CAMPUS AS FOREST

A Comprehensive Vision for a Regenerative Campus

CATAWBA COLLEGE EST. 1851 + BIOMIMICRY 3.8

Together, we are building a path to a regenerative world.

PREFACE

Dr. Lee Ball, PhD
Vice President of Sustainability, Executive Director, Center for the Environment at Catawba

Over the past three decades as an educator, I have envisioned an academic institution where students, faculty, staff, and community members learn, collaborate, and connect with nature as one living system.

Our Campus as Forest vision brings this idea to life through a campus-wide regenerative framework that integrates sustainable architecture, restorative landscapes, innovative academic programs, place-based co-curricular learning, and deep community engagement. Together, these elements create a living laboratory for both learning and regeneration.

Our goal is to cultivate a stronger environmental ethic, deepen our understanding of our interconnectedness with the natural world, and inspire collective agency within our community.

Inspired by the "Factory as a Forest" initiative at Interface Inc., Campus as Forest reimagines what a college campus can be: a place that not only minimizes harm but also actively restores ecosystems, communities, and relationships. From the moment I learned about Interface's regenerative model, I recognized its immense potential to reshape higher education.

A college campus, where innovation, inquiry, and collaboration converge, is uniquely positioned to demonstrate bold and practical solutions to some of the world's most complex challenges. Through the Campus as Forest initiative, students will develop essential skills in collaborative problem-solving, systems and futures thinking, and empathetic communication, which are the very abilities needed to lead in a regenerative future.

We invite students, educators, community leaders, and partners to join us in reimagining education as a regenerative force that restores, revitalizes, and uplifts both people and place. Through community-centered learning and collaborative service opportunities, we are creating experiences where knowledge becomes action and education drives transformation.

This is a call to all who believe that education can do more than inform; it can transform.

Join us in shaping a future where learning regenerates life, community by community.

Factory as a Forest Interface Inc.

Interface's founder, Ray Anderson, had a "spear in the chest" moment in 1994 that launched Interface's sustainability journey and changed the carpet industry forever. In collaboration with Biomimicry 3.8 and inspired by Nature's guiding principle to *create conditions conductive to life* and Janine Benyus' vision for designing to Nature's ecosystem performance standards, "Factory as a Forest" emerged in 2019 as the next step to move beyond zero environmental footprint toward regenerative impact. Learn more about the Factory as a Forest pilot projects and about Interface's sustainability journey in the documentary Beyond Zero.

ABOUT THIS PAPER

This paper has been developed to launch the Catawba College *Campus as Forest* initiative. The seed for Campus as Forest was planted in 2017, when Dr. Lee Ball was introduced to the Biomimicry 3.8 and Interface Flooring *Factory as a Forest* initiative. Since then, Campus as Forest has taken root in the fertile soils of Catawba College, where the college's mission, culture of care, and extraordinary leadership create the conditions for the initiative to grow and thrive.

In 2024, Catawba College joined Project Positive to learn from and collaborate with others doing this important work. As the only Project Positive member that is an institution of higher learning, we are proud to share our journey and inspire others to join us in creating a regenerative world.

> *This is just the time for us to put Nature's wisdom at the center of this new world we want to build together.*
>
> *– Janine Benyus, Keynote, Bioneers 2025*

ABOUT PROJECT POSITIVE

In 2019, Biomimicry 3.8 launched Project Positive, a collaborative of change agents dedicated to raising the bar on what acting sustainably means through biomimicry and Positive Performance.

In a pre-competitive environment, members learn from and inspire each other to activate, accelerate, and scale nature-positive solutions. Today, members of Project Positive, such as Microsoft, Mohawk Group, Jacobs, and, of course, Catawba are demonstrating that organizations can progress their economic agendas, support climate, circularity, and biodiversity goals, and engage their employees & local communities while driving innovation and positive impact for people and planet. Experience from over 60 Positive Performance demonstration projects across the globe by Project Positive members illustrates that the often immense performance gap between the business-as-usual development and Nature's aspirational ecosystem performance benchmarks inspires a new nature-positive mindset across all project teams that pushes the boundaries of what was previously thought possible. This new mindset and the use of biomimicry to learn from Nature for Nature in the solution space has propelled teams to design innovative multi-functional systems-based solutions that deliver significant improvement across all ecosystem services measured over not only the project baseline, but also industry-standard design.

Learn more about how they're doing it in the paper *Nature is Positive—How leveraging Nature's ecosystem performance benchmarks enables nature-positive action today*, a Project Positive collaboration between Biomimicry 3.8 and EcoMetrix Solutions Group.

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Definitions of Frequently Used Terms

Biome | a distinct bio-geographical unit consisting of a biological community that has formed in response to a shared regional climate and physical environment

Biomimicry | an innovation practice that learns from Nature's genius to design regenerative products, processes, and systems that benefit all Life, including humans

Ecosystem | a dynamic complex of plant, animal, fungal, and microorganism communities and their associated abiotic environment (air, water, soil) interacting as an ecological unit

Ecosystem/ecological functions | the biological and physical processes that occur in an environment

Ecosystem Services | direct and indirect benefits people receive from ecosystems

Highly functioning reference landscape (reference) | a landscape where the dominant physical and biological characteristics (vegetation, soils, hydrology, etc.) reflect intact, healthy ecological functional performance

Nature-positive | halt and reverse nature loss, and regenerate the conditions for biodiversity and people to thrive together

Performance gap | the difference in performance between the baseline or design scenario performance as compared to the aspirational performance target(s)

Regenerative | contributing to renewal and revitalization

Regenerative Design | Design that creates the conditions for all life, including humans, to thrive and co-evolve over time

Regenerative Education | An education approach that cultivates learning environments where students grow harmoniously and reciprocally with Nature and society

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INTRODUCTION

Exponential losses to the planet's biodiversity have accelerated the focus and urgency toward regenerative design practices.

Catalyzed by the adoption of the historic Kunming-Montreal Global Biodiversity Framework by 196 countries in December 2022 and passage of multiple biodiversity-related regulations in the European Union and the United Kingdom, Nature has blossomed into the global conversation, shifting the conversation from *how do we do less bad?* to *how can we be **regenerative**?*

However, a lack of knowledge around how nature-related challenges intersect with government, community, and business-related risks and opportunities means that organizations are looking for tangible guidance on how to move forward. Coordinated efforts by organizations like the Task Force on Nature-related Financial Disclosures (TNFD), Business for Nature, and the World Economic Forum are providing guidance for organizations looking to evaluate nature-related impacts and dependencies and develop a nature-positive strategy. But governments and businesses alike are also in need of examples that answer the questions, *how do we make measurable regenerative impact on the ground?—and what does that look like in practice?*

Future-forward examples by members of collaboratives like Biomimicry 3.8's Project Positive are demonstrating that making regenerative impact is possible today. As a member of Project Positive and as an institution with a long history of environmental and sustainability leadership, Catawba is answering the call with our ***Campus as Forest*** initiative.

AUDACIOUSLY GOOD, BY INTENTION

Catawba is working hard to build a better world.
With Campus as Forest, "better" means regenerative for all.

Photo ©Catawba

The horizon is ripe for innovation that thoughtfully and intentionally **resets our relationship with the rest of Nature** to one that delivers positive impact for all. Catawba's rich legacy and traditions make us uniquely positioned to embrace this opportunity and have an outsized impact beyond our campus.

Our innovative **Campus as Forest** (CaF) initiative, centered on regenerative education, thinking, and design, is an investment in Catawba and future generations. Grounded in our identity, mission, and values, CaF weaves together our commitments to sustainability, vocation, community engagement, and well-being, equity, and belonging (WEB), into a holistic vision for the 21st century.

CAMPUS AS FOREST VISION

Our roots run deep.

Building on our foundation of scholarship with character and culture for service, and a rich history of environmental and sustainability leadership, we are boldly embracing an urgent calling to evolve and expand our notions of stewardship with a goal of fostering positive impact for people and Nature in all that we do.

Our **Campus as Forest (CaF)** vision is to co-create the conditions for a thriving and resilient Catawba natural and cultural ecosystem that delivers enduring shared value for, and regenerative stewardship of, our diverse communities.

The manifestation of this ambitious vision transforms Catawba into a **reimagined living-learning laboratory.** From working with faculty to integrate regenerative education principles across disciplines to implementing our regenerative campus landscape plan, from cultivating regenerative leadership to collaborating across our three centers of excellence, Campus as Forest seamlessly weaves together the breadth of what we do in service to regenerative outcomes, transforming the way we prepare our students, support our faculty and staff, and collaborate with communities locally and globally.

Photo ©Catawba

CAMPUS AS FOREST CORE PRINCIPLES

*As a **convener**, **catalyst**, and **cultivator** of ecosystem thinking, we draw inspiration from Nature's time-tested strategies for resilience to embed the following core principles in all Campus as Forest initiatives:*

Thriving Ecosystem

We envision our Catawba ecosystem as the vibrant **living, breathing forest next door**—with dynamic interdependent communities that thrive on diversity, connection, adaptation, and the co-creation of positive impact.

Co-creating Shared Value

Like the **mycelium fungal networks** beneath the forest floor, we build our relationships within and between our diverse communities—on campus, in our community, and across the nation—on **mutual support** rooted in our shared goal of a regenerative world, co-creating shared value that fosters long-term success and resilience.

Expanded Community

In recognition that thriving people require thriving Nature and it will take *all* of us, we expand our notion of "community" to include **biodiversity as our neighbor and partner**, nurturing a culture where we—humans and all living species—are **stronger together.**

Nature's Guidance

We learn and implement strategies from **Nature's 3.8 billion years of experience** evolving in response to complex, dynamic challenges to disrupt our assumptions about what's possible and accelerate the creation of regenerative outcomes.

STRATEGIC ALIGNMENT

Our strategic plan, "A College of Our Own" approved by the Board of Trustees in June 2023, sets the stage for us to collaboratively and intentionally drive this work forward.

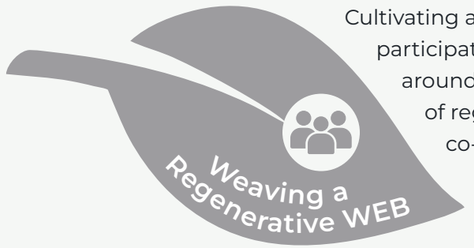
CaF seamlessly builds upon the foundation of the 2023 strategic plan, refining the Catawba notion of environmental and sustainability stewardship into one that is regenerative, and recognizing the distinct opportunity to co-create a compelling, equitable, and innovative learning experience that drives measurable regenerative outcomes now and into the future.

With a culture of care and a mindset of abundance, CaF aligns with "A College of Our Own" to engage all aspects of the Catawba ecosystem to drive meaningful impact for our students, faculty and staff, and community partners, including Nature. By naming and integrating one of our most valuable partners—Nature—into our long-term strategy for success and resilience, we not only benefit from and enjoy regenerated natural resources, but also further our position as a thought leader in higher education, attract and retain students and faculty, and build pride in our alumni and donor networks.

In the spring of 2025, Catawba took a preliminary step towards this vision with the inclusion of the Campus as Forest vision in the **Catawba College Campus Master Plan**. Building on this momentum, the college is moving forward with the manifestation of this vision with the development of the Regenerative Campus Landscape Plan.

In sharing our story, we can catalyze our partners at home and beyond to join the conversation and initiate action in their own campuses and communities and accelerate the global shift to a regenerative world.

Expanding our stewardship of institutional resources to include our natural resources, integrating our core value of sustainability with fiscal responsibility to achieve long-term resilience.



Cultivating an open culture of participatory problem-solving around our shared purpose of regenerative social impact, co-creating shared value networks across our campus and beyond.

Creating a welcoming regenerative campus open to the community, made stronger through community partnerships.

Creating experiential regenerative education experiences that broaden and deepen an individual's understanding, connection, purpose, and curiosity within the context of the whole.

Embodying regenerative education, thinking, and design that supports and/or compliments the core curriculum, faculty expertise, campus operations, and community partnerships.

WHAT DOES IT MEAN TO THRIVE?

The Fred Stanback Jr. Ecological Preserve is not just a beautiful place to learn, walk, and bird watch—it actively creates the conditions for life, including us, to thrive here.

It cleans the air we breathe and the water we drink, helps stabilize our local climate, slows and absorbs water, sequesters its share of carbon, and provides homes and food for the life that also calls this place home.

These ecological conditions aren't just nice to have—we depend on them for our survival, wellbeing, and resilience. Unwittingly, human land use changes at scale have reduced the ability of the species in our landscapes to deliver these benefits, resulting in disruptions like increased flooding, longer periods of drought, higher temperatures, and greater health risks. But these changes are reversible.

Through collective action across our landscapes, we can begin the pixelated healing necessary to secure a resilient future. **The Campus as Forest initiative asks:**

How can the rest of our campus deliver positive impact like the Stanback Preserve?

How can we embody Nature's positive impact strategies into our academic mission, campus operations, and community partnerships to thrive into the future?

SURVIVING

Net zero, neutrality.

MATURING

A few initiatives benefit the ecosystem and community to some extent.

THRIVING

Every decision, service, and process benefits the ecosystem and community; The organization is fully integrated into a thriving ecosystem.

Photo ©Catawba

THE MYCELIUM EFFECT

Striving to create the conditions for regenerative outcomes in all we do is an audacious goal. It will take all of us.

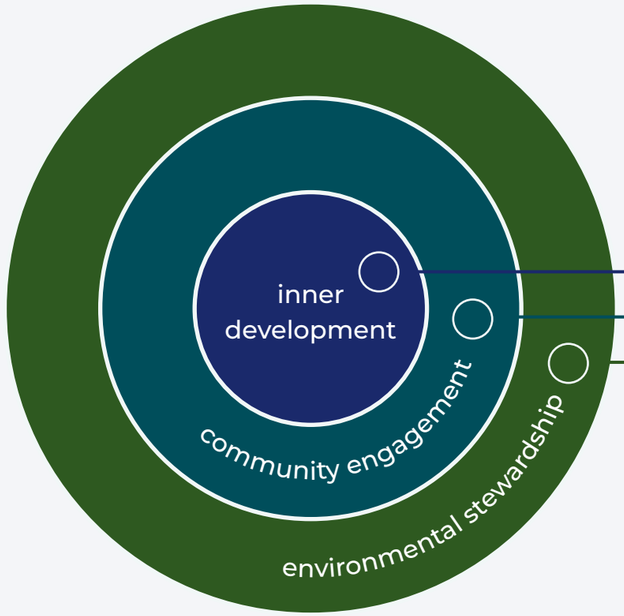
Photo ©Catawba

Catawba is leading the way in doing what is right. We are creating and embodying the conditions that foster the critical thinking, bold innovation, and responsible leadership necessary to drive transformative change today and into the future while also restoring and regenerating ecological communities. Our participatory, multi-disciplinary, and outcomes-driven collaborations will ensure all members of our ecosystem can contribute to and benefit from the flourishing of the Catawba ecosystem.

CENTERS OF EXCELLENCE

Embodying Regenerative Education & Leadership

Catawba's centers of excellence align with the core components of regenerative education – student wellbeing, community engagement, and environmental stewardship. Campus as Forest establishes a clear shared purpose for collaboration across the three centers: to create a unique system of support that enables and builds capacity for students to explore their relationship to the larger whole and discover their unique individual potential to serve as informed global citizens for their communities and the planet.



Regenerative Education

Cultivating learning environments where students grow harmoniously and reciprocally with Nature and society

The Lilly Center for Vocation and Values

Provides a variety of programs that help participants, especially students, discover and use their gifts in ways that serve others and improve the world around them.

The Center on North Carolina Politics & Public Service

Dedicated to enriching civic dialogue, deepening understanding, and fostering engagement within North Carolina. Through non-partisan initiatives, the Center promotes the ideals of public service, civic character and engagement, and informed citizenship across the state.

The Center for the Environment

The Center for the Environment provides hands-on sustainability and environmental learning opportunities for Catawba's students, faculty, staff, and community members, helping them develop the skills to advocate for positive ecological change. The Center also serves as a model, catalyst, and convener for organizations working on issues ranging from regional air and water quality to state and national environmental and energy policies.

FACULTY AND STAFF

Co-creating industry thought leadership

Campus as Forest leverages the knowledge and expertise of Catawba faculty and staff to transform Catawba into an nternationally renowned living-learning laboratory.

- Centered on the shared purpose of fostering positive impact in everything we do including on-the-ground positive impact for Nature, will provide the opportunity for Catawba faculty and staff **collaborate to innovate, adapt, and integrate** this vision into Catawba's **academic programs and Centers of Excellence**, advancing and sharing knowledge within their field of study while creating a distinctly Catawba student experience grounded in the Catawba ideal.

- Together, we have the opportunity to redefine STEM/ STEAM education by introducing **"STREAM" education** with **regenerative thinking** at the center, sparking curiosity and creativity while fostering a deep understanding that we are embedded within, dependent upon, and stewards of Nature.

STUDENTS

Preparing for the 21st century

Our holistic Campus as Forest approach integrates student learning and engagement at every opportunity. Emphasizing critical thinking skills, systems-thinking, ethical decision-making, and the power of diverse perspectives, we are empowering our students to be compassionate future thinking global citizens that can create, adapt, and thrive in harmony with the world around them.

- Students will have the opportunity to engage in a **multi-faceted interdisciplinary regenerative education** that combines values thinking, academic theory, and practice that supports integrated problem-solving skills to develop a foundation of environmental literacy.

- Regardless of their area of study, students will have the opportunity to **take tangible actions and measure impact** through **place-based experiential learning**, connecting classroom learning to real-life contexts in their field of study.

- Through these experiences, students will gain a deep intra-personal and interpersonal understanding of the pathways for fostering **interconnected regenerative outcomes** for the environment, human communities, and personal wellbeing.

CAMPUS + COMMUNITY

Collaboratively regenerating Nature

As an outcomes-based approach rooted in connection, diversity, and regeneration, Campus as Forest boldly invites and encourages collaborative problem-solving with partners within and beyond our campus around a shared goal of regenerative impact.

- Our thoughtful integration of sustainable and regenerative design **turns the Catawba campus into a destination**, providing an exceptional campus experience for students, faculty, staff, and visitors alike.

- Our transformative work on campus will **position Catawba as a regional hub** of regenerative innovation, showcasing **sustainable design and landscapes** as models for the regenerative built environment of the future.

- Our Center for the Environment will **convene regenerative thought leaders** from our region and beyond to share knowledge, advance regenerative design practice, and expand our network of opportunities.

All photos ©Catawba

FUNGI: ECOSYSTEM ENGINEERS

Fungi, which form vast underground networks of mycelium in soils, are vital players in nearly all terrestrial ecosystems on Earth.

As **ecosystem engineers,** fungi play integral roles in shaping landscapes and the planet's nutrient, carbon, and biodiversity systems, making them crucial partners in creating conditions conducive to life. Through **mycelium**, fungi break down organic matter, facilitate nutrient cycling, and support healthy and resilient plant communities. They also facilitate colonization of new land, regulate atmospheric carbon, and shape habitats.

Without the ability to use the sun to turn carbon dioxide into sugars, fungi have created complex systems to extract sugars from living plants and dead organic matter. Mycorrhizal fungi (mycorrhizae) have developed complex symbiotic relationships with living plants. Through their extensive underground mycelium networks, mycorrhizae connect the vast majority of plants in a habitat. In exchange for plant sugars, the fungi provide and redistribute essential nutrients and water to plants in need, helping to protect plants from drought and disease.

These fungi-plant partnerships are based on reciprocity. As we implement Campus as Forest and recognize our interdependence with our ecological and social communities, we're asking,

How can we co-create networks where value flows both ways to support the emergence of healthy and resilient Catawba communities?

Check out this fun New Scientist video about scientific research into how mycorrhizal networks work.

Ecosystem engineer: A species that directly or indirectly influences the availability of resources to other species through creating, modifying, maintaining, or destroying habitats, significantly impacting the physical environment and the species within it.

Mycelium: the vegetative part of fungus, consisting of a mass of branching, thread-like hyphae that grows underground or within a substrate.

STEWARDSHIP, WITH NATURE AT OUR CORE

Regenerative stewardship recognizes that Nature's success is our success.

Photo ©Catawba

Catawba is deeply invested in the greater good—in cultivating a thriving, livable world for us all. Our interconnectedness and interdependence with the rest of Nature requires that to fulfill this goal, Catawba's stewardship must extend to the natural world in everything we do. By considering not just how our actions impact Nature but *how we can intentionally create regenerative impact*, we are strengthening our service to our Catawba community.

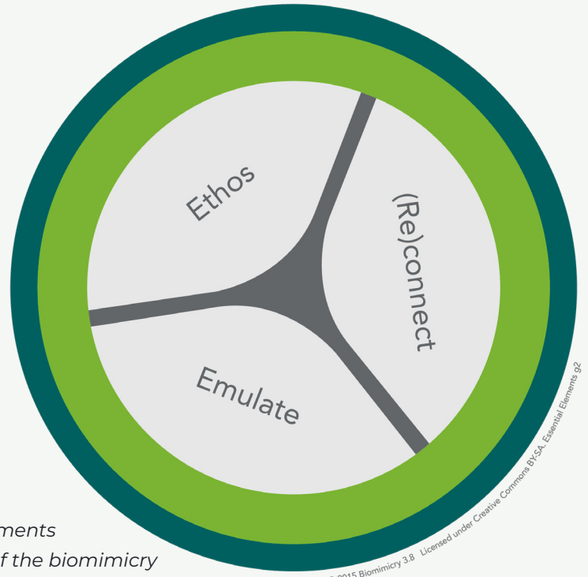
Learning from Nature to Enable People and Nature to Thrive Together

To make sure our actions drive positive impact, we are learning from the only successful model for regeneration there is—Nature.

Through the practice of biomimicry, the blueprints for success gleaned from Nature's 3.8 billion years of R&D are deeply embedded in the Campus as Forest approach.

It informs our ethos of generosity and abundance, our vision of what good looks like, and our mindset of what's possible. From campus planning and operations of our landscapes to regenerative education, organizational development, and community partnerships, we are learning from and implementing Nature's deep patterns and strategies to develop inherently sustainable, resilient, and regenerative solutions that enable people and Nature to thrive together.

By bringing Nature's voice and time-tested guidance to the design table and into the classroom alongside experiential learning in the regenerative transformation of our physical campus, we are empowering all our students—regardless of vocation—with the mindset, knowledge, tools, skills, and hands-on experience to build a regenerative future.



Together, the Essential Elements represent the foundation of the biomimicry approach. To learn more, visit Biomimicry 3.8's DesignLens: Essential Elements.

BIOMIMICRY, AN ESTABLISHED PRACTICE

Life has been solving complex dynamic challenges for billions of years, and successful strategies for living sustainably, resiliently, and regeneratively are embodied in the species and ecosystems living on Earth today.

***Biomimicry* is an innovation practice that learns from Nature's genius to design regenerative products, processes, and systems that benefit all Life, including humans.**

Since the publication of *Biomimicry: Innovation inspired by Nature* by Janine Benyus in 1998, the practice of biomimicry has gone global. Biomimicry provides the "how" for inspiring disruptive thinking about and developing transformative solutions for the wicked problems we face today. From regenerative organizations to the circular economy and beyond, designers are learning from Nature's genius to accelerate the discovery and implementation of innovations that can shift us toward meeting the United Nations Sustainable Development Goals (SDGs), climate and biodiversity pledges, and more.

Through programs like the Master of Science in Biomimicry at Arizona State University to the Ray of Hope Accelerator at The Biomimicry Institute, people around the world are creating nature-inspired pathways to a regenerative future. At Catawba, we're doing the same.

EVOLVING SUSTAINABILITY FORWARD

Nature shows us that everything is connected. Our Campus as Forest approach ensures that we bring a holistic and collaborative mindset to our goal of cultivating a thriving, livable world.

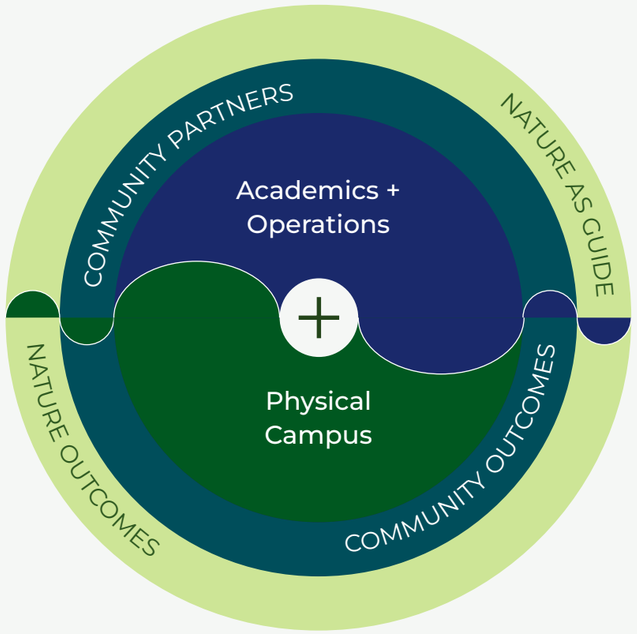
We are making great strides. Our leadership in sustainability has taken us far along the path of doing good. From achieving carbon neutrality seven years ahead of our goal to receiving an AASHE STARS Gold Rating while also increasing enrollment and donor engagement, Catawba is demonstrating that with purpose, the goals of sustainability and Catawba are aligned.

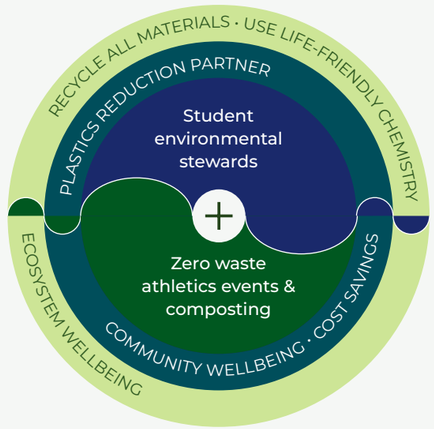
Our CaF approach evolves our sustainability work forward by rooting all our efforts in the fundamental context of whether they are succeeding—*on and in the actual ground*—in regenerating and sustaining the living systems that underpin our survival and wellbeing. Ensuring highly functioning living systems requires that we pair technical solutions with the behaviors and practices needed to optimize those solutions, with care taken to support people in the transition. It also requires that we expand our community engagement and partnerships—the health of the living systems on Catawba's campus are intricately connected to those beyond our borders and vice versa. Nature's guidance opens doors to enable us to move beyond what we currently think is possible.

To know how well we're doing today, we've started by evaluating our **physical landscapes**—both our built environment and natural areas—to see if they are pulling their ecological weight. But *how do we know what their ecological performance should be?* And *how will we know how to do better?* We are looking to Nature as a guide to answer those questions too.

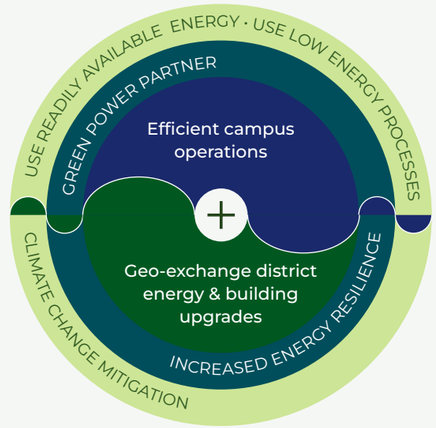
Campus as Forest Holistic Approach

From our academics and operations to our physical campus, Campus as Forest strengthens our sustainability solutions by asking, *What would Nature do? And, How are our actions impacting Nature?*

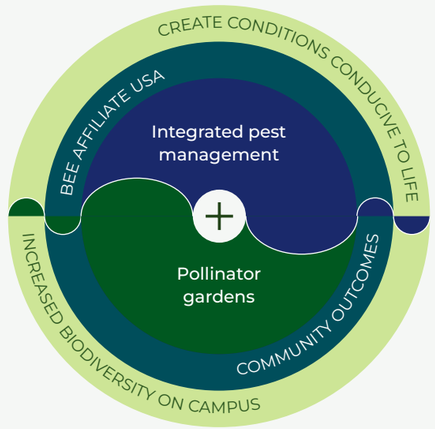




Materials



Energy



Landscape

OUR GOAL: NATURE'S PERFORMANCE BENCHMARK

To evaluate the effectiveness of our solutions at creating the ecological conditions for us to thrive, we are integrating a core tenet of biomimicry into our approach—Nature as Measure.

Nature has been practicing "nature-positive" for 3.8 billion years in ways that are highly responsive and adaptive to the operating conditions in their home habitat, such as the amount of sun and rain, seasons, and temperature extremes.

Each organism in an ecosystem contributes to ecological processes in myriad ways that support others in their ecosystem. Collectively, these nested nature-positive impacts at all scales generate self-sustaining systems-based conditions for thriving ecosystems. These highly functioning ecosystems deliver the outcomes universally required for human and other species' survival, health, and wellbeing: clean air and water, healthy soils, climate regulation, safe shelter, and more.

While the ecological functions that underlie these conditions are universal, the degree to which organisms carry them out changes based on the local context. This means that when looking to Nature's ecological performance as a guide for how to build regeneratively, we can leverage **Nature's local benchmark** to know what thriving looks like in that place and strive to replicate it.

That's why, instead of setting arbitrary Nature-related or biodiversity goals, Campus as Forest sets Nature's proven local ecological performance as our benchmark for defining ecological Good that goes far, adopting an approach that is:

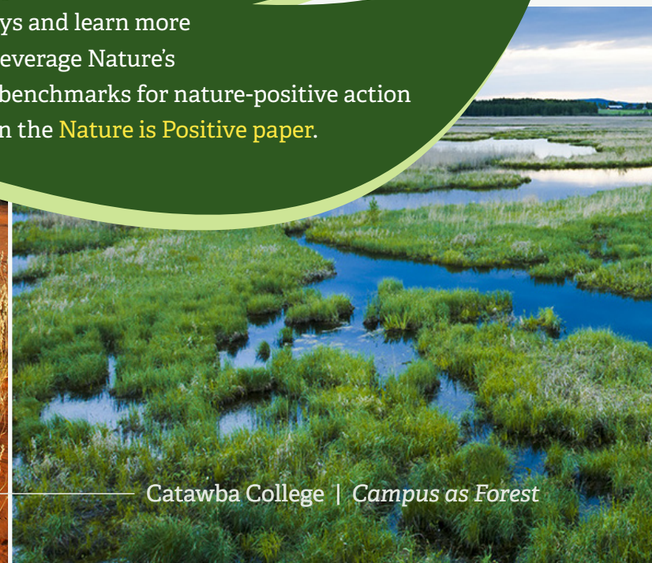
- locally attuned and globally connected,
- science-based,
- systems-based,
- quantifiable and defensible,
- actionable, and
- outcomes-based.

This approach also enables us to:

- **Establish a foundation for a shared understanding and vision** of the regenerative outcomes that all stakeholders in our community can strive toward.
- **Implement holistic decision-making processes across our campus planning and operations** that include Nature impact, enabling smart investments in our future that increase resilience on campus and within our broader community.
- **Share our campus ecosystem performance data, regenerative design process, and implementation experience** with community partners and beyond as we collaborate to embed connected regenerative design solutions across our community.

Companies like Microsoft and Jacobs are already leveraging Nature's ecosystem performance benchmarks to drive nature-positive change in their companies. Read about their journeys and learn more about how to leverage Nature's performance benchmarks for nature-positive action in the Nature is Positive paper.



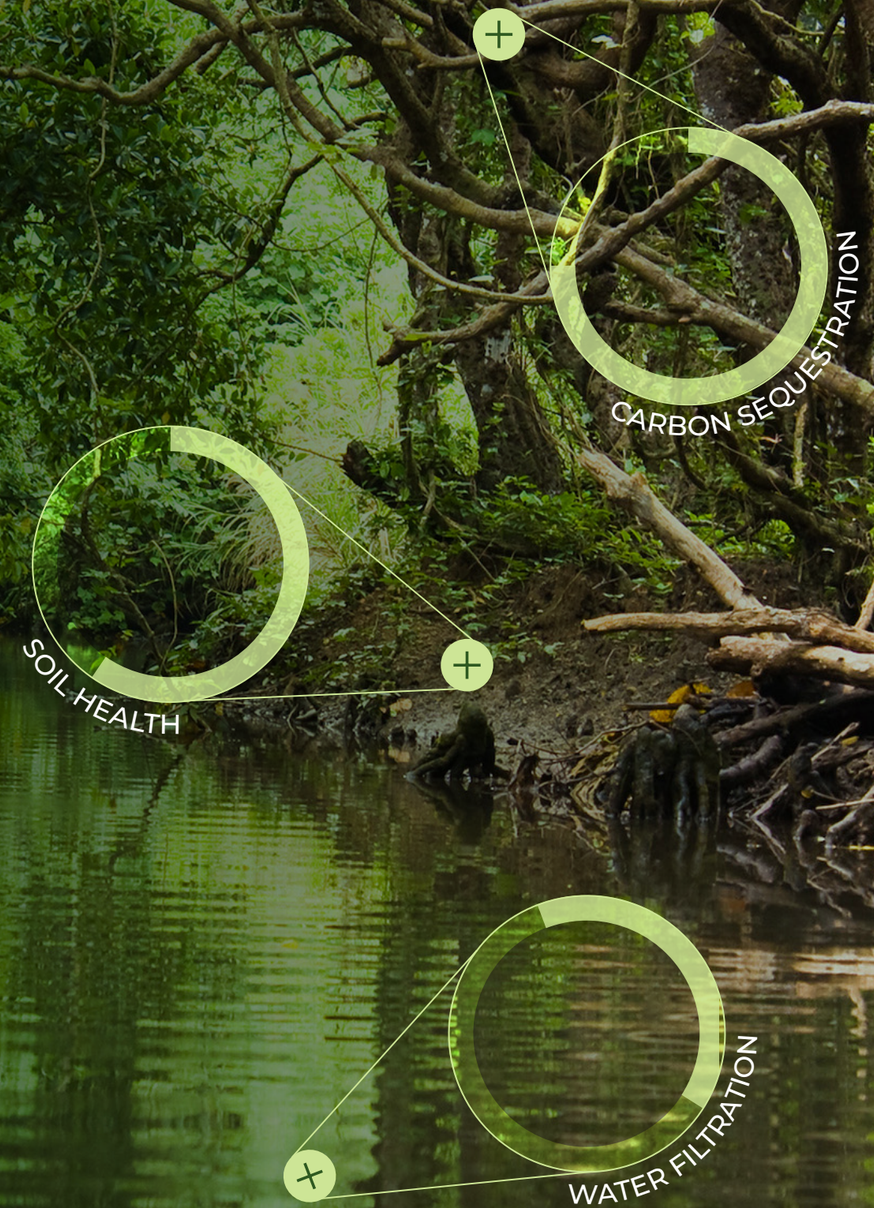
HOW WE'RE MEASURING IT

As described in the B3.8/EMX Nature is Positive paper, the direct and indirect contributions of ecosystems to human wellbeing are called ecosystem services (also referred to as "Nature's contributions to people").

Ecosystem services have been thoroughly studied and can be measured, so they:

- Are an excellent proxy for the health of ecosystem functioning, supporting the quantitative assessment of nature-positive impact
- Provide a systems-oriented framework that links changes in ecosystem performance to social and economic outcomes, enabling organizations to holistically assess and address their impacts and dependencies on Nature
- Provide a leading indicator of whether the conditions exist for life to thrive in that place when comparing to a local healthy intact ecosystem

Because these benefits support the goals of Campus as Forest, Catawba's ecological performance measurement approach leverages the quantification of ecosystem services to gauge how well we are doing and how far we need to go across a diversity of ecosystem service categories as we aim to create conditions conducive to thriving.



Graphs are for illustrative purposes only

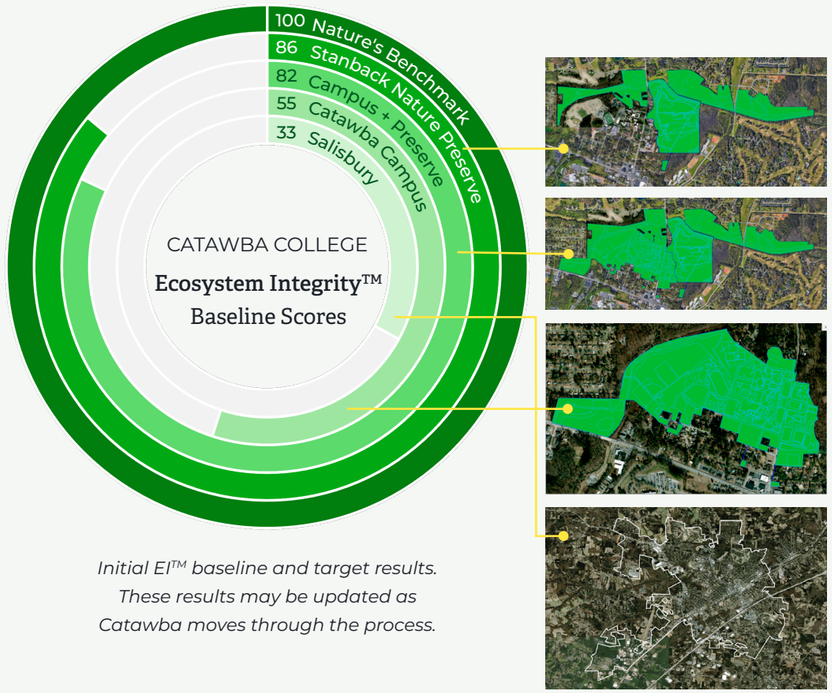
CATAWBA COLLEGE: WHERE WE ARE NOW

In 2025, Catawba began a baseline and target analysis for ecosystem performance. We are leveraging the **EcoMetrix Solutions Group Ecosystem Intelligence™** quantification platform to measure our baseline performance, model the effectiveness of design solutions during campus planning and design processes to inform decision-making, and measuring and monitoring our performance over time as we transform our campus.

As part of the process. Catawba is working with EMX to determine which highly functioning landscapes will serve as the "reference" performance. This performance will serve as Catawba's local benchmark against which we measure our performance as we implement regenerative solutions across our campus. Catawba College sits in the United States Southern Outer Piedmont Ecoregion, a region whose ecosystems have been significantly altered since European settlement, making the identification of reference sites challenging. For now, the reference target performance at right is based on the biome. As Catawba works through this process, the local reference performance may be updated. We are leveraging the EcoMetrix Solutions Group Ecosystem Intelligence™ quantification platform to measure our baseline performance, model the effectiveness of design solutions during campus planning and design processes to inform decision-making, and measuring and monitoring our performance over time as we transform our campus.

Based on the EI analysis, our campus as a whole—including both the Stanback Nature Preserve and our campus—is providing a lot of good to our Catawba and Salisbury communities. However, when looking at our campus and preserve separately, we see that even though the campus is doing relatively well, there is an opportunity to greatly improve its ability to pull its ecological weight.

The unique thing about nature-based solutions is that they *do better over time* with the right balance of stewardship and letting Nature run its course. In other words, the good we do today has the potential to go far into the future. That's why we're focused on building Campus as Forest regenerative thinking into our landscape master planning process and individual campus projects like the new residence hall. For any project we're asking, *how can we improve our sustainability **and** ecosystem performance? How can our solutions benefit people **and** the environment?* And *how do we make sure the potential for long-term regenerative impact isn't thwarted by short-term thinking?*



Initial EI™ baseline and target results. These results may be updated as Catawba moves through the process.

Graphics by EMX

ECOSYSTEM INTELLIGENCE™

The EI™ platform is a proven quantification platform to support nature-based decision-making. Developed over 20 years in 40+ countries and in collaboration with 100+ subject matter experts, EI uses a systems-based understanding of impacts and opportunities to translate Nature's intricate relationships into tangible measurements that can be used by people of all skill levels. EI supports a wide range of needs, such as performance estimating for siting, planning, and budgeting purposes, detailed design analysis, and monitoring and verifying progress on regulatory, ESG disclosures, 30x30, TNFD, and other emerging mandates. EMX's unique standardized measure of quantity and quality across all ecological functions and services, and the Ecosystem Integrity Score™, enable apples-to-apples comparison of performance across different sites anywhere on the globe, helping decision-makers identify and implement the most effective solutions within their project constraints.

CLOSING THE PERFORMANCE GAP: DESIGNING WITH NATURE AS OUR MODEL

As we look to close the gap between Catawba's campus performance and Nature's benchmark, we can also bring Nature's genius to the design table as another core tenet of biomimicry—Nature as Model.

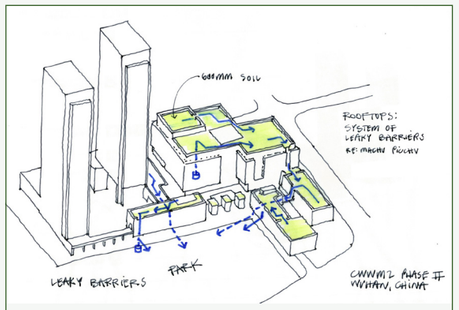
Because the species that live here are expertly adapted to our local context, they provide a blueprint for *how* to deliver local benchmark performance. Learning from Nature's local blueprint opens the solution space and accelerates our ability to get it right the first time, improving efficiencies and reducing costs while delivering the regenerative outcomes we urgently need. That's why we are learning from local species and ecosystems in the development of our Regenerative Campus Landscape Plan with HOK, supported by partners Biomimicry 3.8 and EcoMetrix Solutions Group.

***US Coast Guard Headquarters** | Designed by HOK, the site integrates design principles from beavers to slow, manage, and filter stormwater on site in the second largest green roof system in the country, while also improving energy efficiency, supporting employee wellbeing, and increasing biodiversity support.*

The biomimicry concept is simple yet powerful:

Nature as Guide

Learn how local species solve for challenges in the local context, and in turn, how those strategies support thriving and abundance.



Translate Nature's strategies to design

Express Nature's strategies as design principles that architects and engineers can apply to innovative built environment designs.

Design to Nature's performance

Create holistic multi-functional nature-inspired solutions that move a site as close as possible to Nature's local performance benchmark.

POSITIVE PERFORMANCE

This biomimicry approach to the built environment is embodied in Biomimicry 3.8's Positive Performance Methodology (PPM). PPM enables organizations to leverage Nature's benchmarks within a holistic biomimicry-based design process. From concept to implementation and in collaboration with multiple industry-leading experts including EMX, organizations employ PPM to drive innovative nature-inspired design that delivers nature-positive impact for the organization, ecosystems, and surrounding communities. Using quantification tools like EI™, organizations can measure, verify, monitor, and celebrate the nature-positive impact provided by their regenerative solutions over time.

Experience from over 60 demonstration projects across the globe by Project Positive members illustrates that the often immense performance gap between the business-as-usual development and nature's aspirational benchmarks inspires a new nature-positive mindset across all project teams that pushes the boundaries of what was previously thought possible. This new mindset and the use of biomimicry to learn from nature for nature in the solution space has propelled teams to design innovative multi-functional systems-based solutions that deliver significant improvement across all ecosystem services measured over not only the project baseline, but also industry-standard design.

– Excerpt from the Nature is Positive paper.

EMBODYING THE VISION ON CAMPUS

In myriad ways big and small, we are centering regenerative thinking at the core of everything we do.

Photo ©Catawba

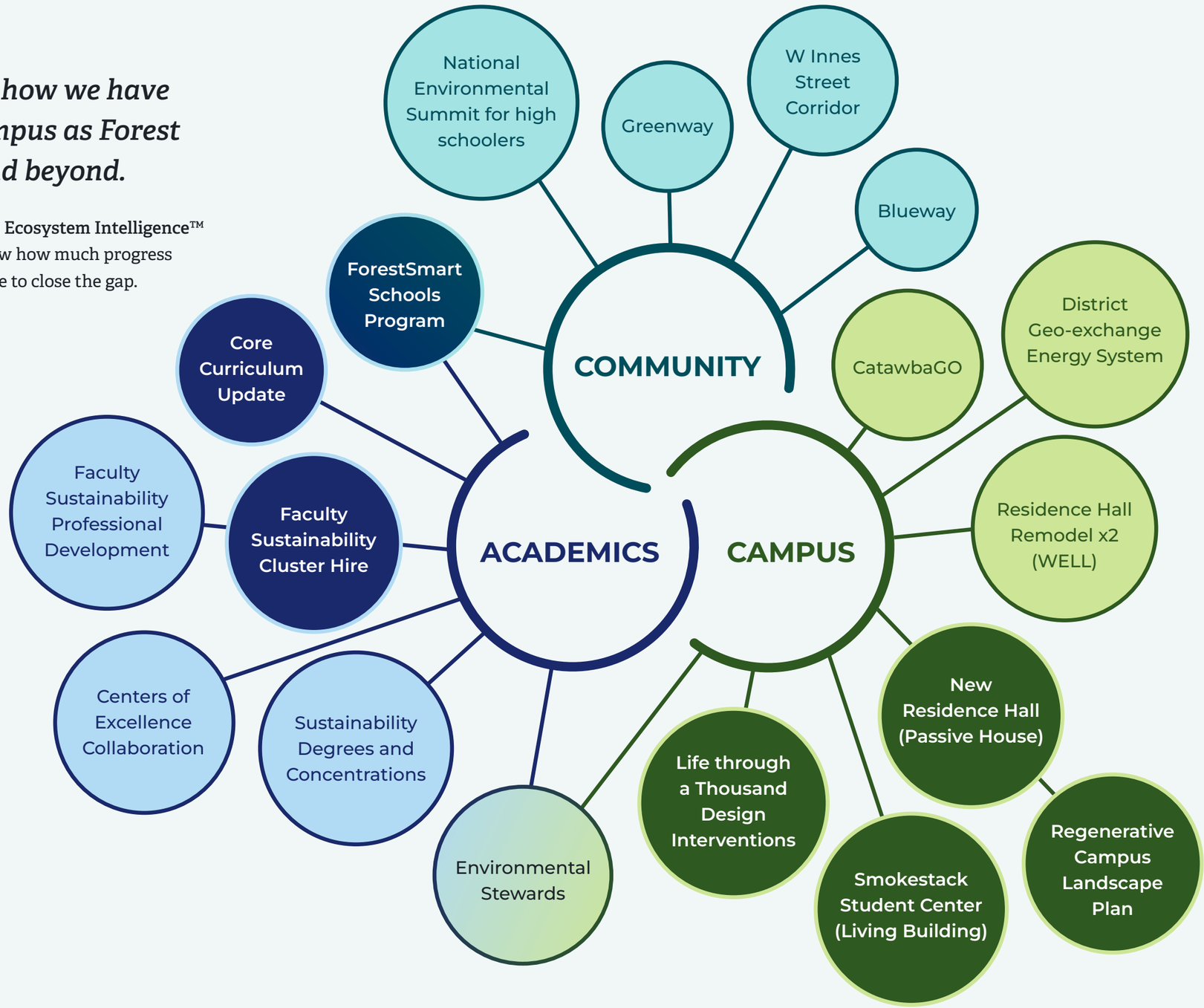
From one of the first Living Building Challenge projects in our state to small pollinator gardens across campus and from student environmental steward programs to integrating sustainability and environmental education into our core curriculum, we are demonstrating that with thoughtful intention, our interwoven Campus as Forest initiatives are creating a regenerative whole that will deliver positive impact greater than the sum of its parts.

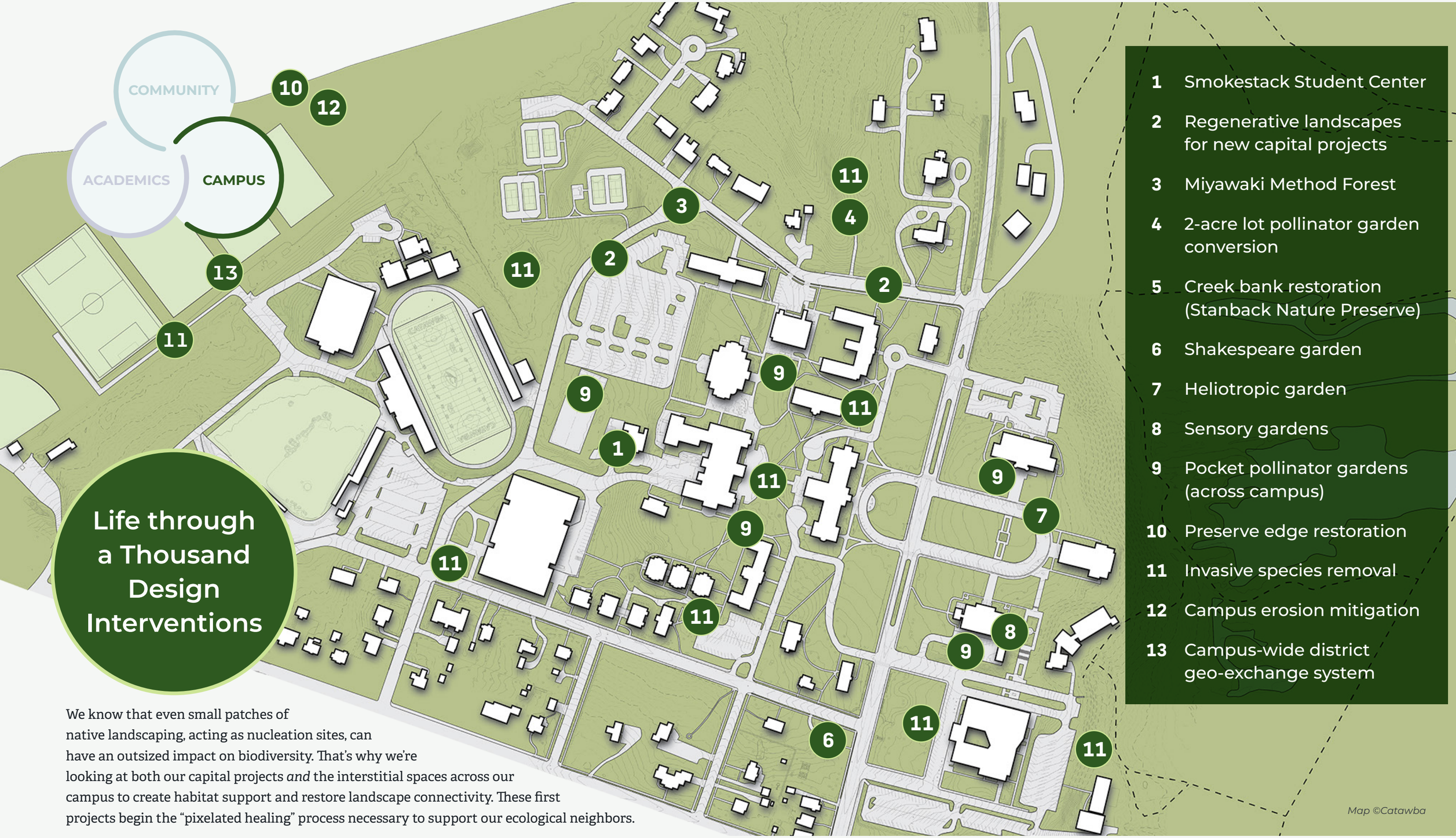
Creating a Regenerative Landscape

Inspired by arboretums, botanic gardens, and the Stanback Ecological Preserve, we will seamlessly create ample moments across our campus for students and the community alike to celebrate, reconnect with, and be inspired by our beautiful natural heritage. At the same time, our campus design will have purpose—increasing our contribution to student, ecological, and community wellbeing and resilience. The result will make the Catawba College campus a destination for everyone to experience regeneration in action.

The following examples illustrate how we have already begun to embody our Campus as Forest vision throughout our campus and beyond.

As we move these projects forward, we'll be sharing the **Ecosystem Intelligence™** analyses for our campus projects on our website to show how much progress we've made and what we're working on next to continue to close the gap.





Life through a Thousand Design Interventions

1 Smokestack Student Center

2 Regenerative landscapes for new capital projects

3 Miyawaki Method Forest

4 2-acre lot pollinator garden conversion

5 Creek bank restoration (Stanback Nature Preserve)

6 Shakespeare garden

7 Heliotropic garden

8 Sensory gardens

9 Pocket pollinator gardens (across campus)

10 Preserve edge restoration

11 Invasive species removal

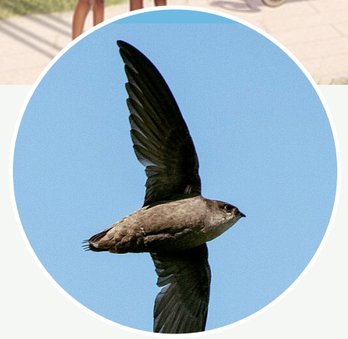
12 Campus erosion mitigation

13 Campus-wide district geo-exchange system

Map ©Catawba

We know that even small patches of native landscaping, acting as nucleation sites, can have an outsized impact on biodiversity. That's why we're looking at both our capital projects *and* the interstitial spaces across our campus to create habitat support and restore landscape connectivity. These first projects begin the "pixelated healing" process necessary to support our ecological neighbors.

Rendering ©Catawba



Chimney swifts already residing in the Smokestack tower will be left alone—a powerful symbol of how, with the right mindset, our built environment can be generous to those who share our home.

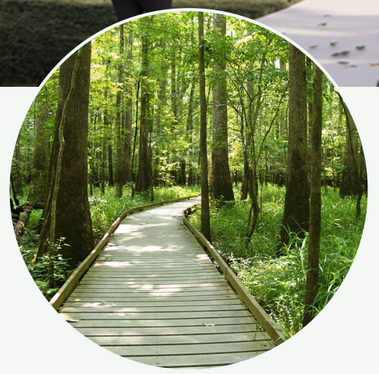
Moving from the Past to the Promise of the Future

Once an operational coal-burning power plant used to heat the campus as recently as the 1990s, the Smokestack is being reimagined through a regenerative design approach as an **active, energy positive student life hub**. As the first Living Building in higher ed in North Carolina and with an open invitation to the community, the Smokestack will be a destination that embodies our Campus as Forest vision to **move beyond "less bad" toward regenerative transformation** for our students and the community at large.

Inspired by Nature's ability to not only live within the means of the resources available locally but also deliver value to the other species that also call that place home, the **Living Building Challenge** is a holistic certification that requires the building deliver positive impact. With solutions like connecting to the new District Energy system and centering biophilic design with expansive views and access to Nature, the Smokestack project will pursue the Core Imperative and the Energy, Place, and Beauty Petals, which dive more deeply into specific challenging areas.

Built into a slope, the site will also manage water through on-site storage for reuse in the building and integrate a water feature into the landscape that will slow and absorb stormwater flow while also supporting native plant species that provide pollinator support.

Rendering ©Catawba



Increasing development in the Salisbury area is driving increasing flooding problems. Rainwater retention areas planted with native plants—like the one integrated into the New Residence Hall landscaping plan—reduce Catawba's contribution to downstream community flooding while also increasing biodiversity on campus and supporting student wellbeing.

Boardwalk photo by Ken Lund via Flickr.com, CC BY-SA 2.0

Building Smarter and Deepening Sense of Place

In what was once an asphalt parking lot, we are building a new Residence Hall designed to meet the elite **Passive House certification**. By using advanced energy modeling and design techniques, we project a remarkable **55 percent reduction in energy use** compared to typical North Carolina standards. The high-performance building envelope will not only provide stable, comfortable living spaces but also **reduce heating loads by 44 percent** and **cooling loads by 75 percent.** In addition, the residence hall ties into the District Energy system, providing on-site renewable geo-exchange energy for the building, helping to bring us closer to our goal of a zero-carbon campus.

Surrounding the hall, mixed-use landscaping will support student recreation and gathering while also deepening their sense of place with unique wayfinding in natural areas that encourages residents and visitors alike to slow down, observe, and experience Nature. Native tree and plant species in natural areas support pollinators, water collection and filtration, increasing biodiversity support and helping to improve water quality. Located close to the building, trees and shrubs also cool the air and provide shade, reducing heat gain on the lower stories of the hall while also providing visual screening for first floor residents.

Photos ©Catawba

Students in the *Sustainable Planning and Design* class and first-year seminar *Campus as Forest: Exploring Nature-based solutions for a more regenerative world* are gaining valuable hands-on learning through participation in the regenerative landscape planning process.

Regenerative Campus Vision:

> ***By 2051, Catawba College will be the model for regeneration and the new standard for higher education sustainability, revolutionizing education, environmental stewardship and campus life.***

Catawba launched its Regenerative Campus Landscape Plan process in the fall of 2025. The plan builds on the school's environmental legacy, embodying the "Campus as Forest" vision to move the campus beyond carbon neutrality to positive impact. The plan aims to create a roadmap to foster a shared "Canopy" of Experience, Regeneration, and Learning, establishing Catawba as a regional hub and destination for regenerative education and design, inspiring others to join in shaping a resilient future for their communities.

Designed by HOK as an inclusive and iterative stakeholder process, the plan incorporates valuable insights from students, faculty, staff, campus leadership, community members and city officials from Salisbury and Spencer. The plan is deeply informed by Nature through collaboration with long-time partners Biomimicry 3.8 and EcoMetrix Solutions Group, leveraging Nature's ecosystem performance benchmark and historic and current campus performance to establish performance goals. Learning from Nature's local strategies and the Catawba community reinforce how to meet those goals through the development of core planning principles and the resultant design of campus spaces and landscapes that:

- Create a walkable campus core with continuous forest programs, transforming everyday life into an immersive experience
- Regenerate a living landscape that enhances hydrology, biodiversity, and resilience and a deep connection between people and the environment; and
- Foster a living-learning laboratory and campus atmosphere that cultivate collaboration, dialogue, and shared experience alongside research, teaching, and experimentation to solve complex challenges.

Photo ©Catawba

Regenerative Education for Regenerative Leaders

We know that a true shift towards a regenerative future will require all of us to think and act differently. That's why we are supporting our students, faculty, and staff to help strengthen their knowledge and understanding of environmental stewardship and sustainability. We are also expanding our sustainability and environmental academic degrees and concentrations to ensure that those who want to go deeper have the opportunity to do so.

Core Curriculum Update

Faculty are collaborating to integrate sustainability and environmental education into our core curriculum by intentionally centering on character education, focusing on vocational, civic and environmental character, academic exploration, and lived experiences for students. Regardless of their area of interest, students will engage in multi-disciplinary curricula and co-curricular activities that connect academic subjects to real-world examples. This engagement supports students in developing a deeper understanding of how human actions have tangible impact on our every-day lives and the health of the communities we live in, and spark curiosity and creativity about how they can be in service to creating positive change. Phase one of our core curriculum pilot begins in the Fall of 2026.

Faculty Sustainability Cluster Hire

Catawba just completed a multidisciplinary cluster hire to support environmental education and sustainability. This effort advances our commitment to both integrating diverse sustainability expertise across our academic disciplines and cultivating a culture of transdisciplinary collaboration. This targeted hiring approach will help catalyze a shift from approaching sustainability as a separate area of study to leveraging sustainability principles across all disciplines in service to cultivating responsible, ethical, proactive individuals who are committed to making a positive change in the world.

ForestSmart Schools Program

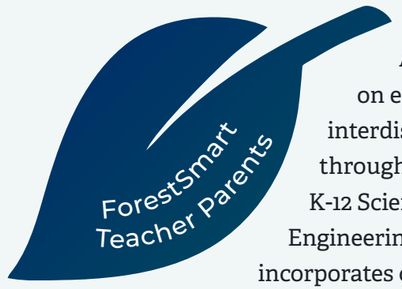
An Ecosystem of Opportunities for Schools, Teachers, and Students

Catawba's Center for the Environment runs ForestSmart Schools, a comprehensive program supporting local schools and educators in place-based sustainability and outdoor learning to improve environmental literacy and foster a deeper connection to place, community, and self. Focused on ST**R**EAM education (Sustainability, Technology, **Regenerative Learning,** Environment, Arts, Mathematics), ForestSmart Schools includes a wide range of interdisciplinary programs aligned with the UN Sustainable Development Goals, Education for Sustainability Standards, and the NC Standard Course of Study.

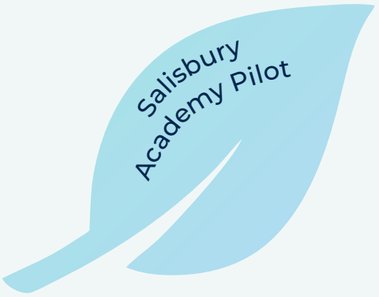
Through teacher professional development and certification programs, K-12 STREAM curriculum, use of our campus as a living learning laboratory, and schools of excellence certification program, ForestSmart Schools engages our broader community in innovative hands-on exploration, discovery, and stewardship of the natural world.

In addition, Catawba students interested in environmental education can develop modules and implement them with students through the program, gaining valuable comprehensive real-world experience and feedback with the support of Catawba faculty. Learn more on our website.

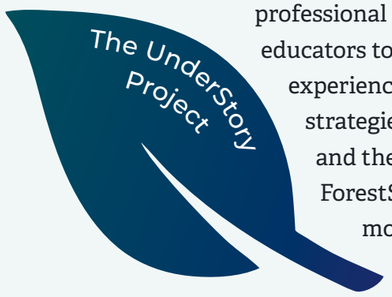
The Schools program recognizes and celebrates three levels of certification: School of Commitment, School of Achievement, and School of Excellence. Schools are recognized in five areas of implementation: School Culture & Community, School Sustainability, Curriculum Integration, Healthy Schools, and Innovation. Schools of Excellence are recognized for achieving success through 50 specific objectives in all five components.



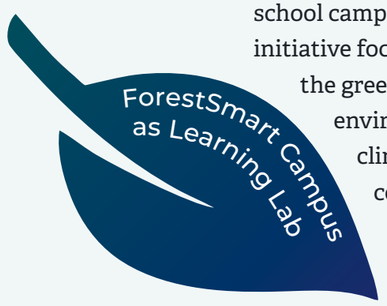
A K-12 curriculum that focuses on environmental sustainability and interdisciplinary regenerative learning through the lens of the new North Carolina K-12 Science Standards and Science and Engineering Practices (SEPs). This curriculum incorporates compelling content, contextual, multi-sensory learning with environmental action through real-world projects that support the learning environment, children, and their communities.



Salisbury Academy served as a pilot site for The UnderStory Project. The K-5 Curriculum is being shared with teachers and environmental professionals in the summer of 2025. The middle/high school curriculum will be shared in the 2025-26 school year.



This ForestSmart "train-the-trainers" program provides professional development for formal and non-formal educators to strengthen content expertise, gain field experience, and learn how to optimize reflective learning strategies to inspire growth and resilience in students and the learning environment. Through the Certified ForestSmart Teacher Leader program, teachers model these high impact practices through The UnderStory Project curriculum.



The ForestSmart Program promotes the use of the school campus as an outdoor living laboratory. This initiative focuses on place-based learning and the greening of school campuses to foster environmental literacy, native biodiversity, climate resilience, and healthier communities.

Photo ©Catawba

LOOKING TOWARDS THE FUTURE

From biomimicry seeds sown in the Catawba Ideal, our unique and inspiring Catawba Campus as Forest journey is just getting started.

There is no better time to grow the intention, literacy, skills, capacity, and networks to build a regenerative world. As stewards of the Catawba College community—all of us, together—**we have the responsibility to take bold regenerative action** to increase the resilience and wellbeing of our communities now and into the future.

The work we are doing at Catawba is not ours alone.

We are engaging and strengthening our community and partner relationships to bring in new ideas, open doors for our students and faculty, and share our experience. As an institution of higher learning, we will courageously share our full story, from successes to challenges to lessons learned, and set an inspiring example that builds confidence in others to take the first steps on their own journeys.

A FUTURE DEFINED BY PURPOSE AND POSSIBILITY

Amplifying the Mycelium Effect

Campus as Forest integrates a culture of care and a mindset of abundance to envision a future defined by purpose and possibility. As we strengthen the threads of connection and reciprocity weaving through our academics, physical campus, and community partnerships, our shared purpose—*to co-create the conditions for a thriving and resilient Catawba natural and cultural ecosystem that delivers enduring shared value for, and regenerative stewardship of, our diverse communities*—will serve to engage, leverage, and align our diverse perspectives to deliver robust solutions that benefit all.

Campus as Forest is rooted in the knowledge that our interdependence and interconnectedness with Nature is a gift that increases and accelerates our ability to address the environmental challenges we are experiencing today. With Nature as our co-collaborator and mentor, we can **learn lessons from Nature's proven solutions** to de-risk and accelerate innovative solutions that deliver positive impact. With nature-based solutions, we can **harness Nature's innate ability to create a regenerative environment**. And by integrating industry-leading ecosystem services quantification technology into our decision-making processes and using Nature's ecosystem performance as our benchmark, we can **evaluate if the solutions we co-create are bold enough** to meet our goals.

Good Goes Far

Campus as Forest uniquely aligns and invests our resources and strengths—financial, knowledge, expertise, time, energy, relationships, and networks—into growing a student body with clear vocation, literacy in the interplay between ecological and social dynamics, and skills in civic engagement and community service. In doing so, we are developing the next generation of global citizens who will have an outsized influence in healing and creating a regenerative world.

We invite you to join us in building the path for our Campus as Forest journey ahead.

As Campus as Forest is designed to evolve and grow with the input of our diverse communities, any time is a good time to step in. For more information about our current and planned Campus as Forest initiatives and how you can be involved and contribute, **visit our website.**

CATAWBA COLLEGE EST. 1851 + BIOMIMICRY 3.8

Together, we are building a path to a regenerative world.