



BACK TO THE BUFFERS

This spring, the Sangha is launching a major initiative to improve and extend the stream-buffer sites that we have been planting for the past five years, as part of Fairfax County's buffer restoration program. We'll work in collaboration with the Fairfax County Park Authority, which owns nearly all of the sites.

A stream buffer is a strip of vegetation along a stream. Buffers keep streams healthy in many ways. They shade and cool the water, supply the channel with the branches and leaves that many aquatic organisms require, filter rainfall, and provide habitat for stream-bank wildlife. In the Mid-Atlantic region, streams under natural conditions are heavily buffered, usually by forest.

Unfortunately, the burbs have not been kind to the buffers. Most DC-area streams are no longer adequately buffered and many stream reaches are now completely exposed. Even in rural landscapes, extensive loss of buffer greatly impairs stream ecology. In suburban landscapes, the damage is far greater because of the huge amounts of stormwater run-off that pour into our streams with every heavy rain. Heavy run-off is a side-effect of development. All those roads, parking lots, and other impervious surfaces prevent the landscape from absorbing as much rain as it once did. Instead of settling into vegetation and soil, the rain rushes from parking lot to storm sewer to stream—carrying in pollutants, eroding stream channels, and raising water temperatures.

Fairfax County launched its buffer restoration program in 2005. The Sangha designed and supervised the plantings; much of the

Photos: Buffer plantings work! At right, our volunteers planted an eroding depression in the Difficult Run drainage, at Fairfax County's Carney Park, in April 2005. Above, the same site, photographed from about the same spot, in August 2009.

On line: For more on our buffer program, visit earthsangha.org/dca/sb.html. To volunteer, check our field schedule at earthsangha.org/dca/fs.html. To see more "before" and "after" shots of buffer sites, view our field map at earthsangha.org/dca/dcmap.html.

planting stock came from our own Wild Plant Nursery. By the end of last spring, 10,000 plants from over 80 species had been planted on about 30 sites covering over 18 acres, along more than two miles of stream bank. Over 1,500 volunteers had participated. But the program's original funding ran out last May and the County's Stormwater Planning Division decided that the buffers no longer fit in its budget.

The Park Authority budget is not in great shape either, but our PA colleagues want to continue working with us on the plantings, and there is a lot to do. The sites vary greatly in condition, from poor to excellent. (The biggest problems: invasive alien plants and heavy deer browsing.) We hope to do at least a little work on nearly all the sites, and to make substantial improvements to at least ten. We have very little funding ourselves, but we're just going to do the best that we can. If you live in the DC area, we hope you'll join us!



IN GRATITUDE TO OUR MAJOR DONORS FOR 2009

We thank everyone who has given to the Sangha, in whatever form. We owe a special debt of gratitude to the following people and organizations, who made major donations to our work last year. The Sangha has drawn great strength from their generosity and vision. May the spirit of their gifts continue to live within our work and practice.

Over \$5,000

The Fairfax County Tree Preservation
& Protection Fund (\$17,000)
The Shared Earth Foundation (\$10,000)
The Fairfax County Park Authority
(\$10,000 in kind)
The Community Foundation for the National
Capital Region (\$9,459)
Anonymous (\$7,000)
Cynthia Irmer & Bruce Engelbert (\$6,700)
The Virginia Department of Forestry (\$6,270)

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We believe this list to be accurate and complete but would greatly appreciate any corrections.



CARBON CREDITS FOR FARM CREDIT

The Sangha plans to create a small-scale carbon offset program for our Tree Bank in the Dominican Republic, along the DR – Haiti border. Funds from the purchase of carbon credits will support a micro-credit program for our Tree Bank farmers. In return, the farmers will preserve patches of remnant forest on their farms. It will be an integrated approach that will produce multiple benefits—for the farmers, for their lands, and for those of us who are trying to reduce our carbon footprints.

A carbon offset is a way to help people or companies compensate for their carbon dioxide (CO₂) emissions. (CO₂ produced by fossil fuel combustion is the main driver of climate change.) To counteract CO₂ emissions from one activity, driving a car for example, you might purchase credits in an offsetting activity, something that captures CO₂. There are many types of offsets; some are renewable energy initiatives, some aim to reduce industrial emissions, and of course there are many forestry projects. (Trees and other plants draw CO₂ out of the atmosphere as they grow.)

Here's a practical example. Say you drive about 12,000 miles a year, in a mid-sized car that averages 30 miles per gallon. According to one source I checked, your driving would release 3.28 tons of CO₂ every year. The remnant forests of the Tree Bank project region probably contain at least 70 tons of carbon per acre—about as much carbon as occurs in 257 tons of CO₂. By helping us conserve or plant just a small fraction of an acre of forest, you could “balance” your annual car emissions.

Sounds good right? We hope it will be—but there are lots of complications, so we have to develop this program very carefully. One major complication: Emissions accounting can be very ambiguous. There are many methods for doing this and they give very inconsistent results, as I learned from looking at several online “carbon calculators.” (If you'd like to try one for yourself, take a look at americanforests.org/resources/ccc.)

Another complication: Offsets can be even harder to measure than emissions. Take those forestry projects. You might think that tree-planting would be one of the easier ways of capturing carbon, but the amount of CO₂ sequestered by trees depends on many factors: Forest type, forest age, soil conditions, how often major disturbances occur, and so on. There are also differences in approach. For example, some forestry projects estimate future carbon draw-down, as saplings grow; other projects are focused on conserving threatened forest, and aim to stop already-sequestered carbon from being released by more cutting.

Photos: On the opposite page, Tree Bankers make their way through a patch of riparian (stream-side) forest near the Dominican Republic – Haiti border. This patch would be a good candidate for protection under our planned micro-credit program. At right, Hispaniolan pine (*Pinus occidentalis*) is by far the biggest native-tree species still common in the Tree Bank project region.

On line: For more on the Tree Bank, go to earthsangha.org/tb/tbmsn.html.



Either approach can work, as long as it's clear that the credits really are creating a carbon benefit—a benefit that definitely would not have occurred without the credits.

Finally, the biggest caveat of all: There is no way that carbon offsets are going to “solve” climate change! Reducing our emissions—burning less fossil fuel—must be the top priority, but it makes sense to offset emissions that we can't eliminate. And we think that it makes even more sense to offset those emissions in a program that also advances conservation and fights poverty!

We'll post updates about our offset program on our Tree Bank Mission page, at earthsangha.org/tb/tbmsn.html.

– Nikki Oteyza

Conservation Manager / Office Manager

**EARTH
SANGHA**
BUDDHIST VALUES IN ACTION

The Earth Sangha is a nonprofit 501(c)(3) charity based in the Washington, DC, area and devoted to ecological restoration. We work in the spirit of Buddhist practice, but our members and volunteers come from a wide variety of religious and secular backgrounds.

Want to donate or join the Sangha? You can support our work by becoming a member. Membership starts at \$35 per year. Donations are tax-deductible. You can mail us a check or donate on our web site. We will send you a receipt and include you in our mailings. Our mailing address is: Earth Sangha, 10123 Commonwealth Blvd., Fairfax, VA 22032-2707. Our web site is earthsangha.org. Comprehensive program information is available on our web site.

Want to volunteer or meditate with us? We work with volunteers at our Wild Plant Nursery and our field sites in northern Virginia. We meditate in the Del Ray section of Alexandria on Tuesday and Wednesday evenings, and on the mornings of the first and third Sundays of the month. For more information see our web site or call Lisa Bright at (703) 764-4830.

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One of the best: The Earth Sangha is recognized by the *Catalogue for Philanthropy* as “one of the best small charities in the Washington, DC, region.”



GREATER WASHINGTON

A BOTANIST LOOKS AT THE LANDSCAPE

Rod Simmons is the Plant Ecologist for the City of Alexandria, a contract botanist for the National Park Service and for the international conservation-science organization NatureServe, a board member of the Virginia Native Plant Society, and Botany Chair of the Maryland Native Plant Society. He is also a life-long resident of northern Virginia—so it’s not surprising that he has an encyclopedic command of the local flora. I recently spoke with Rod about local conservation. Excerpts of our conversation follow. — *Chris Bright*

From a naturalist’s perspective, what are the most valuable things about the DC region?

Within about a 50-mile radius of the center of DC, we have one of the richest floras in the United States. Just within that relatively small area, we have the richest parts of both Virginia and Maryland. Alexandria and Arlington County alone contain a third to 40 percent of all the naturally-occurring native plants in those two states. That’s pretty remarkable when you think about it: Virginia is close to 43,000 square miles; Maryland is 12,400 square miles, and Alexandria and Arlington together only cover about 40 square miles. And this region used to be even richer than it now is. We know that from old herbarium records—we have records for species that no longer occur here.

A ballpark figure of our current species diversity might be 1,000 or so naturally-occurring native vascular plants. But it’s not just the species-count. We also have a very diverse set of plant communities. We have prairie-like formations; we have various types of forest, and we have some very interesting and unusual wetlands as well.

Why should our area be so diverse?

There are two big, overlapping reasons. In the first place, we are living in a kind of botanical crossroads. Many of the species that occur here are at the northern or southern limits of their natural distribution. There are also plant migration routes that extend through this region. Plant species migrate in response to changes in climate, and in our region these shifts have occurred both in a north-south orientation, and east-west. So there’s a lot of complexity in plant distribution here.

The other big reason is our geology. I don’t know of any area in the eastern United States that is as geologically diverse as the DC region. Most people probably know about the Fall Line—the break from Appalachian Piedmont to Coastal Plain. But there are a lot of other features as well. A great example is the Triassic Basin out in western Fairfax County. This area is part of an ancient rift valley, and over millions of years, as that valley opened up, the upper crust of rock was stretched thinner and thinner, until eventually magma erupted through it and produced these extensive diabase outcrops. The outcrops weathered into soils with very high calcium and magnesium levels, and that created conditions for very rare plant communities—probably the most species-diverse communities anywhere in the eastern United States. That’s a great example of how geology affects botany.

It’s also an example of plant communities that are naturally rare. But are there also “artificially rare” communities—groups of plants that were once common and that are now largely gone?

Oh, sure—lots of them. For example, there were vast areas of upland forest, a community called “Terrace Gravel Forest,” that occurred along the Fall Line. But that’s nearly all gone now because these areas are high and dry, and therefore prime development spots. The few examples that remain are still in good condition, and when you go into them it’s like walking back in time. These places have stayed more or less the same for millennia—it’s hard for invasives to get a foothold in them and they weren’t any good for farming, which is why they survived into our era.



Rod Simmons considers the view from Great Falls, where the Potomac River flows from Piedmont to Coastal Plain. The Fall Line is one of the many geographic features that make the mid-Atlantic such an ecological complexity. (Photo by Dianne Graham)

Another example is this gorgeous woodland-grassland complex called “Basic Oak-Hickory Forest.” “Basic” refers to soil type, like what’s found in diabase communities, which occur on mafic rock, which creates a soil high in calcium and magnesium base cations. These are sparse woodlands with a very diverse groundlayer that includes lots of grasses or grass-like plants. Where it’s more open, you have this prairie-like formation dominated by Indian grass, little bluestem, purpletop, and so on. There used to be so much of this out in the west—in the Centreville area, for example. Now it’s largely gone.

If you drive south through the Virginia coastal plain in July, there are places where you’ll see lots of butterflyweed, milkweeds, native grasses, even orchids. Places that are all native, and all clean—maybe one or two exotics, if that. That’s the way our roadsides were here, when I was growing up in Fairfax County in the ’60s and ’70s. We didn’t have this junk—all these invasives. And we didn’t have the intense deer browsing. The extreme damage from invasives and deer is fairly recent; and of course that’s also true of the huge losses to development.

What would you say are the biggest obstacles to conservation in our region? What are the really fundamental problems?

I would say they’re cultural, not technical. If you look at tropical deforestation, for example, obviously there are many causes for that but one of the biggest factors has been poverty—small-holder farmers cutting forest to feed themselves. That’s biodiversity-loss driven by desperation. In this region, we have biodiversity-loss driven by a culture of excess. We’re wealthy, and a lot of that wealth was created by trashing our surroundings through development. That’s the norm here, and changing it looks like a political threat. That’s why politicians always talk about “balance,” as if we were in danger of tipping the scales too much towards conservation! It’s also why we’re so quick to accept museum pieces as a way out—a bit of nature that’s basically stuffed in a box, as a substitute for fully functioning nature. But despite all the damage, there are still many valuable properties that could be protected—and they should be. We should be conserving the best of what’s left, even if it’s expensive. That’s the most important thing to do. Much has been given to us, and much should be expected.