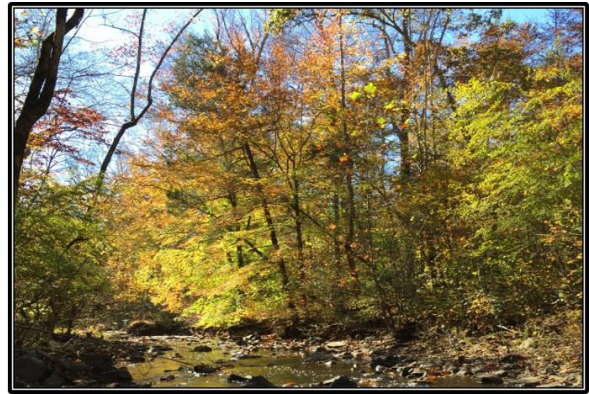




**DUKE FOREST**  
Teaching & Research Laboratory  
ESTABLISHED 1931

Duke Forest Five-Year Strategic Plan: 2017 - 2022



*A Resource for All Seasons*



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## I. Executive Summary




Since 1931, the Duke Forest has been Duke University's research and teaching laboratory. The legacy of scientific discovery – from understanding how a forest regrows after agricultural abandonment to learning about forest responses to changes in climate – is rich. As a living laboratory and outdoor classroom, the Duke Forest has taught countless students, generated innumerable scientific articles, and launched the careers of many well-respected scientists. Its academic legacy is alive and well today as new students and faculty from across the globe use the Duke Forest to uncover secrets about our ever-changing world.

Throughout its history, academic uses of the Duke Forest have evolved with the changing intellectual needs of our society. What began as a demonstration platform for southern forestry evolved into a basic science laboratory for understanding ecological processes and ecosystem-based management. Scholars today integrate that foundational knowledge and historical data with the human context to develop local, national, and global solutions for climate change, ecosystem services losses, biodiversity conservation, and other pressing environmental issues.

As Duke University presses further into an interdisciplinary approach to research and teaching, civic engagement, and collaborative problem solving, the Duke Forest remains poised to support the University's strategic goals with its unique complement of natural, financial, and human resources. Likewise, the Duke Forest maintains its close relationship with the Nicholas School of the Environment and continues to serve its mission to create knowledge and leaders of consequence; to further understand basic earth and environmental processes; and to inform society about conservation of natural resources for future generations.

The Duke Forest Strategic Plan strengthens the position of the Duke Forest as a relevant and invaluable asset for Duke University, the Nicholas School of the Environment, and the greater community. It charts a trajectory for the next five years by developing strategic goals, objectives, and actions that guide program development and resource use. The plan also facilitates the creation of annual action plans, which provide opportunity to adapt to changing conditions, respond to emerging opportunities, and track successes.

The Duke Forest Strategic Plan addresses three overarching goals:

-  **Stewardship for Long-Term Sustainability:** Steward the natural, financial, and human resources of the Duke Forest to ensure its long-term sustainability as a major University asset for research, teaching, and community outreach.
-  **Research and Teaching:** Stimulate substantial contributions to scientific knowledge and interpretation through use of the forest in research and teaching, especially at the frontiers of our understanding and appreciation of the natural world.
-  **Community Engagement:** Engage with the University and public community to expand the forest's role as a stage for academic exploration and to share vital insights about the interactions between humans and the environment, putting that knowledge in the service of society.



## II. Introduction

The Office of the Duke Forest is the university department responsible for the management and stewardship of the Duke Forest Teaching and Research Laboratory. The mission of the Duke Forest is: (1) to facilitate research that addresses fundamental and applied questions about forested and aquatic ecosystems; and (2) to aid in the instruction of students so that they will be informed citizens and effective stewards of our natural resources. To this purpose, the Duke Forest offers a land base and staff support to serve as “an outdoor classroom” and “a living laboratory” for Duke faculty and students, other academic and research institutions, local K-12 schools, and the public.

The entire Duke Forest land base contributes critical ecosystem services such as water quality, wildlife habitat, carbon sequestration, clean air, and access to nature - services that are rapidly disappearing due to the high rate of permanent land conversion across the region. Beyond its boundaries, the Duke Forest anchors a large, landscape-level network of natural and semi-natural areas that are critical in preserving ecosystem functions, connecting areas for native plants and wildlife, and sustaining the aesthetic, woodsy appeal that makes the area so desirable to work and live in.

In total, the Duke Forest is approximately 7,050 acres in Durham (1,536 acres, 22%), Orange (5,084 acres, 72%), and Alamance counties (430 acres, 6%) (Figure 1). It is divided into six management units known as divisions and one dedicated natural area. 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. Five major management priorities, which aim to maximize a wide variety of forest benefits, guide the allocation of forest resources, and in particular, direct staff time and energy. These priorities also underlie strategic efforts to enhance the value of the Duke Forest as a University and community asset:

- Promote the research and teaching mission
- Sustainably manage natural resources
- Protect unique biodiversity and historical elements
- Provide education and outreach
- Offer recreational and aesthetic amenities

The Duke Forest Five-Year Strategic Plan builds upon the existing assets of the forest in establishing three overarching goals: (1) to guide long-term sustainability of the forest’s natural, financial, and human resources; (2) to stimulate substantial contributions to scientific knowledge and interpretation; and (3) to enhance connections with diverse communities. These goals align with the University and Nicholas School of the Environment’s strategies to drive their research and education missions in the service of society across all scales. Information and processes used to develop this strategic plan, such as the status of Duke Forest resources and input from stakeholders, is available upon request.

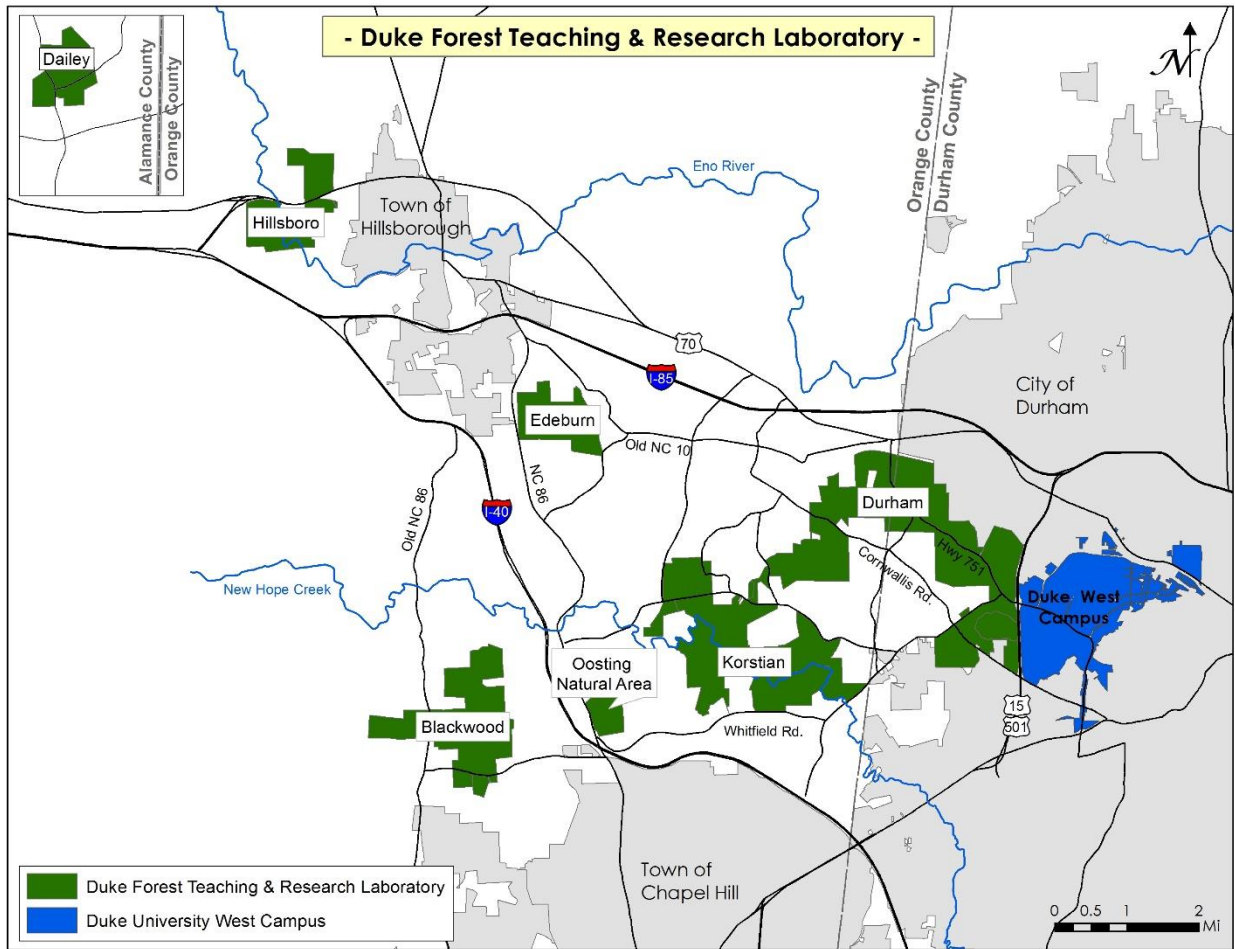


Figure 1. The extent of the Duke Forest land base includes 7,050 acres across Durham, Orange, and Alamance counties. It is divided into six management units known as divisions and one dedicated natural area.



### III. Goal 1: Stewardship for Long-Term Sustainability

*Steward the natural, financial, and human resources of the Duke Forest to ensure its long-term sustainability as a major University asset for research, teaching, and community outreach.*

The long-term sustainability of Duke Forest resources is vital to supporting its research and teaching mission and the role it plays for the University, the Nicholas School of the Environment, and the greater community. The Office of the Duke Forest is responsible for the stewardship of the forest's natural, financial, and human assets – all of which are critical in sustaining the forest's contributions to the diverse communities it serves. Consideration surrounding the maintenance and enhancement of these foundational resources is thus essential for setting realistic expectations and strategies that secure the forest as an academic and community asset for the University (see Goals 2 and 3).

#### **OBJECTIVES: STEWARDSHIP FOR LONG-TERM SUSTAINABILITY**

- A. **Diversify revenue sources through emerging opportunities** for fundraising and exploration of potentially novel market values for Duke Forest resources; further reduce reliance on timber as a revenue source given current age-class distributions and future market uncertainties.
- B. **Conserve and restore natural resources to secure the Duke Forest** as a living laboratory and outdoor classroom, especially in the face of threats such as climate change; integrate protection of its natural assets with scholarly agendas to explore a more sustainable future and engage in community dialogues around environmental issues.
- C. **Maintain a stable land base and prevent further fragmentation** to sustain the integrity of the Duke Forest's natural resources and the multiple benefits received from them; revisit the established land planning strategy and create a long-term vision for the forest.
- D. **Demonstrate exemplary large-scale ecosystem stewardship** as a model among local, national, and international organizations; promote landscape level conservation to maintain ecosystem function and habitat connectivity beyond Duke Forest boundaries.
- E. **Expand staff capacity** and explore opportunities to better align Duke Forest's natural, financial, and human resources to accomplish strategic goals.



**ACTIONS: STEWARDSHIP FOR LONG-TERM SUSTAINABILITY**

Objective	Actions
<p>A. <b>Diversify revenue sources through emerging opportunities</b> for fundraising and exploration of potentially novel market values for Duke Forest resources; further reduce reliance on timber as a revenue source given current age-class distributions and future market uncertainties.</p>	<p><b>Maintain a sustainable timber management program</b> for its teaching, research, and demonstration value, as well as for forest health and resiliency; investigate opportunities to decrease reliance on it as a source of revenue, especially given current age-class distributions and future market uncertainties.</p>
	<p><b>Engage with the Office of University Development</b> to explore potential for fundraising campaigns that benefit the Duke Forest and provide capacity for implementing strategic goals.</p>
	<p><b>Develop a research project to evaluate both non-market and potentially novel market values</b> of ecosystem services provided by the Duke Forest.</p>
<p>B. <b>Conserve and restore natural resources to secure the Duke Forest</b> as a living laboratory and outdoor classroom, especially in the face of threats such as climate change;; integrate protection of its natural assets with scholarly agendas to explore a more sustainable future and engage in community dialogues around environmental issues.</p>	<p><b>Investigate implications of threats such as climate change</b>, invasive species, and population growth and incorporate adaptive responses into management plan (in progress).</p>
	<p><b>Investigate a new approach to wildlife management</b> that seeks to maintain animal biodiversity (in progress).</p>
	<p><b>Minimize negative impact from increased recreation use</b> through enhanced communication with visiting public; projects that protect sensitive areas by rerouting or closing trails; and maintenance activities that mitigate negative impacts on surrounding resources.</p>
	<p><b>Develop restoration projects to bolster forest resiliency</b> and restore degraded areas, e.g. New Hope Creek and low water Concrete Bridge.</p>
<p>C. <b>Maintain a stable land base and prevent further fragmentation</b> to sustain the integrity of the Duke Forest's natural resources and the multiple benefits received from them; revisit the established land planning</p>	<p><b>Prevent or minimize additional fragmentation caused by infrastructure development</b>, e.g. power line, sewer line, or gas line easements; direct such projects to existing forest edges, avoiding interior areas; maintain relationships and open lines of communications with potential project developers.</p>
	<p><b>Engage a community of faculty and administrators to develop a long-term vision</b> for the forest over the next 50 to 100 years.</p>



<p>strategy and create a long-term vision for the forest.</p>	<p><b>Reevaluate the 2006 land planning strategy within the current context of Duke Forest lands</b> to establish, if appropriate, a new list of strategic acquisition priorities.</p>
<p>D. <b>Demonstrate exemplary large-scale ecosystem stewardship</b> as a model among local, national, and international organizations; promote landscape level conservation to maintain ecosystem function and habitat connectivity beyond Duke Forest boundaries.</p>	<p><b>Recognize the role of the Duke Forest land base in anchoring connectivity</b> across the larger landscape; engage with external partners to identify high priority landscape connectors within the Jordan Lake watershed and the inter-basin bridge between the Neuse and Cape Fear River Basins.</p> <p><b>Maintain Forest Stewardship Council certification</b> and further demonstrate excellence in forest management by obtaining additional recognitions or certifications.</p>
<p>E. <b>Expand staff capacity</b> and explore opportunities to better align Duke Forest's natural, financial, and human resources to accomplish strategic goals.</p>	<p><b>Evaluate Duke Forest's assets to optimize organizational efficiency</b> and align resources with strategic goals, especially with regard to staff capacity.</p>





## IV. Goal 2: Research and Teaching

*Stimulate substantial contributions to scientific knowledge and interpretation through use of the forest in research and teaching, especially at the frontiers of our understanding and appreciation of the natural world.*

Since 1931, the Duke Forest has been used by students and faculty at Duke and from across the globe to uncover secrets about our ever-changing world. The Forest's legacy of scientific discovery – from understanding how a forest regrows after agricultural abandonment to learning about how forests respond to changes in climate – is rich. The forest continues to offer opportunity for experimentation and observation across a growing suite of disciplines and technologies, engaging students and faculty in active learning within a unique setting. Increasingly, the forest presents the possibility to link diverse communities of the University in their quest to address common, yet pressing environmental issues, and to translate that knowledge into local, national, and global solutions.

### OBJECTIVES: RESEARCH AND TEACHING

- A. **Promote research and teaching across new disciplines, technologies, and audiences;** and by integrated teams of faculty, graduate, professional, and undergraduate students.
- B. **Facilitate research and teaching projects that enhance knowledge translation and civic engagement,** particularly related to common environmental issues and the exploration of potential solutions.
- C. **Develop strategy and capacity to centralize sharing and access to historic and current research data,** especially from long-term research plots and historical sites; enhance the availability of baseline research and teaching information.
- D. **Strengthen recognition and branding of the Duke Forest as a major research and teaching destination** within the University and across the broader local, national, and international academic communities.
- E. **Leverage forest management to showcase real-world, on-the-ground implementation of sustainability practices,** especially via the production of wood products and the protection of natural resources.
- F. **Design and advertise research and teaching projects addressing Duke Forest management issues** and long-term stewardship goals.



**ACTIONS: RESEARCH AND TEACHING**

Objective	Actions
<p>A. <b>Promote research and teaching across new disciplines, technologies, and audiences;</b> and by integrated teams of faculty, graduate, professional, and undergraduate students.</p>	<p><b>Continue to offer and encourage opportunity for experimentation</b> and observation across a range of new technologies, from drones to nanoparticles (in progress).</p>
	<p><b>Foster expansion of formal teaching uses, especially by undergraduates and across novel disciplines</b> such as arts, humanities, and medicine (in progress).</p>
	<p><b>Promote interaction and potential collaborations between current research faculty and students</b> via novel engagement events such as a ‘Picnics and Posters’ forum.</p>
<p>B. <b>Facilitate research and teaching projects that enhance knowledge translation and civic engagement,</b> particularly related to common environmental issues and the exploration of potential solutions.</p>	<p><b>Cultivate research and teaching uses that offer opportunity to engage communities</b> around environmental issues and the role of science in seeking solutions; through public forums, tours, and digital interactions.</p>
<p>C. <b>Develop strategy and capacity to centralize sharing and access to historic and current research data,</b> especially from long-term research plots and historical sites; and enhance the availability of baseline research and teaching information.</p>	<p><b>Seek new funding or partnerships to:</b></p> <ul style="list-style-type: none"> <li>• improve accessibility of ecological data from long-term research plots;</li> <li>• promote use of historical and archaeological data;</li> <li>• establish and maintain a larger network of research equipment that provides foundational data for numerous research tracks, e.g. weather stations, stream gauges;</li> <li>• develop an online database to facilitate sharing and accessibility of spatial data.</li> </ul>
<p>D. <b>Strengthen recognition and branding of the Duke Forest as a major research and teaching destination</b> within the University and across the broader local,</p>	<p><b>Engage opportunities to participate in research site networks</b> (in progress).</p>



<p>national, and international academic communities.</p>	
<p>E. <b>Leverage forest management to showcase real-world, on-the-ground implementation of sustainability practices</b>, especially via the production of wood products and the protection of natural resources.</p>	<p><b>Facilitate increased use of the forest within sustainability education at Duke</b> by engaging with The Trillium Sustainability Fellows program and with sustainability-related undergraduate, graduate and professional, and executive and continuing education programs/certificates (in progress).</p>
<p>F. <b>Design and advertise research and teaching projects addressing Duke Forest management issues</b> and long-term stewardship goals.</p>	<p><b>Offer Duke Forest research projects related to management and stewardship</b> for students to satisfy class or degree requirements (in progress).</p>



## V. Goal 3: Community Engagement

*Engage with the University and public communities to expand the forest's role as a stage for academic exploration and to share vital insights about the interaction between humans and the environment, putting that knowledge in the service of society.*

The Duke Forest engages a large audience, including the University community, local K-12 schools, and the general public. Community engagement is central to promoting the research and teaching mission of the Duke Forest and the ability to leverage this mission in service to society. Across the academic sphere, engagement with researchers, teachers, and students stimulates use of the forest for investigation and learning across basic and applied questions. Beyond academy walls, community engagement leverages the forest's mission 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. As the local population has increased in recent decades, so has use of the forest as a recreational and aesthetic amenity. Engaging this community is particularly important to raising awareness about the use and benefits of the Duke Forest and for ensuring compliance with rules and regulations that protect its value for research, teaching, and natural resource conservation.

### OBJECTIVES: COMMUNITY ENGAGEMENT

- A. **Bolster staff capacity to support forest use across new disciplines and novel audiences;** to enhance public education offerings; and to support researcher needs to satisfy funding requirements for public outreach.
- B. **Connect communities within and outside of Duke with science,** increasing the diversity of the Duke Forest audience and focusing education and outreach opportunities on natural resource conservation, scientific investigation, and forest management.
- C. **Raise awareness within the recreational user community** regarding the need to protect forest resources and the role and benefits of Duke Forest within the community.



## ACTIONS: COMMUNITY ENGAGEMENT

Objective	Actions
<b>A. Bolster staff capacity to foster teaching and research uses across new disciplines and novel audiences;</b> to enhance public education offerings; and to support researcher needs to satisfy funding requirements for public outreach.	<b>Increase staff capacity with a communications and engagement specialist;</b> develop a funding source for this new position (in progress).
	<b>Enhance publicity, promotion, and communication about ongoing research</b> in the Duke Forest and current Duke Forest management and conservation activities to stimulate teaching and research interest.
	<b>Develop and advertise specific research project ideas that benefit Duke Forest management and stewardship</b> (in progress).
<b>B. Connect communities within and outside of Duke</b> with science, increasing the diversity of the Duke Forest audience and focusing education and outreach opportunities on natural resource conservation, scientific investigation, and forest management.	<b>Leverage ongoing research to offer novel outreach experiences</b> that connect people within and outside of Duke with science.
	<b>Increase communication both within and outside of Duke</b> to raise awareness about ongoing research, forest resources, and responsible forest management.
	<b>Implement new projects or develop new partnerships to increase the diversity of the Duke Forest audience</b> (in progress).
<b>C. Raise awareness within the recreational user community</b> regarding the need to protect forest resources and the role and benefits of Duke Forest within the community.	<b>Engage the recreational user community to share information</b> about the use and benefits of Duke Forest and how the community's actions can impact the research and teaching environment.