

## FIRST SEWER REPAIR, THEN FOREST REPAIR: A PLANTING CLOSE-UP

It was not a great way to start the weekend. On Friday evening, July 10, Arlington County, Virginia, officials discovered a leak in a sewer pipe that runs along — or sometimes, in — a stretch of Donaldson Run, a stream that empties directly into the Potomac. Over the course of the next several days, about 25,000 gallons of raw sewage flowed into the stream, a little less than a mile from the Potomac. County workers tried to vacuum out as much of the offending material as they could.

As with many streams in the DC area, the channel of Donaldson Run is badly eroded — a consequence of unnaturally high stormwater runoff from roads, parking lots, and buildings. The run-off has scoured out the stream channel, dropping the channel bed lower and lower. Eventually, the bed sank below the pipe's concrete casing. The casing shifted and the pipe within cracked.

The cracked pipe had to be replaced. But this section of the stream is flanked on both sides by big, handsome houses whose properties extend all the way to the stream bank. A mature oak-beech forest covers most of the floodplain. The forest is privately owned — it's part of those properties — but it's protected by an easement, a common arrangement in the DC area.

To make the repair, workers had to cut all the trees in a section of the floodplain. There was no other option, and some of the trees that were left will likely die over the next several years from root damage. So the forest was cut, the repair was made, and the exposed earth was covered with biodegradable erosion-control mat.

So much for the pipe. Fixing the forest will be cheaper, of course, but it will take a lot longer. That task fell to the Arlington County Department of Parks and Recreation, in part because the damaged forest is continuous with the Zachary Taylor Nature Area, a beautiful, 44-acre forested park with well maintained nature trails used by many area residents.

The cleared area would have to be replanted. Arlington Parks couldn't simply step back and allow the forest to move in again on its own. For one thing, there was a risk of erosion. And an open area like this could be colonized rapidly by invasive alien plants that could suppress regenerating forest. Also both homeowners and park officials wanted the canopy species reestablished as soon as possible. For all these reasons, replanting was the logical first step for restoring the site.

After securing the consent of nearly all the neighboring homeowners, Arlington Parks turned to the Sangha for plants and planting logistics. The plants came from our Wild Plant Nursery, which produces native, local-ecotype stock for projects such as this. Arlington provided us with a list of tree and shrub species already present in the forest; working from such a list is a standard "best practice" in restoration plantings. We supplied 115 trees: white oak, northern red oak, sycamore, American beech, black gum, black cherry, and redbud. We also supplied 40 shrubs: witch-hazel, spicebush, southern arrowwood, and blackhaw. The local branch of the National Park Service contributed some American elm. And we included some herbaceous plants: a couple of flats of forest sedges and asters.

On Sunday, October 18, it all came together in a three-hour field event. Our 61 volunteers included many members of Sewa International, a Hindu charity dedicated to volunteering as a form of civic engagement. We also hosted a very energetic crew of ethnic Vietnamese students from Falls Church High School, as well as other students and local residents. The digging was tougher than we expected — lots of stones! But the volunteers did a superb job. All the plants went in. Moist soil and cool weather made watering unnecessary. Our only real concern was the possibility of browsing by deer. Arlington Parks will watch for that and, we hope, provide protection if needed.

It was all just routine — but that's why this work is so important. The planting was another bout of successful collaboration towards a common goal. And it was another moment to bring our work full cycle: native seed, collected from the wild, is grown into plants that are used to heal damaged forest. What could be more natural?

**Photo:** In October, volunteers reestablished native forest cover along a section of Donaldson Run, in Arlington, Virginia.

Read  
**LIFE IN THE FIELD,**  
the Earth Sangha's new blog.  
At [earthsangha.org](http://earthsangha.org). Click on "blog."

## THE TREE BANK: ONE YEAR AND TWO MONTHS BEYOND GASPAR

It has been about 14 months since my friend and colleague, Gaspar Pérez Aquino, died unexpectedly of a stroke. Gaspar had been the Director of our Tree Bank Hispaniola program since it was started in 2006. The Tree Bank works along a section of the Dominican Republic / Haiti border, on the Dominican side, to boost the incomes of smallholder farmers and to conserve and restore native forest. The program is a partnership between the Sangha and a local farmers' association, the Asociación de Productores de Bosque, Los Cerezos. (Los Cerezos is the community where the Tree Bank is based.) We are working with 46 families so far, and have so far conserved about 250 acres of forest. For an overview of the program, see the Tree Bank page of our website, at [earthsangha.org](http://earthsangha.org).

Gaspar's death was a tragic loss for his family, for the community, and the biggest set-back that our program has ever encountered. I report below on the main steps that we have taken to recover.

**Communications:** When Gaspar was alive, I worked almost exclusively through him. I have since learned my lesson about communication bottlenecks. We bought cell phones for several of our participants, to take advantage of improvements in the local cell network, and almost every week I talk with three or four people.

**Organization:** We have worked to create multiple pathways for action and more local competence. We now have two Co-Directors, both authorized to act on routine matters independently of our partner Association. Our Co-Directors have a laptop and are learning how to use email and maintain spreadsheets (a simple budget and an inventory of plants at the Tree Bank Nursery). For big issues, we go directly to the Association "Directiva" (Executive Committee).

**Nursery:** The Tree Bank Nursery can produce about 20,000 trees per year. That's nowhere near enough, so nursery expansion has been a big priority this year. We made, or are making, three key improvements. First, we built a garage in Los Cerezos for the nursery pickup truck. The pickup had been garaged in the town of Loma de Cabrera, about 10 miles away, but having a secure shelter for it near the nursery should greatly improve our logistics. Next, we installed a second big water container near the nursery's shade structure. (See the photo.) More water storage will make it easier to manage our stock when there is little rain. And finally, we're extending our shade structure, to increase our container yard by about 50 percent.

**Forest Credit:** Our Tree Bank loan program makes low-cost credit available to the farms, in exchange for easements over surviving forest. At the end of 2014, uncertainties about the program, and the absence of anyone with Gaspar's political abilities, greatly slowed the repayment of the 2014 loans. During the first half of 2015, I worked with our Co-Directors and the Association Directiva to organize the repayments. All but three of our farmers have now repaid their loans in full. (The remainder are on repayment plans and cannot borrow again until they are fully paid up.) We also improved our loan application procedures, and got a new set of loans out, amounting to about \$18,000. These are due at the end of the year.

**Rising Forests® Coffee:** Because it is grown under native forest canopy, our coffee allows farmers to make money from their forest without cutting it down. But over the past two years, a coffee leaf-rust pathogen killed nearly all of the

coffee groves in the Dominican Republic, as well as many groves elsewhere in the Caribbean and Central America. Like other growers, we are replanting with rust-resistant coffee cultivars. By late October, about 1,800 little coffee trees had been produced at the Tree Bank nursery and distributed, for free, to our farmers for reestablishing their old coffee groves. We're producing more coffee trees as fast as we can! Some of the new trees could begin bearing as early as 2017.

**Rising Forests® Cocoa:** Like coffee, cocoa is a high-value forest-compatible crop. We need a mixture of forest-compatible crops to limit our vulnerability to problems with any single one. This year we began expanding cocoa-tree production at the nursery, and our farmers have thus far planted about 700 of these trees. We plan to bring some "high-test" cocoa strains into the nursery next year, and increase cocoa-tree production.

**Information:** This year, we launched our "Information Harvest": periodic surveys of our Tree Bank farmers, on their families and farms. The information will help us improve the Tree Bank. You can find results from the first survey on the Tree Bank page of our website. I attempt an interpretation of the results in our new blog.

**Next Steps:** In addition to routine expansion, I see two big goals for the year to come.

**Native Tree Propagation:** We need to increase the species count and seedling volume of the nursery's native tree inventory. At present, we only have 11 native species in our system. We are looking for a Dominican botanist or ecologist who could help us identify more local seed sources for candidate species.

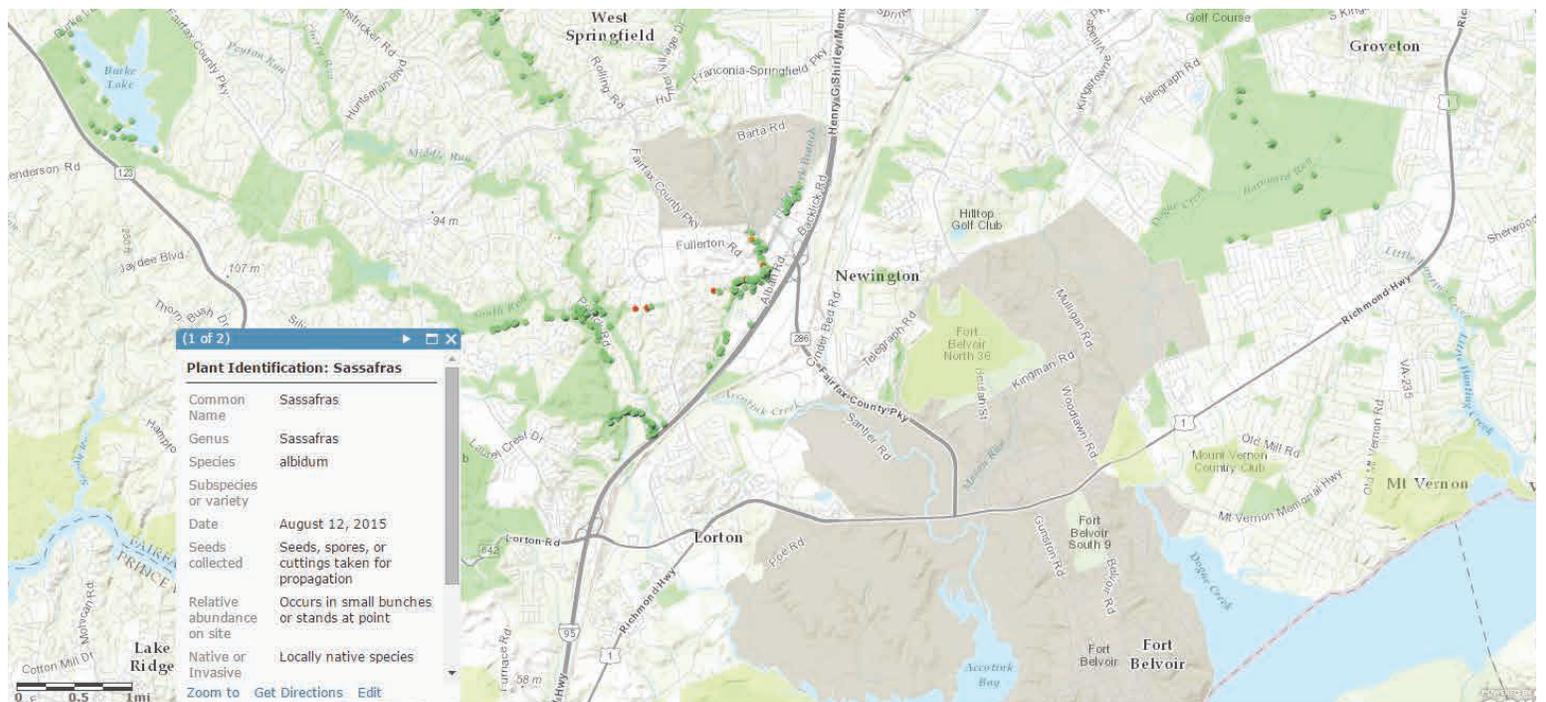
**Coffee and Cocoa Expansion:** The other big challenge is to begin extending coffee and cocoa, under restored native forest canopy, over large areas of low-value pasture and cropland, a project that Gaspar and I were working on just before he died. The plantings will take several years, since the canopy species must be established before we can put in the coffee and cocoa. Such a project could yield huge benefits, both ecological and social. An example of the latter: we hope to centralize payment to our planters, nearly all of whom will likely be Haitian, in order to set a kind of de facto minimum wage for this type of labor. Then we'll try raise that wage in subsequent years, as work proceeds.

The Tree Bank has proved to be a highly resilient program, thanks to its two most important resources: our farmers, and our donors.

— Chris Bright, President

**Photo:** In September, Cosme Quezada, one of the Tree Bank's Co-Directors, prepared the mold for the cement base that now supports the second water tank at the Tree Bank Nursery. You can see the first tank in the background.





## MATT'S NOT-QUITE-TOTAL BOTANICAL AWARENESS DATABASE

In last November's issue of the *Acorn*, I mentioned that we had begun collecting geographical data on our seed accessions. One year on, I'm happy to report that we've made a lot of progress!

In the photo, above, you can see lots of little, differently-colored dots. Each dot represents a single plant species, native or non-native, that we're interested in tracking. Green dots represent natives; red dots are non-natives, and yellow dots represent unidentified species or species of uncertain provenance. The display can be easily adjusted to display other information, for example, blue for points where we collected seed, or orange where a point was set just for purposes of identification.

Our goal is not to map every single plant or even every species — a Sisyphean task! Instead, we record populations from which we collect seed, or from which we hope to collect it, or that tell us something important about the site. For example, an entry for swamp azalea (*Rhododendron viscosum*) probably indicates a seepage swamp, so we would look there for other species that prefer that type of habitat.

For each point we collect a set of data. Some of this is simple, such as the GPS coordinates, the species, and the date of collection. This basic data answers simple questions like "When and where did I collect silky dogwood (*Cornus amomum*) last year?" For less common species, this data can help lead us back to obscure populations hidden in dense meadow, or off-trail locations that are hard to remember.

Other data is interpretive, and calls for the collector's judgement. For example, each dot can represent a single plant, or a stand of several plants of the same species at that point, or a widespread population extending over an entire site, like the grass little bluestem (*Schizachyrium scoparium*) growing throughout a meadow. This is useful so we can better budget our time. If we need to collect a lot of sassafras (*Sassafras albidum*), I want to go to the park with a big, fertile stand, not the one that only has a few stems that almost never bear fruit. When applied to "indicator species," these judgment calls should be useful for monitoring the ecological health of local parks.

To date, we have collected roughly 1,000 points, beginning in mid-fall 2014. Many of these were recorded by my colleague Fritz Flohr Reynolds; Fritz contributed almost all the points for the Accotink Creek gorge, to the right of the data box in the photo above.

We also have several years of hand-written notes that can be converted into ArcGIS data. These older records won't give us the geographical specificity of our new records, but we will be able to search them easily and include them in our analysis.

So far, so good! But we're hoping to improve our data-collection procedures over the winter, and begin anew next spring. Here are our next steps:

**Train volunteers to record data.** Since Lisa remains a holdout against touchscreen technology, and since I can't always be in the field with her, we need to train others to use the ArcGIS Collector app and show them how to enter field data.

**Convert point data to tabular or polygon data, as needed.** Some occurrences, particularly of grasses and meadow forbs (broad-leaved herbaceous species) are better represented by drawing a polygon, rather than recording a single point. I hope to begin making this kind of adjustment over the winter.

**Begin sharing some data.** We plan to offer our data to our public-agency partners, to other conservation groups, and to the public at large. But the process is more delicate than it might seem. We have to balance the risk to sensitive populations from both deliberate damage (poaching), and accidental harm (trampling, tracking in invasive seed). We also want to make sure that our data is as accurate as possible so we don't introduce errors into the work of other groups. But despite these risks, we think it's of vital importance that the information be available to anyone interested in conservation.

We're off to a great start, but we've barely scratched the surface of this field's potential. If you know how to use it, ArcGIS can be a powerful tool for conservation. As we collect more data, we can do more with it, and use it to guide our efforts more broadly. Eventually, we hope, ArcGIS will allow us to build a virtual library on local plant-community composition — a powerful complement to our Wild Plant Nursery as a resource for ecological restoration.

— Matt Bright, Conservation Coordinator

**Photo:** A screenshot of our ArcGIS database. The points record occurrences of various plant species, both native and non-native invasive. One of the points has been opened to show some of the data that Matt and crew record in the field.



## ALL THAT SEED

# EARTH SANGHA

CONSERVATION IN PRACTICE

**L**isa hauls the harvest into our carport. There are big paper bags filled with wild grain, lunch-sized bags with the seed-heads of various herbs, snapped off in powerline meadows, and plastic pouches full of soft, moldering wild persimmon. Some of this seed will be sowed directly into restoration sites, but most of it is destined for our Wild Plant Nursery.

How varied and intricate are these beginnings of life. There are big, handsome hickory nuts that smell like the best aftershave you can imagine. There are milkweed pods that make your fingers sticky when you split them open to disburse the brown flakes within, each equipped with fluffy, white filaments to loft it into the faintest breeze. There are dozens and dozens of little prickly things, twigs bearing little tufts, tiny wooden snowflakes, beads, lozenges, and capsules.

In the field these wonders are easy to ignore. That leafless brown stalk of goldenrod, with its broken seed-head filigree dripping in the winter rain: what is it? A nothing. A dead weed, unworthy of notice, except maybe as a stalk to dislodge the mud on the sole of your boot. And yet it's a nothing that knows, in the chemistry of its seed, in its DNA, how to live here, amidst the other things that also live here, and how to balance its growth and bloom against the climate and terrain, and how to calibrate that balance over thousands of years. That's not something that our culture seems likely to achieve.

All this seed invites humility. When you sow it, you can see its creative force. And if you're out collecting, it's hard not see our own destructive force — and to feel ashamed of what we are doing to wild habitat. Wild seed also offers a crucial opportunity: gathering, growing, and planting, if done with care, can help to un-fragment our landscapes. Collect seed from an archipelago of habitat, broken up by roads and parking lots and strip malls, and distribute the resulting plants to other islands of that archipelago, and you can facilitate the genetic flow from one surviving patch to another.

So maybe through the seed we can redeem ourselves, at least to some degree. To its creative force and deep roots in this place, we can marry our skill, care, and patience.

— Chris Bright, President

**Photo:** In October, veteran Earth Sangha volunteer Jerry Schreppe collects seed from a stand of Indiangrass (*Sorghastrum nutans*) in a northern Virginia meadow.

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 contact us or make a donation?** 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 (made out to “Earth Sangha”) or donate on our website. We will send you a receipt and include you in our mailings. (If your name and address are correct on your check, there is no need to send us anything else.) To donate specifically to our DC-Area programs, write “DC-Area” on the check memo line; to donate specifically to the Tree Bank, write “Tree Bank” on the memo line. [Contact us at: Earth Sangha, 10123 Commonwealth Blvd., Fairfax, VA 22032-2707 | \(703\) 764-4830 | earthsangha.org](mailto:info@earthsangha.org). Complete program information is available on our website.

**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 evenings. For more information see our website or call Lisa Bright at (703) 764-4830.

**The Acorn:** Our newsletter is produced with “print on demand” technology, which consumes far less energy and materials than does conventional printing. This paper is 100% post-consumer waste recycled, process chlorine-free, and manufactured entirely with wind-generated electricity. This issue © 2015 by the Earth Sangha. All rights reserved.

**Gold-rated:** The Earth Sangha has a gold rating from GuideStar Exchange for commitment to transparency.

**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.”



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