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Looking Beyond Forest to Individual Trees

Eco-Friendly Reforestation Efforts Win Friends

By Carla Garnett

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On the front page...

It's official: At NIH we shall never see a stormwater drain "as lovely as a tree." With apologies to poet Joyce Kilmer, the following is part ode to ecology, part nod to economy. It's about planting roots (not Alex Haley's) and appreciating duff (not Hilary). It's planning for the future by returning to nature, and using high-tech gadgetry to manage woodland wizardry. And, as is the nature of NIH, it's about being way ahead of the curve.

Our story starts with an autumn 2004 tree survey that garnered NIH rave reviews for several successful groundskeeping projects around campus.

Continued...

With Bldg. 1 as a backdrop, Ed Pfister, NIH environmental compliance officer, points out completed stream bed stabilization efforts in front of Bldg. 21.

Surveyors "noticed initiatives we had that they saw as models for other urban institutional settings," explains Lynn Mueller, long-time chief of NIH grounds maintenance and landscaping, Office of Research Facilities. "They were impressed with the cypress grove [near NLM], the reforestation of the creek [near Bldg. 20] and the return of the tulip poplar grove [near the Children's Inn] back to its natural wooded layer, which requires no mowing or maintenance."

All of the initiatives are detailed in NIH's Urban Forest Conservation Plan, part of the NIH Master Plan, which is "designed to protect and maintain tree canopy on NIH grounds, specifically buffer zone areas, stream buffer areas as well as landscape and street trees," says Ed Pfister, ORF environmental compliance officer. "It's a mechanism for continued compliance with the goals of the Maryland National Capital Park and Planning Commission and the Maryland State Forest Conservation Act. It formalizes our tree policy of planting a replacement tree for each tree removed due to damage, disease or construction."

Jim Himel, a licensed forester who consults for NIH, points out the natural forest floor created by the tulip poplar trees behind the Children's Inn.

On hand at a recent site visit of NIH's Reforestation Project are (from l) Mark Buscaino of the U. S. Forest Service; Lynn Mueller, chief of NIH grounds maintenance and landscaping; Himel; NIH arborist William Scofield; Ed Pfister, NIH environmental compliance officer; Jeff Horan and Mike Gavin of the Maryland Forest Service; and Marian Honeczy, state forest conservation project, Maryland department of natural resources.

In fact, the latest master plan calls for NIH to have more landscaped open space in 10 years than it has now, largely because the agency is replacing many surface parking lots with multi-level garages.

Horan (l) and Mueller discuss restoration of the streamside forest buffer along the NIH creek.

In an age of rapid urban development, such a forward-thinking master plan is nearly unheard of, according to Jim Himel, a licensed forester who consults for NIH. He conducted the latest tree census over a period of about 3 months that ended last December. That survey was another in a series of bold departures from routine reforestation and resource conservation efforts.

"The NIH staff is using lots of innovative ways to manage the natural resources on campus, really 'outside-the-box' ideas that are enhancing the forest and wildlife jewels it has," he notes.

The tree survey catalogued more than 5,500 trees growing on NIH's 310-acre campus.

"NIH is doing things no one else is doing," Himel continues. "There are over 140 different tree species on NIH grounds, which is just amazing. That vies with most arboreta. There are also more than 40 different species of birds and other wildlife — all because of thoughtful wildlife habitat planting efforts. NIH's one-for-one tree replacement policy — no one else in the state is as aggressive."

Several factors make the NIH census unique. First, Mueller authorized use of high-tech geographic information system (GIS) software — similar in

Wildlife Put to Work
Bluebird Tally In, Up

There is good news about NIH's innovative efforts to attract more bluebirds to campus:

Mueller (l), Horan (c) and Buscaino examine a new persimmon tree seedling, part of a plan to increase the diversity of NIH trees and understory plantings.

"Even with all the construction and landscape disturbances over spring and summer 2004, we were fortunate enough to witness the fledging of 31 bluebirds during the summer months," reports Lynn Mueller, chief of NIH grounds maintenance and landscaping, Office of Research Facilities. "This is an increase over the 2003 total of 16 and 2002 total of 13 bluebird babies. We also had successful nestings of house wrens, chickadees and tree swallows. We added some more bluebird houses over the winter months and changed the locations of some that had not attracted any birds to see if we can continue our increasing success."

Now entering its fifth year, the novel project to install bird houses in strategic areas on campus was begun to encourage more birds to help NIH naturally control campus insect populations without resorting to insecticides. By luring feathered friends to feed on potential West Nile Virus carriers — mosquitoes — the relatively inexpensive NIH housing initiative can help lower the risk of disease, improve the environment as well as make campus life more enjoyable for patients, employees and visitors.

concept to the popular Global Positioning Systems advertised in luxury vehicles these days.

"Now we can locate each tree," Himel explains. Armed with a tablet PC laptop and an aerial photograph of the NIH campus, he and Lonnie Darr, a GIS expert, employed software called ArcGIS to pinpoint every tree on campus. It is also remarkable that the NIH census did not just sample a certain number of its trees and make projections for the total property, as most institutional and neighborhood surveys do.

Not only was each tree's unique address (longitude/latitude) recorded, but also specific and detailed data about the tree's canopy, health and type were documented. A forestry professional for more than 25 years, Himel says canopy information is far more valuable than what is usually collected — height and diameter — during a traditional tree survey.

"This is the first time ever that an inventory has included canopy volume instead of each tree's diameter," he says. "We measure each tree's canopy height and canopy width. We can then project the canopy growth 10 to 20 years into the future. That tells us a lot about the tree's potential environmental benefits. A tree's canopy — its branch spread — is what collects dirt and grime during rain and what provides shade, and the absorbency for natural drainage. If we were just looking at trunk diameter, we'd just be measuring telephone poles."

So impressed was Himel with NIH's results that he contacted others interested in city forest management to visit for a site tour. Mark Buscaino, director of the U.S. Department of Agriculture's urban and community forestry program, was also amazed.

"The ultimate goal of what we do in urban forestry involves public health benefits — stress reduction, storm water management and other issues that have environmental impact," he explains. "Most tree surveys are never as complete as the one NIH has done. It really is cutting edge."

Particularly remarkable, he says, are NIH efforts to segue some formerly mowed land back to trees and wildlife habitat. Over the years, the urban forestry community has gradually veered away from using hard engineering solutions that were built to move water in order to drain it, Buscaino explains. Now the best stormwater management systems make use of natural tree cover and forest floor areas called "duffs" where water saturates and drains the way nature intended.

The trees bordering NLM's southeast corner are believed to comprise the northern- most stand of bald cypress west of the coastal plain. The roots of cypress trees grown along streams can help stave off erosion of creek beds. Cypress planting was even more successful than expected at this location.

"It's a rare occasion when a government agency invests so much into making its facility environment-friendly and ecologically friendly," he concludes. "It may cost money up front, but in the long run you will actually save money by reducing maintenance costs."

NIH is lucky to have staff that are open to new ideas, Himel concluded. Recent tree survey and reforestation efforts guarantee that "you all at NIH are seeing not only the forest, but every single tree," he says.

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