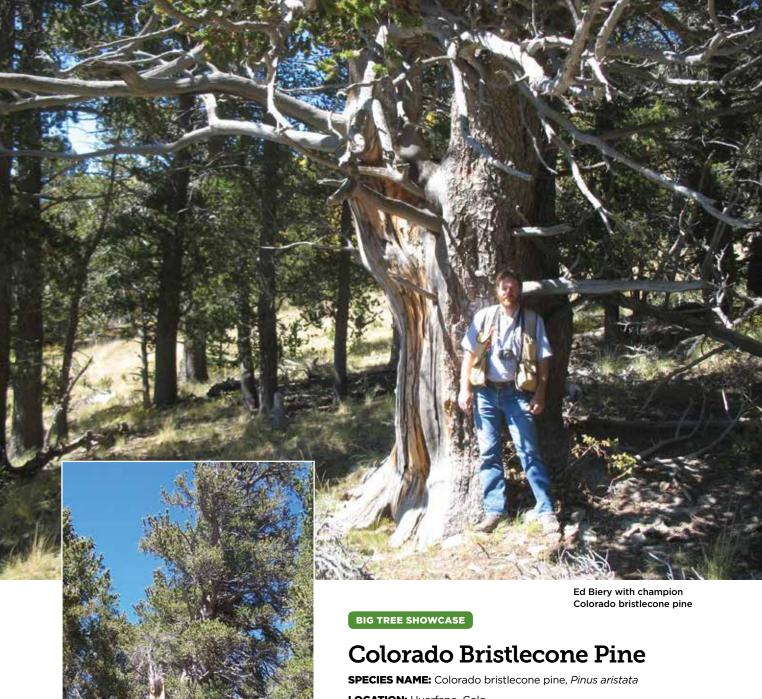
### AUSTRALIAN WINE LABEL BANROCK STATION

is a company focused on conservation. Their charitable trust's goal is to "support internationally and nationally recognized conservation organizations to further their objectives in tackling global environmental issues such as climate change, water conservation, ecosystem loss and species loss" with a particular interest in habitat restoration. They have funded more than 95 conservation projects in 13 countries.

American Forests is pleased to be Banrock Station's first North American partner, joining forces with them last year for the benefit of our Endangered Western Forests initiative. This initiative aims to protect and restore a very special habitat — the high-elevation whitebark pine ecosystem of the Greater Yellowstone Area. The future of whitebark pine is threatened by mountain pine beetles, invasive disease and climate change. Since 2012, American Forests has been creating replicable strategies for protecting and restoring these forests, including using pheromone patches to protect healthy whitebarks from mountain pine beetles and educating the public about the importance of this ecosystem, which is a source of water to at least 13 states.

Last year, with Banrock's help, we were not only able to get nearly 5,500 more pheromone patches to trees in need of protection, but were also able to expand our strategy to include a number of new restoration activities. One of these is a survey of the available water supply for whitebark pine communities. What does that mean? With help from the U.S. Forest Service and the National Park Service, almost 200 sites were monitored for water availability to assess whether they will make good homes for the whitebark pine seedlings we're planting.

These are special seedlings. Some whitebark pine trees are naturally resistant to the invasive disease white pine blister rust. With our partners, we have been collecting cones from these trees to nurture into seedlings that will be planted in the wild, strengthening the species' overall resistance to the disease. But if the seedlings end up in the ground where not enough water is available for them to thrive, then all that hard work may be in vain. Thanks to Banrock Station, we can assess which sites will make the best homes for whitebark pine before we plant, giving this important keystone species the best chance at survival possible. \*



LOCATION: Huerfano, Colo. **CIRCUMFERENCE:** 177 inches

**HEIGHT:** 63 feet

**CROWN SPREAD:** 41 feet

**TOTAL POINTS: 250** 

**NOMINATED: 2007** 

**NOMINATED BY:** Ed Biery

This champion's age of between 500 and 700 makes it still relatively young for the species. The Colorado bristlecone pine is a very long-lived species — often living 1,500 years — and a close relative of the longestliving tree species, the Great Basin bristlecone pine (Pinus longaeva), which can live longer than 5,000 years.

> Visit americanforests.org/bigtrees for more American Forests Champion Trees.

**GLOBAL RELEAF SHOWCASE** 

### **Breaking Ground on Broken Ground**

LAST YEAR, AMERICAN FORESTS began taking on a very special kind of project as part of our Global ReLeaf program: the restoration of former mine lands.

Surface mining activities remove

forest cover and cause soils to become heavily compacted by the massive machinery used to cover and re-contour the landscape. During mining activities, topsoil - with its rich, organic matter - is often lost. These damaged and broken landscapes constitute an environment in which the native trees struggle to grow back, sometimes needing help to get started. We've started by helping two such landscapes recover - one in West Virginia and another in Ohio.

In West Virginia, we've teamed up with the U.S. Forest Service to plant 55,000 red spruce, big-toothed aspen and other native species across up to 175 acres of the Lambert watershed in Monongahela National Forest. The Lambert watershed is part of a larger area that was mined for coal in the 1970s. When the area became part of the national forest, the mining company sought to control erosion and sediment and return the site to something close to its original contour in accordance with the Surface Mine Reclamation Act. However, today it's clear that their methods may have done more harm than good. Erosion was controlled by compacting the soil and planting non-native trees and grasses. Thirty years later, native species still have not been able to recolonize in the compressed soil.

While efforts are underway to bring health back to the soil, we're helping to plant native trees. These trees will not only make the area more resilient to future climate change, but will also create a wildlife corridor for species, including the endangered Cheat Mountain salamander and the West Virginia northern flying squirrel, only recently delisted.

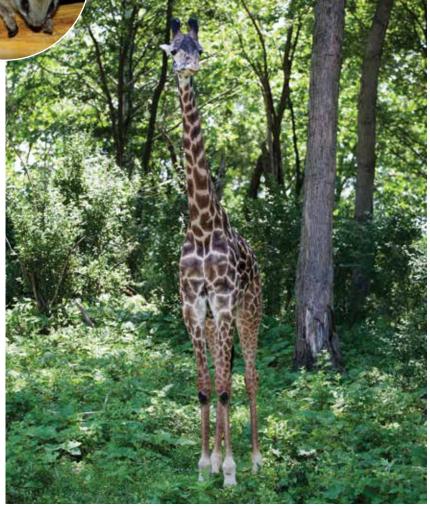
More than 250 miles away in Ohio, we're working with the Hardwood Forestry Fund to plant 7,000 red oak, chestnut oak, black walnut, sugar maple and tulip poplar in another

> place recovering from a history of surface mining: The Wilds.

The Wilds in Cumberland, Ohio, is North America's largest conservation facility. Perhaps best known as a safari park where the rhino, cheetah and antelope roam, this conservation center is comprised of nearly 10,000 acres of reclaimed mining land.

This project will recover wildlife habitat and increase the diversity of native hardwood trees in the area, but that's not all. The popularity of The Wilds' wildlife safaris and other recreation opportunities make it an ideal place to provide educational experiences about land reclamation to the more than 110,000 people who visit each year. \*

Left: The West Virginia northern flying squirrel; Below, visitors drawn to The Wilds for its wildlife safaris will also have the opportunity to witness restoration of surface mined lands.



CHARLOTTE, N.C.

FROM THE FIELD

### Christopher Horn, Director of Communications

MY PALMS WERE SWEATY and I didn't pour enough water in my glass, but as the room moderator read my bio. I stood up, prepared to deliver the first presentation of my career.

Each year, urban forestry practitioners convene at the Partners in Community Forestry (PCF) Conference to discuss the industry, lessons learned and a vision for the future. Last November, I had the privilege of attending my first PCF conference, where a former colleague and I presented on an often overlooked, but nonetheless crucial area of community forestry: how strong organizational identity and engaging storytelling can raise awareness of and appreciation for our urban forests.

At American Forests, restoration activities are at the core of what we do, from our wildland reforestation projects to our flagship urban forests program, Community ReLeaf. And what we're finding with the latter is just how much trees mean to communities. Some aspects of the human-tree relationship we can quantify: Trees clean our air, increase property values and decrease energy costs. But some things data alone can't illustrate. We need words and, most importantly, people.

It was inspiring to see the diverse collection of work of urban foresters from across the country. So much so that I immediately began thinking of ways we at American Forests could not only help broadcast our peers' innovative research or engaging programs, but also make a case for how much cities need trees by using stories in addition to science.

One of the attendees of our presentation raised a very interesting question during the Q&A. She asked our opinion on how we can collectively



Top: American Forests director of communications, Christopher Horn (left), and colleague Mark DeSantis, now of the National Park Foundation, present at the 2014 Partners in Community Forestry Conference.; Bottom: Charlotte, N.C. skyline

shape the identity and message of the national urban forestry community. I can't say I know for sure how we navigate that answer, but I certainly know what should be steering the ship: stories about people and their trees.

Learn more about Community ReLeaf at americanforests.org/CommunityReLeaf.

### DID YOU KNOW?

Studies have shown that children are more creative when playing in green spaces.

### WASHINGTON, D.C.

### Jillian Hanelly, Manager of Individual Giving

LAST SUMMER, I HAD the pleasure of hosting American Forests' first D.C.-area Walkabout. Walkabouts are casual yet informative hikes through when

are casual yet informative hikes through urban forests and, this time, our forest of choice was Theodore Roosevelt Island, just within the D.C. borders on the Potomac River. Our small group gathered at the footbridge that leads from Virginia to the island to

begin our morning hike. As we arrived on the island, the noise of passing planes and traffic was muffled by the thick late summer foliage on the maple, oak and walnut trees surrounding us. It was a perfect day for a hike — cool yet sunny, with just a hint of a breeze.

As we entered the marsh, we were greeted by a host of bright colors: orange jewelweed, groundnuts blooming in purple, white turtlehead, blue-eyed grass and dozens of shades of green from the trees and vines lining the boardwalk. One sharp-eyed member of the group spotted a black rat snake moving just off the trail. The snake paused for a moment, soaking up the sun, before slithering down a hole in the ground. A broad winged hawk perched on a tree across the marsh from us showed off its black- and white-banded tail. As we paused to identify some brightly colored wildflowers, a monarch butterfly flitted by, perhaps for a stop along its migration to Mexico for the winter.

Being surrounded by all of these scenes of nature made us forget for a moment that we were just minutes away from the U.S. Capitol. Theodore Roosevelt Island is indeed a haven for creatures like deer, raccoons, hawks and dozens of song birds, but this urban

forest is also a haven for humans. Urban forests are extremely important to a healthy city. They reduce stormwater runoff, absorb dangerous chemicals and pollutants, and improve air quality. This particular urban forest is well-loved by the area's residents, as was evidenced by

the many joggers and families we

encountered on the trail. Having forests incorporated in a city improves both the ecosystem and the quality of life for all of its inhabitants — human and wildlife alike. \*

Find out about upcoming Walkabouts at americanforests.org/events.

Left: White turtlehead on Theodore Roosevelt Island; Below: American Forests members and friends on a Walkabout of Theodore Roosevelt Island





NEW ONLINE

### So You Think You Know Yellowstone?

Yellows to ne is well-known for its bison and grizzly bears, but lots of lesser-known wildlife abound there too. Which of these is the state of thother animals does NOT live in the Greater Yellowstone Area?

Check your answer and take the rest of the quiz at bit.ly/YellowstoneQuiz!







☐ Swan







□ Pika

### Six New Community **ReLeaf Cities!**

Continuing toward our goal of partnering with 20 cities by 2020, we have joined forces with nonprofits in six additional cities. In 2015, we'll be up to 11, bringing Community ReLeaf to Austin; Chicago; Hartford, Conn.; Miami; Oakland, Calif.; and Washington, D.C. Visit americanforests.org/ CommunityReLeaf or search #20by2020 on Facebook and Twitter to learn more.





American Forests staff and partners in Hiawatha National Forest, the site of our very first Global ReLeaf project in 1990. Today, the site is home to age-diverse trees planted by American Forests over the years.

### It's our Anniversary!

Visit americanforests.org/140Years to find out how we're celebrating 140 years of protecting and restoring forests. #AF140Years

### Plus, 25 Years of Global ReLeaf

We've planted nearly 50 million trees in the 25 years since our Global ReLeaf program began. Today, those trees are growing in diverse forests all over the world. How did it all begin and what memories have been made along the way? Visit our blog, Loose Leaf, throughout 2015 for a new series in which our Global ReLeaf team looks back at 25 memorable projects — one for each year of the program.

americanforests.org/blog

### From the Community

"Muir Woods is a magical place. If I get uptight about anything, I close my mind and simply recall the magical times I have spent there. So calming."

- American Forests Facebook follower Jeannine Mead

We're now on Google+. Hope to see you there!



### WASHINGTON OUTLOOK ▶ SEPTEMBER 1 — NOVEMBER 15, 2014

### Climate Resiliency Agenda

IN OCTOBER 2014, the administration released the "Priority Agenda for Enhancing the Climate Resilience of America's Natural Resources." Drafted by the Council on Climate Preparedness and Resilience, with input from stakeholders including American Forests, it lays out the administration's plans and actions for ensuring our important natural resources, such as forests, can thrive in a changing climate.

The agenda was drafted in response to Executive Order 13653, which required an inventory and assessment of proposed and completed changes to federal land- and water-related poli-

cies, programs and regulations. These changes are necessary to make the nation's watersheds, natural resources and ecosystems - and the communities and economies that depend on them - more resilient in the face of a changing climate.

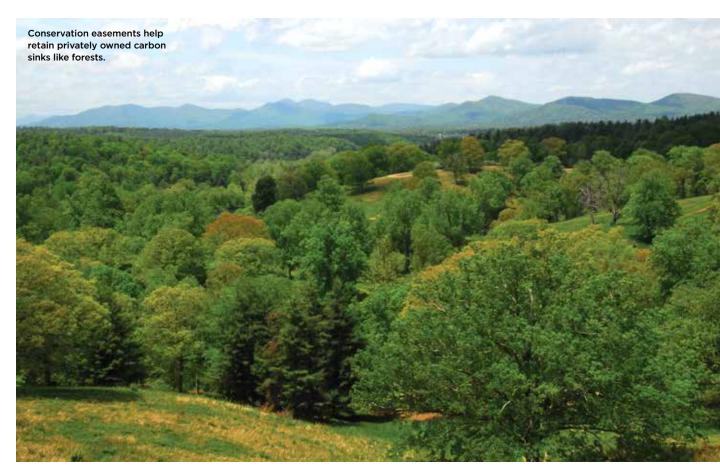
The agenda highlights a number of actions agencies can undertake within the parameters of the existing federal budget, including the use of a federal tax deduction for conservation easements, which serve as a critical tool for retaining important privately owned carbon sinks, especially grasslands, forests and forested wetlands. Another key provision includes the Cohesive Wildland Fire Management Strategy, a collaborative, inter-governmental strategy to address the wildland fire risks facing the nation. The strategy expands multijurisdictional partnerships to reduce hazardous fuels

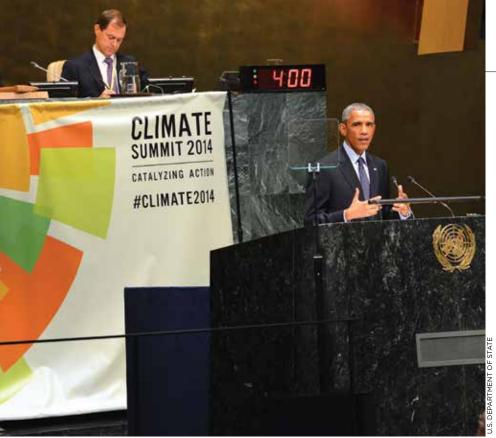
and protects community water supplies and other critical infrastructure.

American Forests is especially pleased with the collaboration of the Forest Service, the Federal Urban Waters Partnership, states and local partners in their efforts to target urban forestry investments that support forests in a variety of ways including:

- increased carbon sequestration;
- reduced energy consumption and greenhouse gas emissions;
- enhanced urban air quality;
- resilience from insects and disease;
- clean water quality and quantity needs;
- bioenergy from urban wood waste to off-set fossil fuel usage.

American Forests will continue its advocacy efforts and coalitionbuilding so we can effectively implement our programs in tandem with the agenda to protect and restore the resiliency of our forests. \*





President Obama delivers remarks at the 2014 U.N. Climate Summit. One result of the summit was the establishment of the New York Declaration on Forests.

consulting with the U.S. State Department regarding global forest policy in relation to the United Nations Forum on Forests (UNFF). In preparation for key UNFF meetings in 2015, American Forests and our partners will continue to provide input on the country's existing international commitments on forests, both legally binding and non-legally binding, in order to raise the visibility of forest issues globally, as well as to improve efficiencies and strengthen stakeholder engagement. 🍁

### **U.N.** Declaration on Forests

THE 2014 U.N. CLIMATE SUMMIT took place in New York City in September and included the establishment of the New York Declaration on Forests, its associated voluntary Action Agenda and various other supportive action announcements.

The New York Declaration on Forests is a non-legally binding political declaration supported by different levels of government, companies, indigenous peoples and non-governmental organizations. For the first time, world leaders are endorsing a global timeline to cut natural forest loss in half by 2020 and strive to end it by 2030. It also seeks to restore forests and croplands of an area larger than India. If these goals are met, there will be a decrease of 4.5 to 8.8 billion tons of carbon pollution every year.

The supporting governments and organizations have announced dozens of concrete actions and partnerships to demonstrate their commitment to implementing the New York Declaration and Action Agenda. Examples include the new bilateral and multilateral programs paying countries for reduced deforestation over the next six years and new procurement policies for several of the largest forest commodity importer governments.

In conjunction with the Declaration on Forests, American Forests has been

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# Eradication NATION

What Boston's battle with the Asian longhorned beetle can teach us about stopping an invasive pest in its tracks. BY TATE WILLIAMS



# KYLE RAMIREZ/WIKIMEDIA Asian longhorned beetle

### **CLINT MCFARLAND DIDN'T WANT**

to believe the pictures he was looking at on his smartphone.

Late on a Friday afternoon in July 2010, he was at a gathering in Worcester, Mass., to recognize federal and state staff who had been working long, hard hours for two years to wrangle the city's runaway Asian longhorned beetle (ALB) infestation, the country's largest by far. By the time a homeowner reported it in 2008, the invasive beetles had already been boring their way across the heavily forested city in the center of the state, frighteningly close to the edge of contiguous forests that span New England and reach into Canada.

While work was far from over, the worst months of 16-hour days, cutting down and chipping more than 25,000 trees in one year, had appeared to be behind them. So it hit McFarland hard when he saw pictures of what he knew was damage from beetles gnawing tunnels through a handful of red maples in Boston, just 44 miles east. And the news got worse almost surreally so - as the hospital parking lot where the infested trees were located was directly across the street from Harvard's Arnold Arboretum, home to a priceless, world-class tree collection.





A Worcester, Mass., neighborhood before and after removal of ALBinfested trees

Back in Worcester in 2008, as USDA's McFarland put it, a multi-agency partnership to eradicate ALB in Massachusetts thought it had drawn a line in the sand. The idea of a similar situation, now in Boston, was difficult for the head of the Massachusetts eradication effort to stomach.

The four-year operation that followed would, however, provide a unique microcosm of the many interlocking pieces needed to stop an invasive pest.

### A SLOW, QUIET BURN

To fully understand why the discovery in Boston was so frightening, consider that, to date, ALB has been responsible for the removal of 133,000 trees in the United States since its discovery in 1996 in Brooklyn. Infestations have since popped up in New York, Illinois, New Jersey, Massachusetts and Ohio, with eradication efforts costing \$550 million so far. The beetle is slow, but it is hungry, with 13 known genera of host trees. Maple is a favorite, making ALB a major economic threat to syrup and timber industries, plus tourism

### Deb LaScaleia arrived at the hospital grounds Sunday morning to find federal employees swinging from her trees.

drawn to New England's signature fall foliage. If unchecked, one estimate of potential cost in urban trees alone is nearly \$700 billion, nationwide.

An ALB infestation tends to be a slow, quiet burn, with multiple generations often feeding on the same tree or those very nearby. The pest's life cycle starts with eggs laid along the trunk or sturdy branches, where chubby, cream-colored larvae that can grow as long as 2 inches hatch. Larvae bore tunnels through the trees during the winter, feeding their way to pupal stage and then, in the summer, chew their way out of perfectly round holes about the size of dimes.

The whole process normally takes a year, and while the black, white-spotted beetle can fly, it's a lazy bug, so the spread is slow.

But as with all invasive pests, the real problem is us. Just as they first hitchhiked here from overseas in wood packing material, the beetles can hitchhike for miles in firewood in the back of a pickup headed to a camping spot in New Hampshire or Vermont, for example. If beetles take hold in a new location, it's like a spark, starting a whole new, quiet burn.

"I couldn't sleep that night, from trying to think about how gross was this, how large was this infestation?" says McFarland, who heads the Massachusetts eradication effort led by the USDA's Animal and Plant Health Inspection Service (APHIS) and the state's Department of Conservation and Recreation (DCR). ALB has been his world for about 13 years now, starting





Left: Asian longhorned beetle (ALB) larva stowed away in wood packaging; Above: An Asian longhorned beetle sitting on tree near the hole from which it emerged

with the original infestation in New York, but he became something of a general in the battle when he took over the Worcester operation in 2008. He teamed up with DCR's Ken Gooch to run a multiagency operation that would grow to employ about 100 people.

McFarland, who has a gruff, no-nonsense way of talking that's balanced by a friendly laugh, left for Boston early Saturday morning to spend the day searching the area for signs of the pest and firing off texts to anyone else he could mobilize.

### **MAPLE ZERO**

Faulkner Hospital's grounds supervisor, Deb LaScaleia, arrived at the hospital grounds Sunday morning to find federal employees swinging from her trees and a small team's makeshift operation setting up in her parking lot.

Days earlier, she had spotted piles of sawdustlike material at the base of some of her trees while walking the grounds. "Upon closer inspection, you realize the volume and the quantity of what had been going on." She saw the exit holes, and wasn't sure exactly what it was, but had taken plenty of classes and seen the latest on invasive pests at trade shows. She called the hospital's arborist, who called APHIS in D.C., which kicked off the whirlwind in what she thinks of as her own yard.

The site of the reported infestation was a row of six red maples in the landscaped parking lot area in front of Faulkner Hospital, a 17-acre property facing the Arboretum to the southeast. To its west lie the Allandale Woods, Boston's second-largest unfragmented woodlands, full of sugar maple - all of which is surrounded by some of the city's greenest neighborhoods like Roslindale and Jamaica Plain.

One alarming turn of events that day was that, while there were no fresh holes when McFarland



Left: Preserved Asian longhorned beetle larvae in the Worcester headquarters of the Massachusetts Cooperative **ALB Eradication** Program; Below: Cross-section of damage to one of the six infested maples in Boston





The Boston skyline from Arnold Arboretum

left on Saturday, there now were two. Overnight, two adult beetles had emerged. After hours of searching, a group of six people found both of the adult beetles crawling on the trees.

What followed, as LaScaleia describes, was like something out of CSI. The team downed the six maples and began peeling them apart with chisels and hand axes. They found 33 larvae and 13 adults, some of which were getting ready to emerge, but were now destined for the lab.

"Because there were only six trees, we could do all the forensics. It was pretty wild," says Gooch, who is now DCR Forest Health Program supervisor and had also been working with ALB on some level since the first New York infestation.

Investigators started doing several "trackbacks," including checking whether the beetles could have come in the nursery stock (nope), tracking the serial numbers of medical equipment deliveries the hospital had received from Europe (nope). They did genetic testing on the beetles and were able to eventually confirm that they were connected to the infestation in Worcester.

While they weren't seeing other signs of infestation, no discovery in North America had ever

been just a handful of trees. Even the smallest infestation, in Illinois, had ended up downing around 1,800 trees. To use a phrase that would come up more than once, people were freaking out.

### AN ACCOMMODATING ARBORETUM

That Monday, Stephen Schneider hadn't turned on his Blackberry yet. It was a national holiday and the manager of horticulture at Harvard's Arnold Arboretum was at home unwinding. When he finally did turn on his phone, it was exploding.

"All of these messages came up and I was like, 'What? What is going on here?'," says Schneider. "There were messages from the mayor's office, there were messages from Harvard University."

Arnold Arboretum is 281 acres of research grounds established in 1872 and designed by Frederick Law Olmsted. It's a meticulously curated collection of 15,000 living specimens from around the world, and its maple collection alone ranked as the most significant in the world in a 2010 survey by Botanic Gardens Conservation International. It is adored by the city and beyond.

Fortunately, shortly before the Faulkner discovery, the Arboretum staff had finished two



Part of the reason it got so out of hand is because people let their quards down.

scoutings for ALB, albeit looking at random samplings and the perimeter, so Schneider felt reasonably confident. His biggest concern was a naturalized area right near the hospital called Central Woods that the Arboretum doesn't curate, but is full of beetle food.

When there's an ALB infestation, the feds take control and move fast, and everyone at Arnold where they usually have 100 percent control knew that. Schneider and his team's strategy was to be as accommodating as possible. For example, he first met the APHIS and DCR team before a press conference with "gifts in hand," reams of records about the site.

This approach wasn't entirely altruistic. Schneider not only hoped to work in suggestions when it came to things such as the process for any potential tree removal, he also wanted to get the investigators in and out as quickly as possible, limiting any disruption to a sensitive collection.

And while they feared the feds would have a "we've got this, thanks" attitude, Schneider said the tone was far more inclusive.

What followed was a survey of every potential host tree in the 10 square miles surrounding the six maples - slightly more than 90,000 trees in the arboretum and the surrounding area. The area was also put under quarantine, meaning no host wood could leave, and anyone working with host wood in the area needed special training.

Outreach was crucial. APHIS freed up a separate \$30,000 budget to immediately run advertising in the area. The team worked with the city parks, green organizations, nonprofit "Friends of" groups, neighborhood associations and anyone else they could to distribute information.



### **CONTENTION AND COMPROMISE**

By the end of 2010, surveys still hadn't found more infested trees, and people were feeling like they had dodged a bullet. But APHIS protocol calls for treatment with imidacloprid, a common pesticide that is effective against ALB as a prophylactic. The plan was to make trunk injections in a quarter-mile radius of the six maples, once a year, for three years.

When McFarland and Gooch first brought this up, Schneider wasn't happy, and wanted to find an alternative. The Arboretum uses pesticides, but on a very strict basis. Not only that, they're surrounded by a highly environmentally conscious demographic that includes many young families, and imidacloprid — which has shown up in discussions of possible contributing factors of colony collapse disorder among honeybees — has been gaining a bad reputation.

The Arboretum was in a tight spot, made more complicated by the fact that Harvard actually uses the land on a 1,000-year lease from the city

Above and left: Arnold Arboretum





Top: Tree climbers with the Massachusetts Cooperative ALB **Eradication Program** surveying trees in a neighborhood on the outskirts of Worcester; Above: Surveyors hunt for Asian longhorned beetles infestation from the ground.

of Boston. As landlord, it appeared the city could authorize treatment. "Spirited debates" followed.

Eventually, compromise — and technology – saved the day. Schneider and a research fellow used a newly acquired mapping program to take a scalpel to the USDA's treatment zone. One way to think of it — when it comes to the size of the treatment area, USDA rounds up to be on the safe side, the Arboretum had tight enough records it could round back down, ultimately reducing the number of trees that received pesticide treatment - mostly by soil injection, to limit damage to trees — by half.

With Schneider and the Arboretum satisfied, APHIS still had to engage with a concerned public. This is when, you might say, the love fest

ended. A petition was started to stop the Arboretum's soil treatments. APHIS fielded many calls and held a series of public meetings. "A lot of those public meetings were quite contentious," McFarland recalls, but ultimately, most residents accepted the treatment, with 95 percent of host trees in the radius receiving the pesticide. Outside of the arboretum, most trees received trunk injections instead of the soil injections that were the source of much of the public's objection.

In summer 2014, with the 10-square-mile area surveyed once, and the core of the infestation surveyed multiple times, the program held a press conference to announce eradication. They now believe a vehicle that parked at the hospital was carrying materials that contained ALB, which crawled out and found a nice little row of maples and never made it any farther.

### **ERADICATION NATION**

Back in Worcester County, now October 2014, I'm tagging along with a survey crew in an outlying neighborhood, the kind of beautiful, gold- and scarlet-lined street that makes fall in New England incredible. A team of six tree-climbers scrambles up a stand of maples behind a private backyard. With every tree cleared, they mark their initials with chalk and update their records on a handheld device.

About 5 million trees have been surveyed and 34,000 trees have been removed in the Worcester area to date. For comparison, Central Park in New York has about 25,000 trees. In 2008 and 2009, nearly 17,000 infested trees were found in Worcester. As I walked through the city with the survey crew in October, that number was down to fewer than 300 for all of 2014. The city is replanting with much

higher diversity. "In 10 years, it's going to be the ideal urban forest," Gooch says.

But the larger question remains whether nationwide eradication is possible. Regulations on global shipping materials have been clamped down since 2002. But Ohio is fighting infestation. Long Island, once thought clean of the beetle, has a new infestation.

Experts I talked to believe ALB is one invasive pest that has a good possibility of eradication. The wild card where opinions differ is how much ALB is currently out there. Worcester's infestation went undetected for 12 years.

"We're going to find more," says Gooch. "I kept saying that to everybody and everybody's saying, 'No, no. It's isolated here.' But I kept saying, 'No, it's been here a long time.' And people work here. People move stuff, wood, in and out, all the time."

He still thinks the agencies need to start branching out more, hunting ALB down. And a new, joint program with the U.S. Forest Service, APHIS and DCR will begin sending out teams of surveyors to investigate high-risk areas in Massachusetts.

But the USDA will never have the funding to go everywhere the beetle might be, and that's where the public is important. Gooch and McFarland both believe part of the reason the Worcester infestation got so out of hand is because, after earlier infestations were contained, people let their guards down and agencies could have done better at outreach.

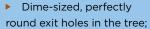
These days, the USDA has an annual outreach budget of around \$1 million, including ads of all sorts, partnerships and social media. The agency received 184 online reports of the beetle - mostly false alarms - in just one recent month, 72 from Massachusetts. At the height of the Boston operation, Deb LaScaleia would come to work and find specimen jars of all kinds of insects, mostly stinkbugs, left for her by concerned hospital staff.

That kind of diligence is how Clint Mc-Farland, the optimist, thinks they'll win. The telltale holes peppering maple trees might show up in a new. far-off location. But eradication can still be won if that next dreaded email on McFarland's phone is reporting another Boston and not another Worcester. lack lack

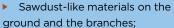
Tate Williams writes from the Boston area about science, the environment and culture. Read more of his work at www.tatewilliams.org and follow on Twitter @tatejw.

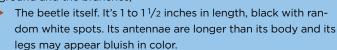
### Join the Eradication Nation

American Forests joins the USDA Animal and Plant Health Inspection Service (APHIS) in encouraging people to check for signs of ALB. No need to head out into the cold. Once summer comes, the beetles will become more active. Then, take 10 minutes to check your trees for:



Oval depressions on the bark where the eggs are laid;







ALB exit hole



Report any sighting of ALB at asianlonghornedbeetle.com/ report-your-findings.

You can also help prevent the spread of ALB. Don't bring firewood with you on camping trips; buy local wood instead. But don't bring any leftover wood home with you!

Learn more at asianlonghornedbeetle.com.

# BACKYARD

How urban birds decide where to feed and nest in our neighborhoods

BY JEFFREY LING

### FOR BIRDS

"Bugs are here, bugs are there, Everywhere you find 'em, For little fleas have lesser fleas, ... and so on, ad infinitum."

### THE GREAT WEB

I memorized that version of a nursery rhyme a long time ago and have seen its truth in my work as an arborist ever since. Insects are common in modern forests and landscapes and so are vertebrates. Urban and suburban landscapes have been shaped by human needs. Yet, every landscape, every collection of plants, every cluster of trees, is a focus point for animals, no matter its complexity, context, character, age or location. We must remember that whatever other purposes it serves for us, a landscape is also a home for animals. Even a "bad" landscape — one with incorrect assumptions or mistaken



Above: A crowd of goldfinches is attracted to this feeder, but are not likely to stick around just for this source of food.; Below right: Aphids on a silver birch tree. choices in the site's design and plant selection is still a habitat. Within this 'web of life' — from the debris on the ground, to understory plants, to the tops of trees — animals of all sizes can and do grow and thrive.

Arborists have always acknowledged this reality. We meet many animals as we climb and work in trees. However, the tree owners are often unaware of the interlocking connections of one animal to another or the relationships between animals and the landscape features around them.

For example, it has been reported that upwards of 20 different species of mites can reside and interact in a single spruce. Some feed on the tree's tissues and some on each other as they all become food for insects and birds.

In the urban forest, some of the most significant insects are aphids and adelgid species that inhabit and feed on trees. From an ornamental

horticulture perspective, they are universally ruled unacceptable and routinely treated to stop damages and to deter the mess of dripping trees. Yet, these bugs offer significant food sourcing for both other insects and hummingbirds. In this way,

the tree is the base on which all insects,

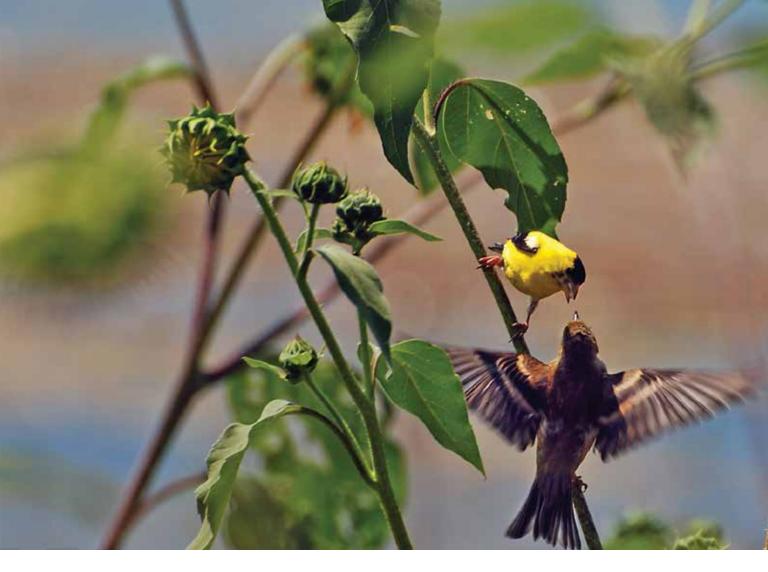
living to their own ends, create a foundation for the hierarchy of

species found in the trees.

Squirrels bound in and around the trees. Deer nibble on foliage, fruit and twigs beneath, while raccoons and opossums claim cavities as their winter dens. The urban and suburban forest supports wildlife large and small.

### **BIRDS: PLAYING BY THE RULES**

Nowhere in the urban forest is the relationship between animals and woody perennials more frequently seen — or more unique to each species - than in the case of birds. Urban and suburban trees directly impact the types and numbers of birds on a site, in a neighborhood or throughout



a city. All trees, whether specifically planted or volunteer trees - those that spring up on residential property on their own — will create avian habitats, food sources and rearing sites.

But why do some trees fill certain roles for some birds and not others? Examining birds' interactions with our landscapes, it becomes clear that there are rules that apply to the bird-tree relationship. Three prime directives rule birds' selection of a particular property and even an individual tree. Familiarity with these rules can help homeowners wishing to create a welcoming habitat for bird populations.

### All birds have tolerances and preference ranges that lead them to accept or reject a site.

Every bird makes "value judgments." They respond to their surroundings or react to changes therein. It doesn't matter if the change is a radical alteration like tree removal or an incremental change like that of trees growing or being pruned over time. The avian community fostered in every habitat is a result of the positive and negative influences of the landscape's character at that time.

### All birds learn over time.

Birds are intelligent and learn from new experiences. Many relate what they learn to offspring as well. Any bird hatched on a site or in a landscape feature will consider it home, but sites that can foster and support more individuals will do so over time as birds learn about the spot. As an environment changes, birds will learn that it has become more or less hospitable, and areas that attract birds once are more likely to see future generations as well.

### Feeders bring visitors; harbors bring residents.

Across America, bird feeding supplies are sold to homeowners desiring to watch birds in their vards. The installation of feeders — whether seeds, suet or sugar water — is primarily for the entertainment of people; it seldom impacts the local bird population over time. Most birds that visit feeders are either locals or migrants passing through. Consistency over the years - coupled with environmental support — is needed to have any real impact on any bird species. Feeding alone will not significantly increase bird populations; birds need a place to live, too.

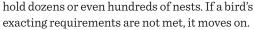
### PICKY, PICKY

To see these rules in practice, let's take a look at some of the ways tree features influence birds' decisions and therefore affect the numbers and

These goldfinches may have found a harbor to call home for a while.



Above: Lingering fruit like hawthorn berries can make an area a good home for a robin, even in the frosty winter.; Below: Ornamental pear has been planted extensively over the last 30 years and has had a profound influence on bird populations. types of birds in a given area. The height at which birds fly, roost and nest is species-specific. So too is their preferred tree structure and texture. Some species of birds demand a specific height for their nest. Cardinals and bluebirds, for example, will not nest above 15 feet while others, like orioles, demand high, exposed branches. Most birds require a specific density of cover and others seek a specific branch angle. Bird species that nest in rookeries need a tree or grove that can



A number of bird species need cavities to nest; some may be manufactured by woodpeckers for self-use, then appropriated by other species. Larger cavities and tree hollows are possessed by mammals and larger birds, like owls and wood ducks. Landscapes with these harbors will naturally draw more birds to them.

Food sources provided by trees are also important. Just like you and me, birds want food sources that are filling and reliable. A great example of this is the new cultivars of crabapple (Malus spp.) and their "persistent fruiting habit." Almost universally, these trees are planted by homeowners for their multiseason traits, but it is their habit of growing small, colored fruits that hang on the twigs all winter that makes them interesting to birds. These fruits are not palatable for northern birds in November, but they turn to softened pulp after freezing, and become a primary source of food later in winter.

In America, probably no tree is more influential to several bird species than the ornamental pear (Pyrus calleryana). Though exotic, the species is not invasive and is a preferred urban specimen, planted extensively over the last 30 years, and would certainly appear on any list of the most predominant trees in landscapes and along streets or parking lots in much of America.



### 1,000 starlings can produce more than 70 pounds of manure nightly.

Their density draws many birds, and their abundant and persistent small fruits are a welcomed food supply in the very early spring when it is difficult for many birds to find enough sustenance.

It's not just ornamentals at work. The creation of "urban scrub" — shrubs and small trees — has also enlarged the populations of birds like cardinals (Cardinalis virginianus) and robins (Turdus migratorius). For both of these birds, as well as goldfinches, (Spinus tristis), purple finches, (Carpodacus purpureus) and many sparrows (Passeridae), the scrub provides the necessary type of roosting and nesting site.

Recently, many people in the Midwest have reported seeing robins in the snow, arriving to northern climates much earlier than expected. This may or may not be a function of global

climate change, but it is certainly a reflection of micro-environment change - specifically, localized heat islands and persistent fruiting. All three rules are at work here: While urban buildings and concrete create warm harbors for the robins and other birds, it is the abundance of persistently fruiting trees that feed them in February and March, changing their calendar. Also, the lower canopy of ornamental trees has proven to be their preferred nesting habitat. Once birds have hatched in a location, they learn that "this is my home, my neighborhood" and teach that to their offspring as well.

### **CHANGING POPULATIONS**

The robins have certainly benefitted from our warmer cities and abundant food sources, but one invasive species seems to have benefitted even more, judging by the explosion of its population. Hundreds of millions of European starlings (Sturnus vulgaris) now flock in the winter, almost darkening the skies in some areas, leaving trouble and messes in their wakes. These birds, like the

Flock of starlings



robin, rely on persistent fruiting trees. Unlike the robin, they are omnivores, subsisting on any and all food sources.

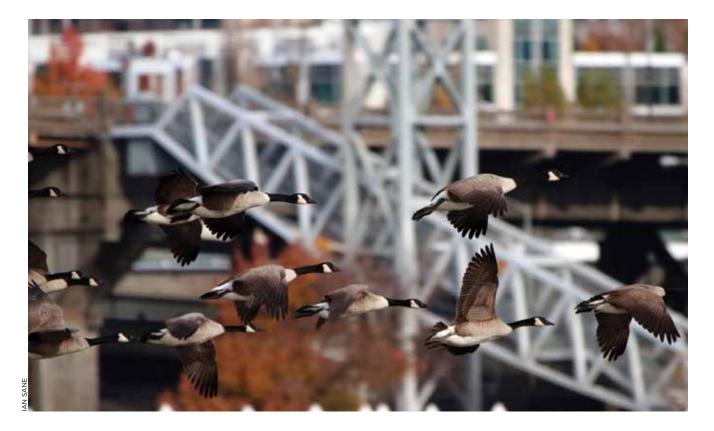
What the passenger pigeon (Ectopistes migratorius), a native species, was to 19th century America, the starling is for much of the country today in terms of numbers. In winter, the large black clouds of these birds are the new urban wildlife reality for many sites, particularly in the Mississippi, Missouri and Ohio River regions. Not only are their nighttime roosts loud, but their

huge nightly deposits of manure - 1,000 birds can produce more than 70 pounds of manure nightly leave homeowners and city managers discouraged. In this, the behavior of star-

lings mirrors 19th century reports of the now-extinct passenger pigeon that routinely killed forest trees with its high-ammoniate manures. Part of the passenger pigeons' demise was uncontrolled hunting, but a greater influence was the loss of the forest habitat that supported the pigeons. The starling has a broader tolerance and

Above right: Abundant acorns can mean abundant birds of the Corvus genus; Below: Geese typically nest on the ground, but may get creative with nesting sites in urban areas.





### If there is a bird issue, don't blame the birds.

has found urban America and its urban trees and landscapes to its liking.

Another change in America's bird population is the population growth of crows and ravens (Corvus) in urban settings. Among the smartest birds on the continent, they adapt readily to manmade landscapes. But these birds are gregarious in both their roosts (winter nighttime resting places) and rookeries (nesting/rearing sites). They demand tall trees in groupings to handle their numbers and branches stout enough to hold their collective weight. As urban forests mature, trees planted in groupings can be selected by these birds.

These birds also find natural food sources in urban environments in the form of small acorns. Pin oak (Quercus palustris), northern pin oak (Quercus ellipsoidalis), shingle oak (Quercus imbricaria) and willow oak (Quercus phellos) all set acorns that can be swallowed by these birds. These oaks are preferred in urban plantings, and it is no surprise that, as these trees proliferate and grow larger, Corvus populations increase in response to both the food source and the availability of high platforms for roosting and nesting.

Perhaps the ultimate success story of wildlife adapting to urban, man-directed sites is the

non-migratory Canada goose (Branta canadensis maxima). Nearly extinct in the 1950s, this bird is now found in almost every state in the continental U.S. and across Canada. The total population is estimated at over 100 million individuals. This impressive increase is due in part to one landscape feature: the retention pond. This, blended with the installation of short-blade, high-fertility turf like golf courses, as well as protection by international treaties and the ability for the female goose to re-ovulate if the first clutch of eggs are lost, has created a nearly miraculous population explosion in half a century. These birds, interestingly enough, are inhibited by trees, not encouraged!

All birds differ — by size, by physiology, by need - yet all are attracted to or discouraged from a potential habitat site by how it allows or restricts species-specific behaviors. The success of micro- and macro-populations is governed by these same principles, whether a substantial woodlot, a homestead garden or a street tree planting.

By knowing and exercising these rules, tree owners can offer stimuli for more desired birds or control numbers of "undesirable" birds. Most importantly, if there is a bird issue, don't blame the birds. They are almost always responding to what humans have done within the micro-environment that we share.

Registered Consulting Arborist Jeffrey Ling is the founder of Arborwise, Ltd. with his wife, Victoria Ling. He writes from Fort Wayne, Ind.

Canada geese

# Oeau in the

A photographer follows the example of early conservationist John Muir and finds beauty in subtle landscapes.

BY TOM PERSINGER



### IT WILL TAKE JUST OVER TWO HOURS TO REACH THE OLD FARMSTEAD.

I left before dawn and the sun is rising behind me as I drive west on Highway 94. I always enjoy driving with the sun illuminating the route stretched out before me in long, cool rays of golden light.

Unlike when early conservationist John Muir first made this journey in 1849, my trip is easy. Developed highways and well-marked secondary roads paved with asphalt carry me the distance. Muir's 100-plus mile trek from Milwaukee to the farm via a hired wagon took place in early spring on recently thawed roads. They were thick with mud and not easy for travelers to navigate. Muir's father, like many homesteaders, compounded the problem by bringing far too much luggage, including a cast iron stove and cookware set that weighed several hundred pounds. The Muirs paid a wheat farmer 30 dollars to ferry them in his wagon to their new home. The combination of poor road conditions and excessive baggage had the farmer in fits. He fumed and declared that he would "never again be tempted to haul such a horse-killing load."





### The beauty of this place is subtle, but striking for those willing to take the time to look.



The Muir family's journey had begun just over six weeks earlier on February 19, 1849 when they sailed from Scotland to America. John Muir, his father Daniel, sister Sarah and brother David leaving his mother and four other members of the family behind in Scotland until the new homestead was ready - arrived in New York after rough travel over the wild Atlantic Ocean. From New York City they traveled by steamer ship to Buffalo and then on to Wisconsin. Muir's father had left Scotland intending to become a wheat farmer and settle in Canada, but while in Buffalo he heard of the abundant grain harvests in Wisconsin and Michigan, changed his plans and headed toward Milwaukee.

I'm in Milwaukee for a few days visiting family for the December holidays and decided to take a long day and travel to the site of John Muir's boyhood home. The lake and 150-acre area around it is now a protected park that I've long wanted to visit. Many agree that this is where Muir's revolutionary idea to preserve lands for their own sake first took shape. If you like cold and snow, December is a terrific time to travel in Wisconsin. If not, you might be best served waiting for warmer months. This particular day is biting cold with an occasional stiff, chilly wind.

Shortly after I drive through the small town of Portage I turn on to County Road F and cross the mostly frozen French Creek Wildlife area. The wildlife area is a 4,000-acre marsh filled with a great variety of plants and animals. A native sedge known as wiregrass was once farmed here and made into grass rugs. Bald eagles also make their homes here, but sadly none reveal themselves to me today. A few minutes after passing the wildlife area, I turn into the park's snow-filled parking lot.

The entrance is not well marked and is easy to miss. Today's snow isn't deep, but it's crusty and



slippery. Fortunately, my car has all-wheel drive and I skate up the slight hill, pull over towards the left, and park near the trailhead to admire the magnificent view of the prairie through the windshield. Sipping hot coffee, I eat the last of a breakfast sandwich and reflect on the land before me. It was carved over 12,000 years ago by the retreating Green Bay Lobe of the Wisconsin glaciation. When huge pieces of ice began to recede here they exposed an area of bare sand and gravel that concealed a large chunk of buried ice. The buried ice gradually melted and formed the lake that now, partially frozen, sits placidly to the right.

I open the car door and step out. The cold air fills my lungs and the snow squeaks underfoot. The squelch of snow with each step indicates that the pressure from my boot isn't melting the snow, but is crushing it which means the air temperature is not warmer than 14°F. I grab my day pack, camera gear and tripod and walk down the small hill onto the prairie. In the spring and summer, this area is alive with the magnificent colors of false indigo, butterfly milkweed, bergamot, prairie coneflowers and many other brilliant blooming prairie

plants. Today, however, it's a glorious snowfield under an open sky interrupted by brambles and branches from trees and plants dormant for the long winter.

The trail is a loop slightly less than three miles that



Above: Oaks; Left: Birch in a mixed young forest along the trail



Signs of wildlife that winter visitors to Ennis Lake might stumble upon include coyote tracks (left) and turkey

circles the 30-acre Ennis Lake. It might be short, but it contains a stunning number of plant species and traverses a surprising variety of landscapes: prairie, willow groves, oak, pine and tamarack forests, a sedge meadow and an open bog. Even though the area is varied, diverse and beautiful by today's standards, some might find it easy to overlook as a fairly unremarkable place. There are no grand vistas or majestic cathedral mountains, no geysers, canyons, hot springs, glaciers or soaring waterfalls. In this place, beauty is found in the

details. For the young John Muir this "glorious Wisconsin wilderness" was filled with everything "new and pure." It was a world away from the streets and alleys of Glasgow, Scotland.

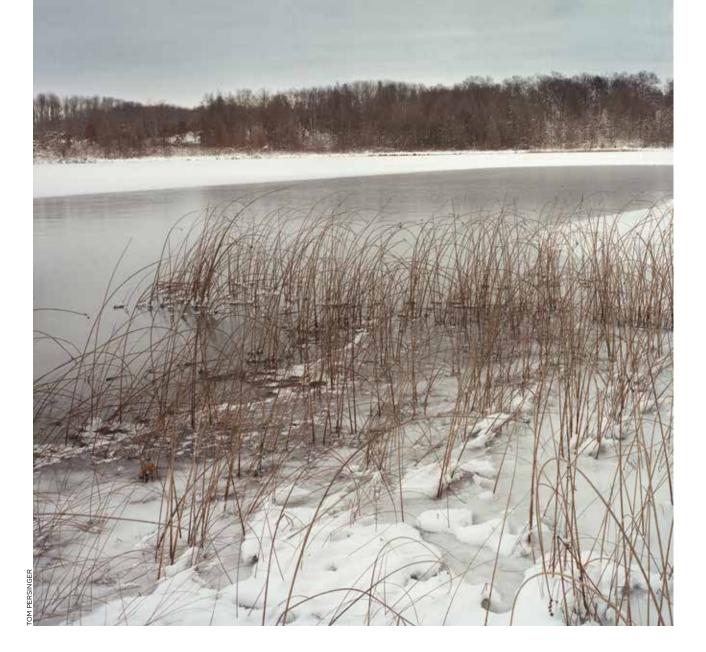
The snowy trail I walk marks a division in the land: to the right lie the remains of a native mesic prairie while the land to the left, once part of the same prairie, was developed but is no longer used for farming. Mesic prairies, characterized by good drainage and high moisture levels throughout the growing season, are the most threatened types of prairie land because many were converted for agricultural use. They also generally display the most diverse wildflower populations. The former prairie-turned-farm may recover, and nonprofit restoration efforts are underway, but it's a long, arduous process with no guarantee.

The trail moves through a clump of willows and then on toward a cluster of oak trees. It's possible that these trees once marked the western edge of the Muir property line. Looking at the trees, I wonder if Muir may have walked here as a boy doing chores. There are bur and black oaks and, down the way, a shagbark hickory or two. Each has distinctly different leaf shapes and is easy to identify, but bur oaks also have a unique, thick, cork-like bark that is deeply grooved. It's because of their unique bark that bur oaks can survive the hot, intense wildfires of the prairie.

I continue on through the snow and come to a simple wooden footbridge that crosses a small, frozen stream. I walk to the middle of the bridge and pause to look toward the north. The stream slides down a hill out of a sedge meadow that holds more than a few dogwood trees. Just up the

Looking north toward the old homestead from the first footbridge





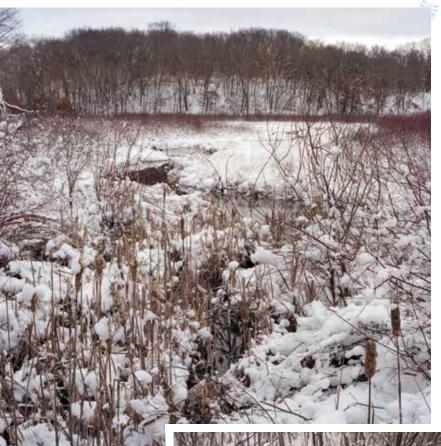
hill and beyond the meadow is the place where Daniel Muir built the first family homestead. Here, on a hot Wisconsin summer night, the young John Muir watched what appeared to be millions of fireflies flickering and illuminating the meadow. Later, he would write that the event was "so strange and beautiful it seemed far too marvelous to be real." Today, only a few nuthatches and chickadees flit among frozen trees; otherwise, it is quiet and still. A light snow begins to fall.

I turn and glance toward the lake. The place where the stream joins the frozen waters isn't far, but the distance between is filled with trees and bushes including a clump of now bare tamarack. I've long found the tamarack to be a curiosity. It is a coniferous tree by classification and appearance, but one that drops its leaves in autumn like its deciduous cousins. Though I can't see the confluence from here, I know this stream is one of many that feed the lake. Now called Ennis Lake after a later landowner, Muir's father named it

Fountain Lake because of the many springs and streams that bubbled up and ran over the ground, feeding the lake a steady diet of fresh, cold water. It's not miraculous, but it is beautiful.

I look off to my right and see the dog-like track of a coyote. The fresh snow reveals which travelers have passed, and I have seen many animal tracks today including deer, raccoon, fox, turkey, rabbit and squirrel. The trail begins to gently rise up a slight hill that's slick with snow and ice. I scramble to the top and walk through a pleasing forest of mixed oaks. It's a nice walk through some tall trees with a terrific view of the lake. After a short while, the trail descends to lake level, skirts the bottom of a hill of oaks and follows the outside Looking from the young oak forest after the sedge meadow

The winter landscape is a muted palette of pale whites, browns and beige brought alive by splashes of deep burgundy branches.



Above: Looking east from the bridge near the fen; Right: Looking west from the bridge near the fen

years, an entire lake can be consumed by a growing sedge meadow.

From here the trail follows the edge of the sedge around the southern end of the lake before entering a woodland of young oaks. This young forest is on the opposite side of the lake from the Muir homestead, but I expect that John Muir spent time walking and exploring here. Their nearest neighbor was four miles away, so there was ample space for exploration, but time was always a problem. Daniel Muir was a firm task master who often kept John and his siblings occupied with long, arduous days of farm chores. There was often some free time after church on Sunday and occasionally some time was granted in the evening to hunt or fish, but mostly their days were filled with farming. John's days were so full that to find some time for himself he would often rise at 1 a.m.!

Following the trail around the lake, I emerge on the western side and circle a very large spring fen. A fen is a type of wetland characterized by marshy land that lacks tree cover and is filled with living peat-forming plants and pH-neutral to alkaline water. I soon arrive at another footbridge that affords passage over a small, snow-rimmed stream. Its bubbling, clear, cold water runs swiftly over the sandy

> dark brown and black stream bed. The view east over the cattails of the fen and toward the hills of the oak forest is terrific. The winter landscape is a muted palette of pale whites, browns and beige brought alive by splashes of deep burgundy branches.

> The Muirs would only live at Fountain Lake for about eight years. Despite all of their hard work — and perhaps also because of it - the thin, sandy soil was quickly farmed out. Around 1857, when Muir was 17 vears old, they moved six miles southeast to a new farm. But it was the memory of Fountain Lake that Muir carried with him as he walked to the Gulf, spent a summer in the Sierra,

when he camped with Theodore Roosevelt, and while he tirelessly advocated for the preservation of American wild places.

There are many who feel that this land and lake was as important to Muir as Walden Pond was to Thoreau. There are three occasions when

edge of a sedge meadow. This trail most likely follows the lake's old shoreline, but the sedge that now lies between the trail and the water has been gradually expanding. It has moved further and further into the lake and filled the open water with layer upon layer of peat. Over thousands of



Muir tried to purchase the land from his brother, but was refused each time. The area is a wonderful collection of various plant communities and wetlands. It is now owned by Marquette County and has been protected as a State Natural Area since 1972. In September 2014, negotiations were completed with a private land-owner who owned a section of the Muir homestead to the north of the existing park, and that land will soon become part of the preserved property. It is currently slated to be dedicated in the spring of 2015.

After crossing the bridge, the trail opens into a field and from behind a tree my car comes into view. As I approach my vehicle, I reflect on this place. John Muir made this space a place of significance for the entire country. Its beauty is subtle,

but striking for those willing to take the time to look. Muir changed the way we consider open spaces. He intensely advocated to preserve them for themselves, beyond any idea of economic use or function. Today, I wonder about the place where I live. It's easy to take for granted the familiar places we see every day, but what if we took a moment to get out and turn over stones, do a little research and consider them with fresh eyes — the kind of eyes with which John Muir saw wild places? We might be as inspired by our own "ordinary" backyards as young Muir was by his. •

Tom Persinger is a photographer and writer based in Pittsburgh, Pa. Read more at www.tompersinger.com.

Granite memorial to John Muir near the parking area



# ROCK-A-BYE:

The Humble Treehouse as a Cradle of Empathy and **Understanding for the Forest** 

BY JULIA SHIPLEY



#### TONIGHT, IN THE BOUGHS OF TOWERING

spruces, cedars and oaks, ordinary people are getting ready for bed. As they settle in, they can feel their tree gently sway, maybe they hear the burble of a creek far below; when an owl hoots, it sounds as if it's in the next limb. Sensations like these are why the childhood treehouse is currently enjoying a full-grown renaissance. As master treehouse builder Pete Nelson says, falling asleep in the arms of a tree represents "the ultimate return to nature."



Read our web-exclusives on the world's first universally accessible public treehouse, built by "The Treehouse Guys" in Burlington, Vt. and on how treehouses are built in ways that are friendly to the tree at americanforests.org/magazine.



### People who view nature are less stressed and have decreased feelings of fear, anger or aggression.

For forest enthusiasts wanting to take their relationship to a new level, roosting in a treehouse can present a more intimate experience than meandering around the forest floor.

This is why Pete Nelson of Fall City, Wash., whose vision is "connecting people through personal encounters with trees," has built Treehouse Point — six treetop bowers amid the trunks of his large spruces. Nelson, who built his first edifice at age five, has made a career of his boyhood enterprise, building forts and bowers for adults. In addition to renting out his Parthenon-inspired tree forts, he's a frequent consultant on the TV series, "Treehouse Masters," and has helped numerous others "break bark" to get started on designing and constructing their own elevated rooms with a view.

Bill Compher of Ashford, Wash., also believes that a reprieve in the canopy can transform one's relationship with the surrounding woods. In 1998, Compher built the Cedar Creek Treehouse on his land near Mt. Rainier National Park, on the edge of Gifford Pinchot National Forest. His rentable, 256-square-foot aerie sits 50 feet — five stories above the ground, in the boughs of a 200-year-old

Above: Guests at Cedar Creek Treehouse can enjoy views of Mt. Rainier from this observatory, which sits 100 feet high in a Douglas-fir; Right: Treehouse at Timber **Ridge Outpost & Cabins** in southern Illinois





western redcedar. The tree grows though the floor and out the roof, offering a new meaning to the word "host."

Unlike your old childhood hideaway, Compher's is outfitted for longer stays. Though all water must be carried in, there's a butane stove for cooking, an icebox for perishables, solar electricity for light and even a bathroom on the premises.

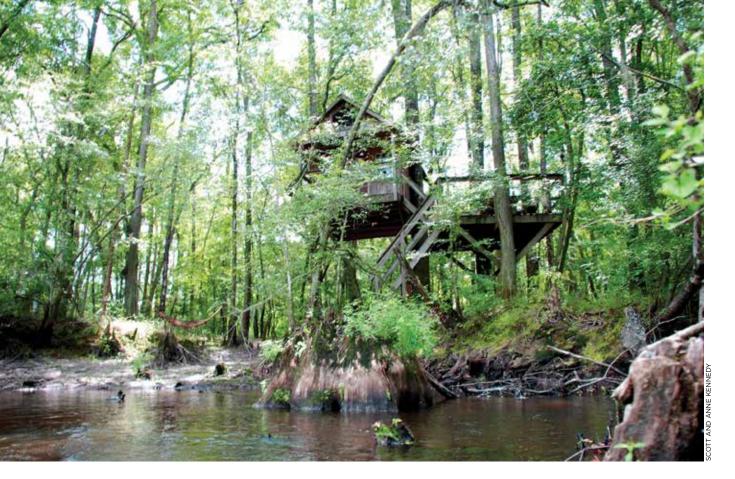
For almost two decades, Compher's guests have repeatedly inscribed the words "peace" and "magic" in the guest log. Science corroborates their experience. A University of Washington study found that people who view nature are less stressed and have decreased feelings of fear, anger or aggression.

The more explicit among Compher's guests share how falling asleep, rocked by the tree, helped them Cedar Creek Treehouse



Learn more about the **Evergreen Society** by visiting www.americanforests.org/evergreensociety or by calling Matthew Boyer, Vice President of Individual Giving, at (202) 370-4513.





One of the Kennedys' treehouses in Canadys, S.C.

see themselves as part of a bigger picture. As one guest writes, "having a tree at the center of our daily activities was an amazing reminder [that we are] part of a larger ecosystem."

Across the country in Canadys, S.C., Scott and Anne Kennedy share this same ethos — to help visitors cultivate a visceral awareness of the forest. Their flock of three treehouses perch 16 feet in the air, supported by the trunks of bald cypresses, water oaks and swamp tupelos. Built along the Edisto River in 1992, 2002 and 2006 by Scott Kennedy and his son, Beau, each treehouse is constructed on a platform stationed between a pair of trees with similar diameters. Like Compher, the Kennedys also rent their hideouts, which are accessible only by canoe along the river through a 300-acre privately owned forest. These low-impact treehouses are equipped with propane grills, oil candles and torches in lieu of electricity.

Anne Kennedy explains that many of their customers are searching for a way to "plug back in to nature" because, "as a lot of folks tell us, 'We'd forgotten what it sounds like to hear wind through the leaves."

"I love the land and I love the river," Scott Kennedy says, but he wants others to care, too. As he puts it, "If you don't know about a fish, how can you care about a fish?" To help others discover and subsequently care about a swamp forest, his treehouses facilitate a sort of immersion course, allowing guests to meet sturgeon and turtles as they paddle along the river and to imagine the life of a

heron or swallow-tailed kite as they mount stairs to dwell among trees for the night.

The Kennedys' treehouse guest logs brim with enthusiastic testimonies. On page after page, guests describe sighting their neighbors - Cooper's hawks, wood ducks, egrets — and offer glowing praise for the region's seven different subspecies of fireflies. Kennedy says he hopes his guests, whether arriving from nearby Atlanta or distant Athens, Greece, leave with a more personal relationship to the forest community and all its diverse inhabitants — the lizards and the bullfrogs, the wild ginger and huckleberries.

Treetop lodgings such as those offered by Bill Compher and the Kennedys abound across the country. In Vermont, a treehouse B&B nestled among the maples overlooks Green Mountain National Forest; in California, a redwood cradles an abode for rent; and on the edge of Shawnee National Forest in Illinois, one can wake up in a white oak. Lodgings range from \$100 to \$900 per night, depending on the spectrum of amenities, but each treehouse affords its inhabitants the chance to witness and temporarily reside on a higher level. As a recent guest to Cedar Creek advised: "Take time to adjust to life in the trees. Spend time doing nothing."

These grown-up hideaways all offer a squirrel's eye view of the forest surroundings and the chance to feel like a woodland creature, sleeping in the arms of the canopy.  $\blacklozenge$ 

Julia Shipley is an independent journalist, poet and small farmer in northern Vermont.

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### earthkeepers



## WildEarth Guardians: Champion for the West's Wild Places

THE AMERICAN WEST: home of the biggest skies, deepest canyons and widest open spaces — a place big enough to accommodate the dreams of even the biggest dreamers. But its grandeur does not exempt it from challenges. The landscapes here have faced many threats over the years, from overgrazing of the land and overharvesting of the trees, to dwindling wildlife populations and off-road vehicle abuse.

For a quarter of a century, nonprofit WildEarth Guardians has taken on

these challenges, working toward their mission to protect and restore wild places, wild rivers and wildlife in the American West.

It all started in 1989 on Elk Mountain in New Mexico's Jemez Mountains. WildEarth Guardians, then known as Forest Guardians, began as an effort to stop a logging project there. Since then, they have halted logging on more than 21 million acres of national forests throughout the West.

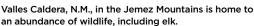
Even as they have expanded their work throughout the West, they have never stopped working in New Mexico. Says Restoration Director Jim Matison, "Whether it's the Chihuahuan Desert, Colorado Plateau, Rio Grande Valley, southwestern plains grass-

pine, mixed conifer, subalpine or alpine forests, all of these ecosystems are important to protect for future generations of the American public as well as wildlife." They still work in the Jemez Mountains, which is where American Forests has partnered with them since 2010 on another cause that has been part of WildEarth Guardians' vision since the beginning: recovering lands from overgrazing.

"In the early years," says Matison,
"WildEarth Guardians mostly fenced
sensitive riparian habitat to protect it
from livestock and elk grazing pressure.
Now, WildEarth Guardians is actively









WildEarth Guardians and American Forests 2013 plantings at Rito de los Indios in Valles Caldera

engaging with the Forest Service and grazing permittees to buy grazing allotments and permanently retire them from livestock grazing where resource challenges are insurmountable."

And they're having success. In 2014, WildEarth Guardians completed a grazing permit buyout, retiring 90,000 acres in the Gila National Forest from livestock grazing. This victory, Matison says, will "protect watersheds and endangered species including the Gila trout."

Yet no victory is ever the end. What does the future have in store for WildEarth Guardians? Says Matison, "We hope to bring our forest restoration work to Utah and Colorado in the near future and we have already been actively restoring watersheds in Montana and Idaho." They are developing new projects to meet the needs of the area as well, including "returning beaver populations to watersheds where they have been extirpated and their native food source depleted. By reestablishing native riparian forests and vegetation, we hope to bring back beaver and cost efficiently build resilience into western watersheds."

Here's to the next 25 years of protecting wild places in the West. \$

"WildEarth Guardians' core focus is to protect and restore wild places, wild rivers and wildlife in the American West and we will continue to expand these efforts up and down the Rockies."

- JIM MATISON, RESTORATION DIRECTOR, WILDEARTH GUARDIANS

### Years of WildEarth Guardians and American Forests

Last year, WildEarth Guardians retired 90,000 acres from livestock grazing, but they know that the work is still not done when the cows go home. That's when the restoration work begins, and that's where American Forests comes in. "American Forests is a vital partner for WildEarth Guardians' restoration efforts in the southwest," says Restoration Director Jim Matison. Here's a look at some of what we've accomplished together to restore lands damaged by overgrazing and overuse of off-road vehicles in the Jemez Mountains:

336,000 trees and shrubs planted

715 acres restored

2,500+ members of the elk herd that roams this area, whose habitat has been restored

Hundreds of volunteers from the local community who helped plant







#### Top: Darkside (2011); **Bottom: Ice Rainbow** (2013)

Taken in natural light against dark woolen fabric

Moscow-based photographer Alexey Kljatov is best known for his macro images of snowflakes — images that illustrate how nature's wondrous complexity can be found in even the smallest packages. Kljatov doesn't need to travel to far-off arctic locales, but relies on the nature on his own balcony for his photography. He shoots snowflakes on his balcony either against dark fabrics, illuminated by natural light, or against a glass background, illuminated by a flashlight from below.

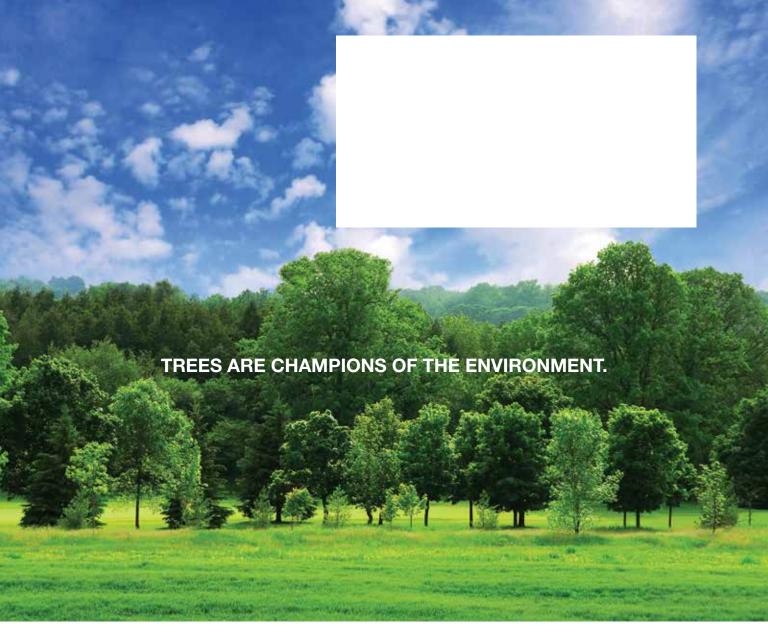
Snowflake photography runs in the family, Kljatov says. His mother, Olga Kljatov also photographs snowflakes using a similar technique. See more beautiful snowflakes and learn more about the work of the Kljatovs in an exclusive interview at americanforests.org/ magazine.

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