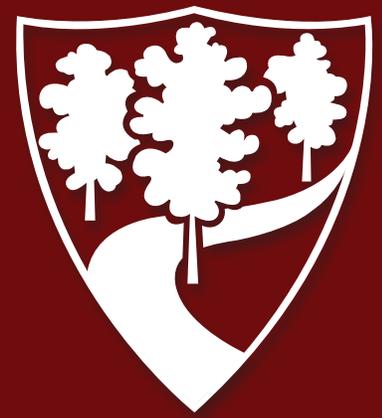


THE DUKE FOREST LOG

A bulletin from the
Office of the Duke Forest

Fall 2022



Planning for a Future Forest

In 2021, we celebrated the Duke Forest's 90th anniversary and reflected on its history and present as a teaching and research asset for Duke and the wider community. As we press forward in these turbulent times, we recognize that we have reached an inflection point in the Forest's story — one that is driven by the confluence of increasing pressures faced by the Forest and increasing recognition of its irreplaceable value.

While many aspects of the Forest's mission are modernizing and advancing, we also face challenging questions as stewards of this tremendous resource.

In spring, we will finalize an update to the strategic plan that has guided our work across management and stewardship, teaching and research, and community engagement for five years. This plan drew on months of stakeholder input and professional consultation, and we have followed it with fidelity while also adapting and tweaking as needed. We anticipate that the new plan will amplify much of what is already underway and leverage the resources, processes, and programs that have



Peter Jeff Nicholls

been successfully secured and implemented over the last five years. These include, among other accomplishments, the addition of two new staff roles; development of a robust communications and fundraising plan; implementation of new community engagement programming; continued leadership in regional habitat connectivity conservation; and execution of a new continuous forest inventory system. With so much strategic momentum, it is appropriate that updates to our management plan and recreational survey — both on 10-year cycles — are also underway at this time.

While many aspects of the Forest's mission are modernizing and advancing, we also face challenging questions as stewards of this tremendous resource. How will increasing local and global pressures — from urbanization to climate change — continue to drive change in the Duke Forest and to the benefits it provides? Should we try to manage some of that change, adapt to it, or both? What should we do with long-term research sites as the research community itself transitions and evolves? These are just some of the big questions we are wrangling with.

With the announcement of Duke University's Climate Commitment this fall, all of Duke's resources and expertise across its academic, health, operational, and community enterprises will turn toward the goal of addressing climate change. The Duke Forest Teaching and Research Laboratory will

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The Duke Forest Teaching and Research Laboratory comprises over 7,000 acres of land in Durham, Orange, and Alamance counties and has been managed for research and teaching purposes since 1931. The mission of the Duke Forest is to facilitate research that addresses fundamental and applied questions across a variety of disciplines and to aid in the instruction of all students in their pursuit of knowledge, especially regarding the stewardship of our natural resources.

dukeforest.duke.edu

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Duke
UNIVERSITY



Duke University President Vincent Price and Nicholas School of the Environment Dean Toddi Steelman talk with Executive Director Sara Childs about Duke's Climate Commitment.

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Forest Greeting

From the Executive Director's Desk

Though the last two years have been disruptive in so many ways and to so many facets of our life, I, like many of you, have found solace in the Duke Forest. It's been a source of relative stability to know that the trees kept adding growth rings, the owls maintained their hunting perches, the salamanders returned to their breeding ponds, and the waters of New Hope Creek flowed. I do not, however, take any of this for granted, and it is precisely these seemingly simple yet profound processes that provide me with the purpose and passion to take care of this resource and the team that tends to it. Our staff's devotion to this place and to each other throughout this trying time has been an inspiration, and I am forever grateful for our small but mighty team.

While its boundary lines, roads, trails, and access gates make the Duke Forest's existence seem solid and unchangeable, I am increasingly aware that what makes anything truly enduring is the network of people who care about it. Without the support of visionary Duke leadership past and present, the continual inquiry of steadfast researchers, the annual retinue of curious students, the efforts of collaborating organizations, the work of hundreds of faithful volunteers, and the dogged commitment of our generous and growing list of donors, the Duke Forest would not exist as we know it. To all the Duke Forest faithful, I hope you continue to join us in stewarding this incredible forest.

As we share in the cover story, this is a big moment for the Duke Forest. We are wrestling with unwieldy questions, tackling challenging problems, and setting our course for uncertain times. We will continue to rely on and call upon our community to join us in shepherding the Forest toward a healthy and hopeful future. We hope you appreciate the rest of this annual update on what our office and the Duke Forest community have been up to. May we all be inspired to together take care of the unrelenting yet precious beat of nature drumming in the Duke Forest.



Watch Duke University's cinematic mini-documentary about the work of our staff at dukeforest.duke.edu/origins.

Sara

Sara DiBacco Childs
 Duke Forest Executive Director

Continued from Front Page

certainly play an indelible role. After all, it was one of the university's earliest investments in the environmental field, and it will certainly be one of its proudest and longest-lived legacies.

In light of both the incredible momentum and the big challenges of our time, we are confident that with the insight and support of our vast community, this is the moment when we will set the conditions for stewarding the Duke Forest for the next 100 years.

Duke | CLIMATE COMMITMENT

To learn more about Duke's Climate Commitment, visit climate.duke.edu.



Teaching & Research

First and foremost, the Duke Forest is an outdoor classroom and living laboratory, and it is the mission of our office to facilitate this use through our daily operations and strategic initiatives. We help establish and maintain dozens of research projects every year; we assist faculty and teachers in creating high impact learning experiences for students of all ages; and we work directly with students interested in designing and conducting projects focused on any aspect of the Duke Forest.

Above: Dwarf Waterdog (*Necturus punctatus*) specimen collected by Bryan Stuart of the NC Museum of Natural Sciences. This fully aquatic salamander had not been observed in the Duke Forest since the 1960s.

Management & Stewardship

Management of the Duke Forest is guided by a comprehensive plan that promotes the Forest's academic mission while ensuring the protection of its natural resources. Our holistic approach sustains a wide variety of benefits that are available to Duke University, as well as the broader academic and public communities. This management system is certified by Preferred by Nature™ to Forest Stewardship Council® guidelines, a strict set of environmental, social, and economic standards.



Tom, Blake, and Sara (left to right) on a trip to inspect a timber harvest in the Durham Division in November 2021.

Engagement & Outreach

The Duke Forest engages a large audience, including the Duke University community, local K-12 schools, and the general public. Through engagement and outreach, we leverage the Forest's resources to connect people with science; to educate about natural resources conservation and forest management; and to empower the public with information about issues affecting the environment. We rely on a critical core of volunteers to help us accomplish teaching, research, and management goals.



Dr. Nicki Cagle (right) showing spring ephemeral plants to participants in the annual Flora & Fauna tour in March. This tour was the first in-person event since the COVID-19 pandemic began.

2021 - 2022 AT A GLANCE

*Some reported numbers reflect impact of COVID-19 Pandemic



Research	
Number of research projects	42
Number of primary investigators	30
Number of institutional affiliations	9
Total research dollars (22 of 42 reporting)	\$1,969,500

Teaching	
Number of teaching activities	18
Number of educators	15
Number of class visits	101
Number of participating students	516



Harvests	
Regeneration	20 acres
	20

Stand Improvements	
Pre-commercial thinning	136 acres
Invasive control	90
Prescribed Burn	37
	9

Research Maintenance	
Field Mowing	77 acres
	77

Road & Trail Maintenance	
Trail work	154 miles
Road mowing	79
Ditch clearing	37
Side mount mowing	31
	7



Outreach Activities	
Number of tours and activities	14
Number of participants	317
Total outreach hours	23

Volunteer Activities	
Stewardship Projects	
Number of events	5
Number of volunteers	46
Total volunteer event hours	482

Community Science	
Number of volunteers	36
Number of data collection visits	102

Photography Corps	
Number of volunteers	20
Number of photographs submitted	856



Project Updates



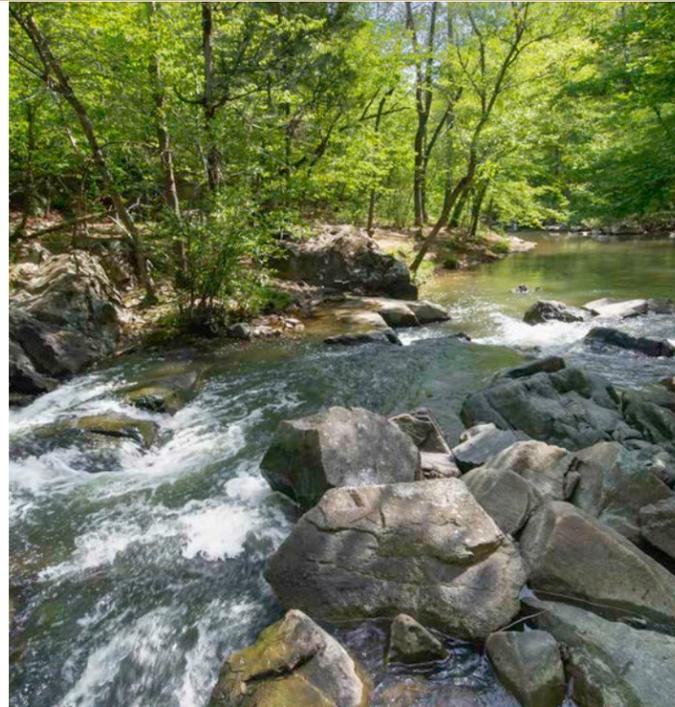
Pat French

Regional Habitat Connectivity Work Continues

Duke Forest has continued as an active steering committee member of the Eno-New Hope Landscape Conservation Group (ENH-LCG), a regional effort to connect significant natural areas, create wildlife corridors, reduce habitat fragmentation, and protect biodiversity. This ambitious and collaborative project began in 2015, and additional information about this vital work can be found in previous editions of the LOG.

Over the last year, the ENH-LCG followed up on its 2019 Landscape Conservation Plan with a strategic action planning (SAP) process funded by the Network for Landscape Conservation. It involved convening a diverse audience to design strategies for achieving habitat connectivity across the Eno River and New Hope Creek watersheds. Community members, land-use planners, conservationists, scientists, educators, transportation planners, and more participated in four working groups: Land Use, Transportation, Conservation, and Education and Outreach. From March to July, each working group assessed opportunities for achieving landscape connectivity and created a set of deliverables outlining the top 3-5 strategies within their focus area. The Steering Committee took this input and created a summary SAP that is now available, and they hosted a celebration to honor the accomplishments of the working groups.

Learn more about this group at connectedconservationnc.org.



The Korstian Division with its winding New Hope Creek corridor is an important anchor of habitat connectivity in the region. Photo: Paul Travis

Cameron Ward



Peter Jeff Nicholls

Return of Community Engagement

Engaging the Duke and local communities in scientific discovery and forest stewardship is a key component of the Duke Forest Strategic Plan, but the COVID-19 pandemic brought much of our engagement efforts to a halt. We are pleased to report that in 2022, these efforts were back and in full swing! The year began with the return of Herpetofauna Community Science, where community scientists record observations of reptiles and amphibians — collectively known as herpetofauna — on a weekly basis from February to October. Our staff led several other engagement events this year, including our annual Spring Flora and Fauna tour, various tours for the Duke academic community, volunteer workdays to close unauthorized trails and clean signage, and a roadside cleanup on NC-751 with Duke's Alpha Phi Omega Service Fraternity.

Community engagement also expanded with the launch of the Forest Stewards Program. These new volunteers regularly monitor our roads and foot trails and provide an ambassador-like presence for recreational visitors. This budding program extends our staff's reach to encourage more people to steward and responsibly recreate in the Duke Forest.



Some of our Forest Stewards Program volunteers pose in their monitoring vests at our annual Volunteer Appreciation Cookout in September 2022.

Recreation Management on a Research Forest

We are nearing the end of a two-year initiative to update the Duke Forest's recreational infrastructure (see the 2020 Duke Forest LOG to read about what prompted this action). During this time, we have authorized three new trails, designed the Forest's first downloadable maps, clarified rules around novel uses and new technologies, and launched the volunteer Forest Stewards Program. In addition, our office has taken a leadership role in national efforts to raise awareness of the difficulties faced by land managers as public use of GPS-tracking, crowd-sourced apps grows. Nicholas School student Emily Wood investigated this emerging conservation issue for us in a graduate assistantship.

We have worked closely with staff at AllTrails, one of the most popular recreation apps, as an early participant in the testing phase of its Public Lands Portal. The new feature has been designed to give land managers more input on how their trails are represented. We are also a member of Open Street Map US's Trails Working Group, where federal, state, and nonprofit land management organizations work collaboratively with app developers to create consistent coding rules for the way unauthorized trails appear on maps across the internet.

Finally, our decadal Recreation Survey is underway. This year's effort builds upon the methodology of our last survey in 2013, and with it, we aim to recalibrate our understanding of recreational use so we can better manage the Duke Forest Teaching and Research Laboratory into the future. If you recreate on the Duke Forest, we invite you to participate at dukeforest.duke.edu/recsurvey.



UNC Professors Uncover Indigenous Artifacts

This summer, Duke Forest hosted an exciting project led by Drs. Heather Lapham and Steve Davis from the UNC Research Laboratories of Archaeology. The two approached our office after reading a newspaper article from 1870 that they believed described a location along New Hope Creek within the present day Duke Forest where Native American graves had been uncovered. Given the description of the graves' contents, they thought it was possible that the same general area might yield evidence of the indigenous village of Adshusheer, which had been described in 1709 by explorer and colonialist John Lawson. To investigate their hunch, Lapham and Davis hosted their archaeology field school for students at the site.

Encouraged by initial shovel test pits that yielded pottery sherds and stone flakes, the team continued their investigation by excavating three 1 x 2-meter pits. In a deep layer of extracted soil, they discovered indigenous artifacts dating to the 1700s, likely indicating the location of the ground's surface at the time. Just above it was a sandy layer that contained pre-1400s and 1700s indigenous artifacts, suggesting the materials mixed as erosion and flooding occurred across the historic landscape. Their analysis continues today at their laboratory, and we anticipate they will return for further excavation of the site. We are excited about this tremendous opportunity to better understand and share the lesser-known history of Native American communities on what are now Duke Forest lands.



Dr. Heather Lapham describes the soil profiles visible at an excavation pit by New Hope Creek. Watch our videos about the UNC team's findings at dukeforest.duke.edu/unclra.

Ecosystem Restoration in New Hope Creek

Even the most infrequent Duke Forest visitor can recall the unique and practically named Concrete Bridge that crosses New Hope Creek in the Korstian Division. This concrete slab is one of two bridges along the creek that the Civilian Conservation Corps installed in the 1930s to provide vehicle access across the Duke Forest. Designed to function as a low-water bridge, the creek flows through culverts built into the structure under normal conditions and overtops it during high-water conditions. The bridge is a favorite meeting place for visitors to stand and take in the sights and sounds of the Forest while New Hope Creek passes underneath.

For nearly nine decades, the Concrete Bridge has served its intended role, but we have reached a “watershed moment” in which it is time to upgrade this old structure and resolve the unintended consequences it has had on the stream ecosystem. For decades, high flows have caused scouring of the stream bed and stream banks immediately downstream of the bridge. Some of the culverts have become permanently clogged, causing a wide impoundment of water to form upstream. While some water does pass through, most aquatic species probably cannot, including

CONCRETE BRIDGE ROAD

the federally endangered Atlantic Pigtoe mussel (*Fusconaia masoni*) and one of its host species, the Creek Chub (*Semotilus atromaculatus*).

To restore and reconnect the habitat and wildlife of New Hope Creek — to be the best stewards of the Duke Forest we can be — we are in the early stages of planning a major project to remove and replace the Concrete Bridge and to remove a partial dam structure farther downstream (known as the Old Billy Erwin Dam). We are currently working with two outstanding students from the Nicholas School Master’s Program, Andrew Friedman-Herring and Jackie van der Hout, under the guidance of professor Martin Doyle to explore engineering and financing solutions for what will surely be a complicated and costly, but incredibly important project. The entire process from project planning and implementation to ecosystem restoration and monitoring will be valuable fodder for teaching and research efforts at the Nicholas School and at Duke.

Donors passionate about ecosystem restoration, forest stewardship, and wildlife conservation will be critically important to this project. They will also receive the benefit of seeing the tangible and beneficial impacts of their investment. Please reach out if you would like to support this project with a significant gift by emailing restore-nhc@duke.edu.



Above: Old Billy Erwin Dam
Below: The Concrete Bridge overtopped by New Hope Creek



People Make a Forest

First Private Endowment Established

The Office of the Duke Forest is excited to announce the creation of the first privately funded endowment for the Duke Forest Teaching and Research Laboratory. The Angle Family Duke Forest Fund, established by long-time friends Dr. Marcia Angle and Mark Trustin, recognizes and strengthens the Duke Forest as a vibrant resource for teaching, research, and community engagement.

As we navigate these uncertain times, this milestone, one-million-dollar gift reinforces our financial future and helps ensure the continued success of the Duke Forest as a living laboratory, an outdoor classroom, an anchor of ecosystem services, a community engagement resource, and more!

Please visit dukeforest.duke.edu/give to join the network of people committed to securing the vital future of the Duke Forest Teaching and Research Laboratory.



See our recent interview with Dr. Angle as she discusses her hopes for the endowment and her desire to encourage others to support this incredible forest at dukeforest.duke.edu/anglefund.

Direct Support for Our Interns

Toney Lumber Company, Inc. in Louisburg, NC supports the Duke Forest with donations to our summer intern program. This program provides experiential opportunities for the next generation of natural resource professionals and provides additional staff capacity during the busy summer months. **Sam Nurmi** and **service dog Newton** are pictured monitoring a Natural Heritage Natural Area during Sam’s internship this summer. In addition to performing field duties, Sam made progress on her Nicholas School of the Environment Master’s Project, which aims to reconstruct the fire history of the Forest by examining microscopic charcoal from soil samples.



Calling Forestry and NSOE Alumni

Anukriti Hittle, MF '92 came to campus recently to meet with her favorite professor, Dr. Dan Richter. While she was here, she also spoke with Duke Forest staff about her wish to see other late-career and retired alums reconnect and reengage with the forest that helped shape their career trajectories. In a letter to fellow alumni, she writes: “The Duke Forest was instrumental in the formation of my enduring love for the beautiful eastern forests. . . . [A]fterwards, everywhere I lived was weighed against this first forest and what it had taught me.” Read Anu’s full letter at dukeforest.duke.edu/anu.



Friends of the Duke Forest

The **Friends of the Duke Forest** are our foundation—our roots. When you become a Friend of the Duke Forest you are part of the network of neighbors, community members, Duke staff, and students that make our work possible. You can show your dedication and appreciation for this invaluable, irreplaceable resource **by donating \$50 or more per year**. You will receive a *Friends of the Duke Forest* car sticker and invitations to register early for our tours and other events.

Visit: dukeforest.duke.edu/friends

dukeforest.duke.edu/give



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