



2022

Sustainability

Report

University of North Carolina at Chapel Hill



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL



INSTITUTE FOR  
THE ENVIRONMENT

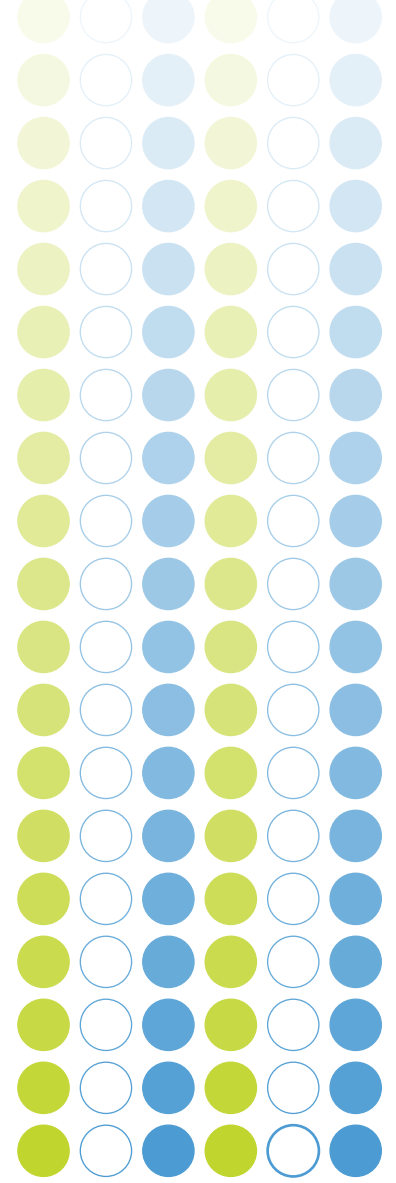


Sustainable  
Carolina



# Table of Contents

- 2** 2021 Greenhouse Gases | By the Numbers
- 3** Optimizing Operations
- 6** Student Leadership
- 7** Research & Innovation
- 10** Curricula
- 12** Experiential Education
- 13** Community Engagement
- 15** Communications
- 16** Photography



---

## Iconography

An item in one section of the report may fall under multiple categories. These items will be marked with additional, applicable icons.



Campus Operations



Experiential Education



Student Leadership



Communications



Research & Innovation



Community Engagement



Curricula

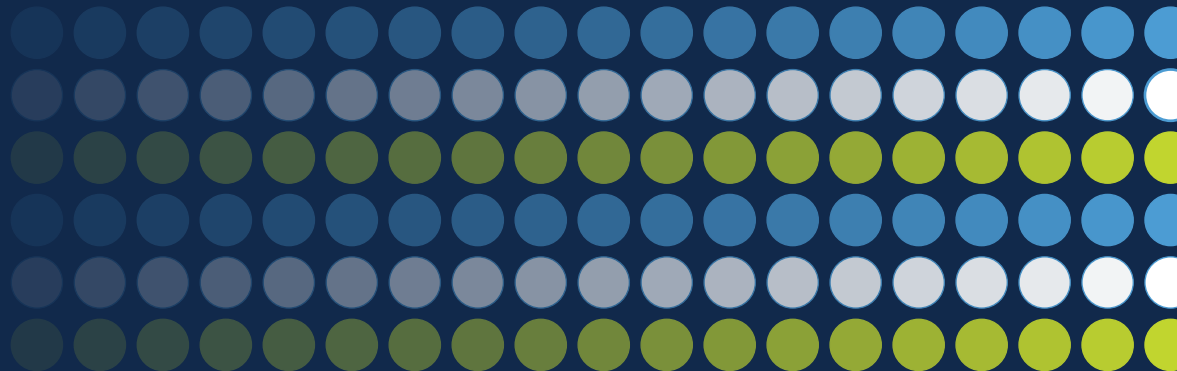


## A Word From the Sustainable Carolina Team

---

Over the past two years, Sustainable Carolina has built a strong foundation with sustainability partners across campus. Housed within the UNC Institute for the Environment, our group works to build and balance societal well-being, ecological integrity, and economic prosperity. Guided by the Carolina Sustainability Council, we strive to utilize our partnerships to implement innovative strategies to advance Carolina's sustainability goals. This report highlights the excellent work of University departments, researchers, and student organizations during the 2021-2022 academic year.

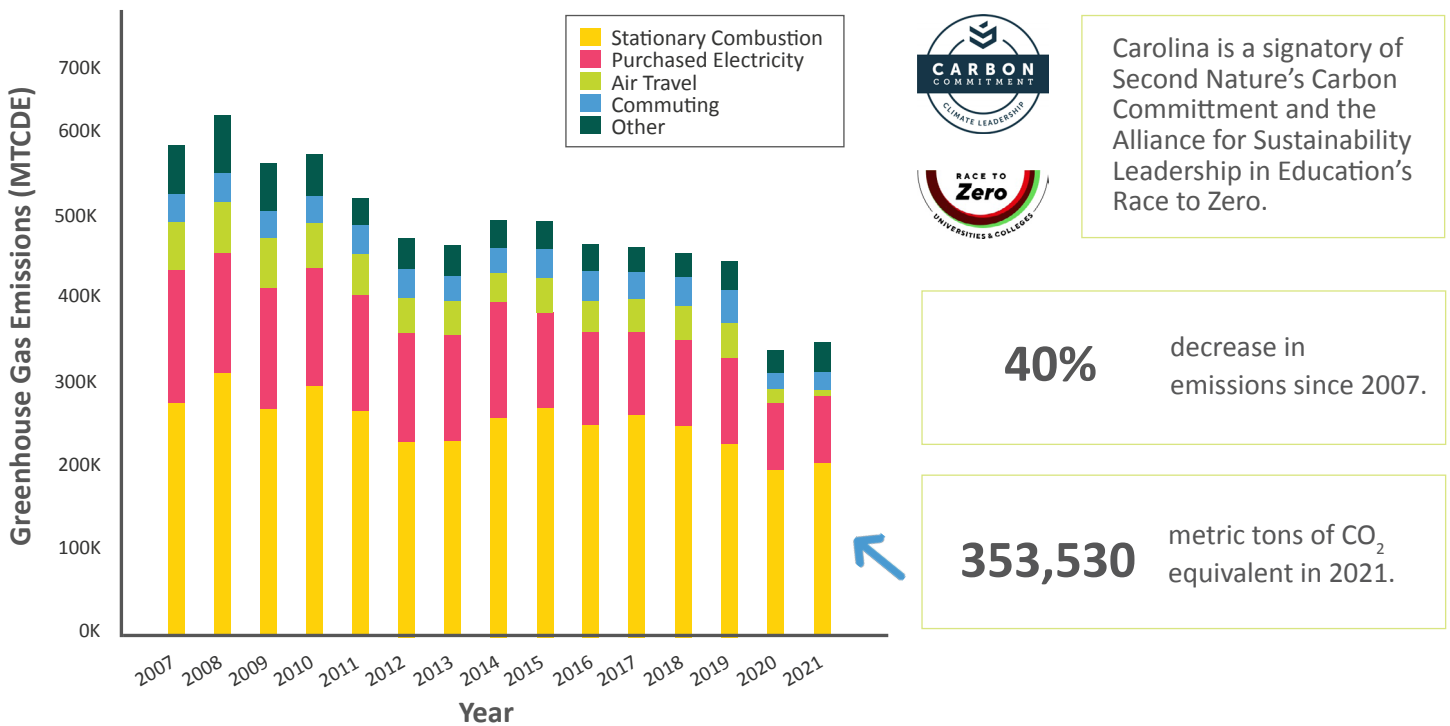
As Carolina's hub for sustainability, we would love to hear your sustainability success story. This Sustainability Report is updated annually in the summer. Contact us to have your work included in a future report.





# 2021 Greenhouse Gases | By the Numbers


Carolina began [robust tracking of campus emissions](#) in 2007. Today, we use the 2007 greenhouse gas inventory as a benchmark. The numbers below reflect the improvements made over the past 15 years.




Carolina is a signatory of Second Nature's Carbon Commitment and the Alliance for Sustainability Leadership in Education's Race to Zero.

Campus steam use per square foot has decreased by **36% since 2007**. Steam is critical for campus and hospital operations and must be generated by stationary combustion (see graph above) at the cogeneration plant. During the pandemic, hospital steam use increased, but emissions from generating steam decreased.


## Since 2007:




**54%** reduction in coal consumption.




**49%** reduction in purchased electricity emissions.



**23%** reduction in electricity consumption, per square foot.



**36%** reduction in fleet emissions.



**32%** reduction\* in commuting emissions.

\*Decreased travel during the pandemic impacts this number.

## Improving Energy Efficiency

Carolina is continuously improving campus building efficiency. UNC Energy Management has made improvements to its energy usage dashboard. Users can now select different timeframes and location to create detailed usage charts. Proper energy conservation can reduce campus emissions by minimizing the amount of steam, chilled water, and electricity.

## Exploring Renewable Electricity

By increasing on-campus solar generation and engaging in stakeholder discussions around utility-scale renewables, Carolina is working to reduce electricity emissions. The University prioritizes high-impact, cost-effective projects and programs for renewable energy.



# Optimizing Operations

When the pandemic disrupted typical campus operations, Carolina’s operational units continued to develop plans and implement projects to bring Carolina closer to its sustainability goals. This section explores activities and metrics related to campus greenhouse gas emissions, water sustainability, and waste reduction.

## Climate Action at Carolina

Sustainable Carolina published its new [Climate Action Plan](#) in 2021, after implementing 75% of the near-term strategies described in the 2009 plan. Carolina strives to achieve the energy efficiency goal set by [Executive Order 80](#): A 40% reduction in energy use intensity (EUI) of state-owned buildings by 2025. Through the efforts of [UNC Energy Management](#) and construction of more energy efficient buildings, Carolina has decreased energy use per square foot of building space by 37% since 2003.

### Tracking Our Progress

Carolina uses the Sustainability Indicator Management & Analysis Platform (SIMAP®) to calculate greenhouse gas emissions for campus. Through SIMAP’s [public reporting tool](#), anyone can search an institution and see its commitments, goals, and emissions trends, as well as a breakdown of annual emissions.

### Champion Sustainability Fund

The first energy efficiency projects made possible by the [Champion Sustainability Fund](#) are underway. This green revolving fund is made possible by a \$1 million gift from HanesBrands’ Champion Athleticwear brand. The fund supports innovative sustainability programs and initiatives, encouraging the Carolina community to devise sustainable solutions that benefit the wider community. Sustainable Carolina will share project updates and progress throughout the year.



The Curtis Media Center’s rooftop PV panels can produce 34% to 87% of building energy used.



Through programs like [UNC Green Labs](#), labs can save electricity and decrease overall energy use.

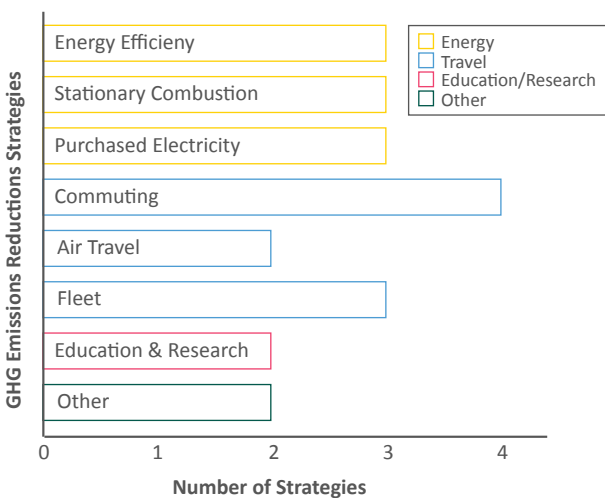


Figure 1: The CAP details 22 strategies to reduce GHG emissions and help Carolina reach its ambitious 2040 carbon neutrality goal.



Carolina has **70 kW** of rooftop solar panels.



UNC Fleet Services’ emissions fell **17%** from 2009 to 2020.



RESPC contributed **\$390,000** toward a Chapel Hill Transit electric bus.



Carolina uses **50%** natural gas at its cogeneration facility.

Implementation of strategies keeps Carolina moving forward in its climate commitments.

## Campus Water Footprint

Sustainable Carolina’s newly released [Water Plan](#) describes accomplishments and goals related to campus water sustainability. Source water management strategies implemented by the University minimize stormwater runoff pollution and improve water efficiency on campus. Sustainable Carolina collaborates with campus partners and our water utility, [OWASA](#), to further best practices in water sustainability.

### Our Water Footprint

Potable water consumption per square foot on campus decreased by 61% from the 2003 baseline. This reduction is the result of increased use of non-potable water from the [reclaimed water utility near campus](#), the use of captured rainwater and condensate from cistern storage, and significant investments in water conservation strategies.

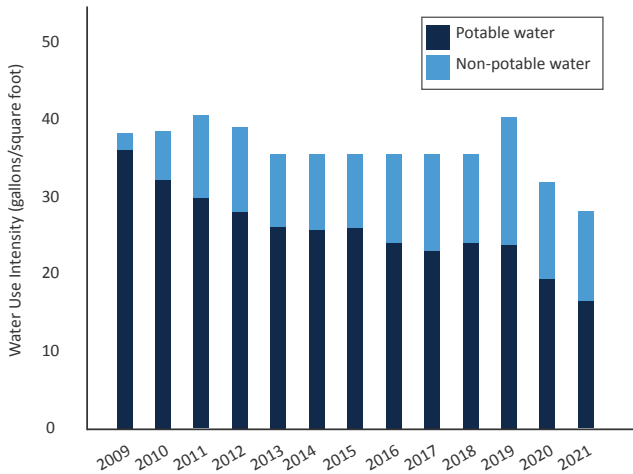


Figure 2: Water use on campus, in gallons per square foot, over a 13-year period.

### Tools to Improve Water Efficiency

Carolina uses [OWASA’s AguaVista software](#) to visualize interval water use data. UNC Energy Services and Energy Management use this tool to provide early leak detection and identify high water consumers in various user categories. This data may help Carolina decrease water use around campus.

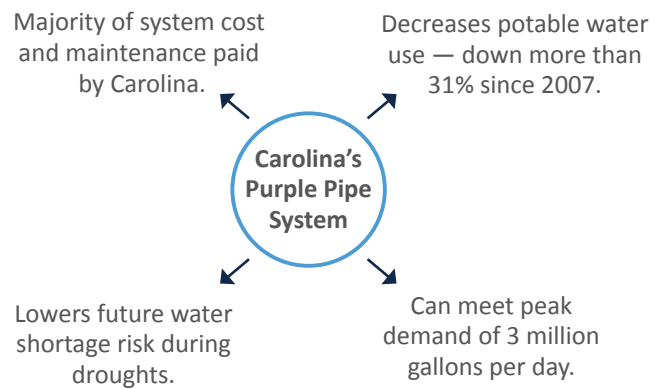


Figure 3: Grants from the NC Clean Water Management Trust Fund and the US EPA in the early 2000s helped Carolina pay OWASA for a [reclaimed water system](#).

### Managing Stormwater Runoff

Over the years, Carolina’s campus has become very developed. To decrease the impact of land use, operations staff invests in projects to manage campus stormwater runoff. These projects take many forms, such as wetland restoration, stream daylighting, and green roof construction. The [Chapel Creek wetland](#) at the Outdoor Education Center improves water quality and habitat for fish, macroinvertebrates, and birds. On North Campus, the [Battle Grove Regenerative Stormwater Conveyance](#) has a daylighted stream with step pools that slow water flow and reduce erosion and sediment turnover. Lastly, [green roofs](#), which can be found on eight campus buildings, reduce runoff volume and promote evapotranspiration, which removes pollutants from water.



Campus streams provide a laboratory for [students to study water quality](#).



Sustainable Carolina’s stormwater tours often begin on the roof of the [FedEx Global Education Center](#).



The [Sustainable Triangle Field Site](#) shared data with Chapel Hill on its streams.

## Waste Recovery

According to the [UNC Office of Waste Reduction and Recycling](#) (OWRR), 57% of campus waste is sent to the landfill and 43% is recovered (recycled or composted). In 1990, the recovery rate was just 12%. A 2017 study of campus waste found that 20% of landfill waste could be recycled and 52% of landfill waste could be composted. Departments and organizations across campus continue to improve waste recovery.

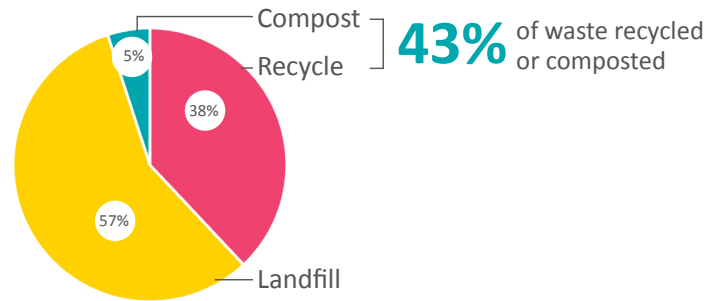



Figure 4: 2020 breakdown of campus waste.

### Residence Hall Waste

Plastic film, like grocery bags, can be recycled at the front desk of each residence hall. [Carolina Housing](#) residents can also check out a small, airtight compost bucket from their community. The small buckets are emptied into large carts; carts are emptied weekly and contents are sent to a local facility.

 **367 tons** of usable goods have been collected since “Don’t Ditch It, Donate It” began.

### Move-Out Donations

Carolina Housing partners with TROSA, Carolina Thrift, and UNC OWRR to host “[Don’t Ditch It, Donate It!](#)” The annual program runs from April to mid-May and provides donation bins for clothes, furniture, school supplies, non-perishable food, and more. In 2022, the program led to nine tons of item donations and 3,375 pounds of food donations for Carolina Cupboard.

### EatSortWin Dining Campaign

[Carolina Dining Services](#) is Carolina’s chef led, student-focused dining operation. Through the Student Dining Board, CDS communicates with the student body, giving them a say in food purchasing, meal plans, budgets, and more. CDS sources fresh, sustainable food, with vegan, gluten-free, and vegetarian options daily. With a dedicated sustainability manager, CDS releases an annual [sustainability report](#), highlighting achievements and setting sustainability goals. In 2022, CDS is re-introducing its “EatSortWin” campaign, which earned a [NACUFS](#) Sustainability Award in 2019.



In 2021, CDS diverted [550,000 pounds of food waste](#) from the landfill.



Reusables help CDS divert about 150,000 containers from the landfill every year.



“EatSortWin” taught students how to properly dispose of their food waste.

## Sustainable Carolina’s Campus Partners

Sustainable Carolina works with a variety of partners across campus. This list is not exhaustive.

- [UNC Finance and Operations, Facilities Services, Operations](#)
- [UNC Finance and Operations, Facilities Services, Engineering and Construction](#)
- [UNC Finance and Operations, Facilities Services, Planning and Design](#)
- [UNC Finance and Operations, Energy Services](#)
- [UNC Finance and Operations, Auxiliary Services](#)
- [UNC Institutional Integrity and Risk Management, Environment Health and Safety](#)
- [UNC Student Affairs](#)



# Student Leadership

Ambitious, sustainability-minded undergraduate and graduate students take on organizational leadership roles across campus. Their dedication of time, energy, and problem-solving skills are instrumental in moving Carolina toward its greenhouse gas emissions, water sustainability, and waste reduction goals.

## Carolina Thrift

Student-led nonprofit [Carolina Thrift](#) collects used items at the end of each school year to be sold at the beginning of the following school year. The organization works to encourage socially responsible consumerism, provide the UNC-Chapel Hill area financial relief, and build Carolina’s community. In the past, the organization has used its proceeds to donate to local charitable organizations, like [Take Action Chapel Hill](#).

## CompostMates

[CompostMates](#) is a student-led organization that expands compost access for students living off-campus in Chapel Hill and Carrboro. The organization’s free, biweekly food scrap pickup model reduces barriers to composting such as time, transportation, space, and funds. Collected food scraps are donated to local community gardens and are used to grow food for donation. Since 2021, the program helped divert almost 4,500 pounds of organic material from landfills and prevented 900 pounds of greenhouse gas emissions. CompostMates receives a portion of its funding from the [Carolina Center for Public Service’s Robert E. Bryan Fellowship](#).

## Renewable Energy Special Projects Committee (RESPC)

The [Renewable Energy Special Projects Committee \(RESPC\)](#) increases the use of renewable energy and sustainable practices on campus by funding projects on campus. Through its [Efficient Freezer Rebate Program](#), RESPC has provided rebates to 50 campus labs for the purchase of highly efficient freezers. The student-run committee has also installed electric vehicle charging in the Craige Parking Deck, a 20-kW solar panel system on the roof of the Frank Porter Graham Student Union, and occupancy sensors in the Gillings School of Global Public Health. The most recent projects funded by RESPC include a rooftop PV array for the new Curtis Media Center, an electric bus for Chapel Hill Transit, and two electric Chevy Bolts.

## Meantime Coffee Co.

Located in the Campus Y, [Meantime Coffee Co.](#) is a café and hub for social justice and social innovation. By composting its spent coffee grounds, Meantime diverted 1,579 pounds of waste from the landfill in 2022. Through a collaboration with Edible Campus this year, the shop gave away five gift cards, which were made out of seed paper. Once used, winners could plant the paper!

## Residence Hall Association

The [Residence Hall Association](#), known as RHA, is a University-sponsored student organization that allows students who live on campus to share their voice and perspective with the administration. The group has a history of promoting sustainability and helped create [Green Games](#) in 1995. Today, RHA supports a sustainability officer in each residence hall. Most recently, the group collaborated with UNC Libraries to curate “[Sustainability Now](#),” an online repository of books on environmental topics.



Sixty solar panels make up the Curtis Media Center’s 25.2 kW system.





# Research and Innovation

As one of America’s top research universities, Carolina conducts [more than \\$1 billion in sponsored research annually](#). Sustainability is a theme throughout much of this research, which pushes North Carolina, our country, and the world forward in mitigating the causes and effects of anthropogenic change.

## Collaborating for a Better State

Established in 2016 by the North Carolina General Assembly, the North Carolina Collaboratory is headquartered at UNC-Chapel Hill. The group translates academic research into practical application for use by State and local governments and the communities they serve. In 2022, the Collaboratory [announced the Collaboratory Research Fellows program](#), in partnership with the North Carolina Department of Environmental Quality. Fellows are leading researchers in the Collaboratory’s PFAS Testing Network. The Collaboratory also [hosted a research symposium](#) in partnership with the UNC Institute for the Environment and Upper Neuse River Basin Association to discuss updates in the group’s Jordan and Falls Lakes [nutrient management study](#).



*Originally focused on natural resources and environmental issues, the Collaboratory has since expanded to numerous other research areas in response to some of the State’s most pressing challenges, including public health, education, clean energy, economic recovery, and technology development.*

## Monitoring Green Roof Plant Health

The [Carolina Drone Lab \(CARDNL\)](#) received funding through the [Lenovo Instructional Innovation Grants Program](#) for a collaborative research project assessing the status and biodiversity of campus green roofs. Over the next year, CARDNL will partner with UNC Grounds Services and Sustainable Carolina to test the use of drones in monitoring the plant health on campus green roofs. EcoStudio interns will assist in drone operations, generate three-dimensional models of the landscapes, and create a green roof workshop and tour. The workshop and tour will be available to the Carolina community and general public, virtually and in person. This work will increase public awareness of campus green roofs and update green roof management strategies at Carolina.



*During the academic year, the Carolina community can fly CARDNL’s drones on [Free Fly Fridays](#).*

## Applying Data to Environmental Challenges

Led by Angel Hsu, assistant professor of public policy and faculty member in E3P, the Data-Driven EnviroLab (DDL) seeks to solve the world’s environmental policy challenges by using cutting-edge data analytics and collaborating with local and international organizations. This year, the lab led a citizen science heat mapping campaign with the [North Carolina Museum of Life and Science](#) and hosted the [HeatHack Data Science Collabathon](#) with NC SciFest. With their global research partners, DDL also launched the Net Zero Tracker, which tracks net zero emissions pledges from over 4,000 actors. Most recently, the lab [updated its Urban Environment and Social Inclusion Index \(UESI\)](#), which measures inclusivity and sustainability in 300 cities.



*DDL has authored almost 10 reports and peer reviewed articles this year, and received \$1.5 million in grants from organizations such as NSF, the IKEA Foundation, and the Carnegie Corporation.*





## A New Space Dedicated to Innovation

The UNC Board of Governors approved a new 20,000 square foot home for Innovate Carolina, the University-wide initiative for innovation and entrepreneurship, on Franklin Street. The team has helped Carolina innovators bring inventions to market. Notably, the Sustainable Access to Clean Water Creativity Hub is [developing a purification technology](#) that could provide 1.8 billion people with access to clean water.

## A Valuable HBCU Partnership

UNC-Chapel Hill Chancellor Kevin M. Guskiewicz and [North Carolina Agricultural and Technical State University](#) Chancellor Harold L. Martin created the [Looking Forward funding program](#), which utilizes cross-institutional collaboration to solve the state’s biggest challenges. Through the program, four teams were selected from four priority areas to receive a \$200,000 over a 2-year period. Funding for Looking Forward was made possible by the chancellors’ offices at each institution and by the UNC Lineberger Cancer Center.

“Looking Forward builds on many years of partnering with our colleagues at UNC-Chapel Hill and substantially broadens our commitment to find solutions to important societal problems that directly affect the lives of people in our communities.”

Chancellor Harold L. Martin, NC Agricultural and Technical State University

**Graph-based Flood Operational Analytics Tool:**  
Led by [UNC RENCI](#) and [N.C. A&T Department of Built Environment](#)

**Improving Prediction of Flooding Associated with Tropical Cyclones in Eastern North Carolina:**  
Led by [UNC Department of Earth, Marine and Environmental Sciences](#) and [N.C. A&T Department of Mathematics and Statistics](#)

*Two of the four projects are related to sustainability.*

  
Data Science and Society

  
Environment & Environmental Justice

  
Health Disparities

  
Cancer-Related Research

*The Looking Forward program consists of four priority areas.*

## New Environmental Justice Programs

The UNC Institute for the Environment is administering two new programs supporting environmental justice research and research translation in underserved communities across North Carolina. The 2022 Senior Campaign raised money and awareness for the [Environmental Justice Undergraduate Research Program](#). In addition to this, the Institute raised a separate \$50,000 for the [2022-2023 Environmental Justice Graduate Research Award](#). Amy Kryston, the graduate student awardee, is an MPH candidate at the Gillings School of Global Public Health and will research the inequity of on-site sanitation and incidence of acute gastrointestinal illness in rural North Carolina.

## UNC Gillings School of Global Public Health

The [UNC Gillings School of Global Public Health](#) offers undergraduate and graduate, and invests in air, water, and climate resilience research. The School's Department of Environmental Sciences and Engineering celebrated its centennial in 2021 with a symposium honoring the late Dr. Philip C. Singer, a nationally renowned expert in water quality issues. Centers and programs at the Gillings School with a sustainability component include the [Center on Financial Risk on Environmental Systems](#) (CoFIRES), the [UNC Superfund Research Program \(SRP\)](#), and the [Water Institute](#).

## Ackerman Center for Excellence in Sustainability

In spring 2022, Kenan-Flagler Business School received an \$11 million gift to accelerate progress in social and environmental sustainability using profitable business solutions. The School's Center for Sustainable Enterprise became the [Ackerman Center for Excellence in Sustainability](#), in honor of Charles Ackerman ('55). The gift will support creation of a LEED building that will house the Center and is slated to open in fall 2024.



The [Water Institute's](#) conference is held annually in October.



Rendering of Kenan-Flagler's [new LEED building](#), to be completed in 2024.



World Summit on Island Sustainability participants connected with nature and learned about conservation.

## Advancing Artificial Photosynthesis

The [Center for Hybrid Approaches in Solar Energy to Liquid Fuels](#) (CHASE), headquartered in Carolina's chemistry department, works to accelerate fuels from sunlight research. The Carolina-based multi-institutional partnership with Brookhaven National Laboratory, North Carolina State University, Emory University, University of Pennsylvania, and Yale University is made possible by [\\$100 million in funding from the U.S. Department of Energy](#). The proposal for the grant was developed under the guidance of the [UNC Solar Energy Research Center](#) (SERC).

## Promoting Island Sustainability

The [UNC Center for Galápagos Studies](#), a collaboration between UNC-Chapel Hill and Universidad San Francisco de Quito, celebrated 10 years of joint research. The decade of work was recognized at the [World Summit on Island Sustainability](#), held from June 26-June 30, 2022, on San Cristóbal Island. Earlier in the spring, Carolina and USFQ [renewed their strategic partnership](#), reaffirming their joint-commitment to activities on the islands. Arts Everywhere joined the celebration by collaborating with CGS to bring [Galápagos-inspired sculptures](#) to campus.

### Centers & Institutes in Professional Schools

- [Ackerman Center for Excellence in Sustainability](#) (Kenan-Flagler Business School)
- [Center for Environmental Health and Susceptibility](#) (Gillings School of Global Public Health)
- [Center for Environmental Medicine, Asthma and Lung Biology](#) (School of Medicine)
- [Center for Climate, Energy, Environment & Economics](#) (School of Law)
- [Center on Financial Risk in Environmental Systems](#) (Institute for the Environment/The Gillings School)
- [Environmental Finance Center](#) (School of Government)
- [Institute for Environmental Health Solutions](#) (The Gillings School)
- [Water Institute](#) (The Gillings School)

# Curricula

As North Carolina, the United States, and the world work to find solutions to our greatest sustainability challenges, the University ensures graduates are prepared for work in the field. Recent reorganizing and refocusing has enhanced resources available to faculty and students.

## IDEAs in Action

Carolina's [new undergraduate general education curriculum](#) emphasizes experiential education and inquiry. IDEAs in Action was developed over five years and many conversations with faculty. The curriculum empowers students to create their own academic journey, while fostering writing, quantitative reasoning, scientific investigation, and ethical citizenship skills. The new learning outcomes require an understanding of human and environmental challenges that transcend national borders, as well as differences between personal ethical decisions and those bearing on the public and civic spheres.

## Bridging Natural and Social Sciences

The interdisciplinary [Environment, Ecology and Energy Program](#) (E<sup>3</sup>P) launched in 2018 to understand and provide solutions to the most challenging resource issues facing the planet. The program incorporates natural sciences, social sciences, and humanities to teach students how to best manage resources in an ever-changing world. Students can earn degrees in environmental sciences (B.S.) and environmental studies (B.A.) and graduate degrees in ecology (M.A., M.S., Ph.D.).

## Strengthening Interdisciplinary Research

The [UNC Department of Earth, Marine and Environmental Sciences \(EMES\)](#) launched in 2021, bringing together the departments of geological sciences and marine sciences, along with the Institute of Marine Sciences. Merging these departments leverages the natural alignment between earth and marine sciences and expands degree offerings to students.

## Bringing Art to Science

In spring 2022, the [Process Series presented a staged reading of Rollover](#), a play based on the real-life experiences of Hurricane Ike survivors in Texas. UNC EMES Professor [Laura Moore](#) received a [Fostering Interdisciplinary Research Explorations \(FIRE\) Grant](#) to write the play with [Kathryn Hunter-Williams](#) on coastal environments and climate change.

“IDEAs in Action will ensure that Carolina graduates will not be powerless in the face of big challenges. They won’t simply cope with the world; they’ll have the tools to shape it.”

Chancellor Kevin Guskiewicz



*This diagram shows how students will progress through the IDEAs curriculum.*



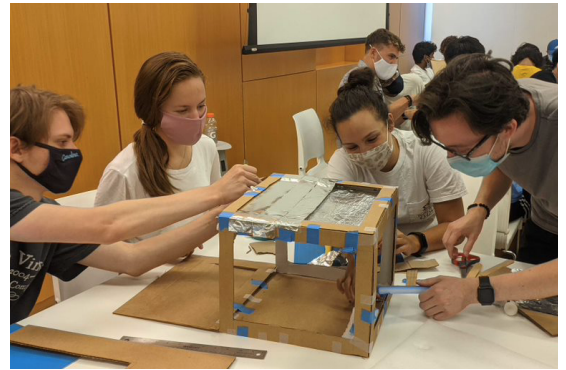
*Diamond Holloman received E<sup>3</sup>P's 2021 Impact Award for her work on race and the environment.*



*UNC IMS commissioned a mural on its Morehead City building in celebration of 75 years.*

## New Offerings: APSE Minor 🧪

The UNC Department of Applied Physical Sciences works to solve challenges related to drug treatment for diseases, environmental monitoring techniques, and solar energy. The department is home to a lab studying [perovskite solar cells](#), a technology that could one day become competitive for commercial solar energy. In 2021, the department graduated its inaugural class of [applied sciences and engineering \(APSE\) minor](#) students. Members of the first cohort said that it's a great way to meet people from a variety of different departments and learn how to collaborate on challenging projects. Coursework within the minor teaches students how to demonstrate curiosity about the world around them, make connections to integrate knowledge, and identify unexpected opportunities to create value.



Students in APPL 110, "Introduction to Design and Making," [participate in project-based learning](#) to make an impact beyond the classroom.

## New Offerings: Data Science and Society 💡

The [UNC School of Data Science and Society](#), launched in fall 2022, will allow students to pursue data science degrees at the undergraduate, graduate, and professional level. The School will utilize a human-centric approach with an emphasis on ethics. Carolina appointed RENCi Directory Stanley C. Ahalt and RENCi Chief Operating Officer Jay Aikat to [take on secondary appointments](#) as inaugural dean and senior associate dean, respectively. Along with an advisory group of campus representatives, Ahalt and Aikat will lead the School in its launch, which will take place over the next three years.

## New Tool: Sustainable Course Directory 💡

A variety of courses at Carolina incorporate sustainability concepts. Through a [tool on Sustainable Carolina's website](#), students can find sustainability courses by searching a keyword, department, or general education requirement.

## Informal Learning: Beekeeping School

In 2019, the [Xerces Society](#) recognized Carolina as a Bee Campus. Today, the [Carolina Beekeeping Club](#) has bees living in hives on the top of the FedEx Global Education Center. The bees from these hives can [pollinate plants across campus in the Coker Arboretum](#). In spring 2022, the club hosted a free beekeeping course, consisting of six classroom and two field sessions, where participants learned about the art of maintaining a healthy colony.



Bees from one of the new hives on top of the FedEx Global Education Center.

## Informal Learning: Walking Tours 🧳

Sustainable Carolina leads sustainability and stormwater tours regularly. These tours are open to interested individuals as well as entire classes. In spring 2022, Sustainable Carolina partnered with UNC Exercise and Sports Science to lead students taking Lifetime Fitness (LFIT) course down the Campus-to-Garden Trail for a nature walk. During the walk, Sustainable Carolina team members identified invasive species and discussed stream ecology with students.



The Campus-to-Garden Trail is maintained by North Carolina Botanical Garden staff and volunteers.



# Experiential Education

Carolina’s experiential education programs offer students structured, dynamic learning opportunities that invite them to apply their knowledge and skills in real-world environments.

## EcoStudio

EcoStudio hosted 72 student internships during the 2021-22 academic year, many of which counted for course credit. Sixteen EcoStudio projects were UNC-affiliated internships within UNC Energy Management, Green Labs, the North Carolina Botanical Garden, Edible Campus, and the Ackerman Center for Excellence in Sustainability. Other participating departments include UNC Energy Services; UNC Environment, Health, and Safety; and Sustainable Carolina.

## Field Sites

The UNC Institute for the Environment, in partnership with E3P, has a network of field sites with locations in North Carolina and abroad. Each site focuses on themes specific to that community or region and provides a semester-long opportunity for students to explore real-world issues through a combination of course work, field trips, group research projects and internships with local organizations. Challenges facing host communities help shape the curriculum at each site, and the results of research by UNC-Chapel Hill faculty and students are shared with community partners.

### Sustainable Triangle Field Site

The most recent cohort of Sustainable Triangle Field Site students worked with the Town of Chapel Hill to identify contributors to frequent flooding in various parts of town. The group deployed flood sensors in streams both on and off-campus to model how a comprehensive sensory network can help predict major flooding.



[Highlands Field Site](#) - ecology and environmental infrastructure (Highlands, NC)



[Morehead City Field Site](#) - ecology, earth system science, and environmental health (Morehead City, NC)



[Outer Banks Field Site](#) - decision making and environmental infrastructure (Manteo, NC)



[Sustainable Triangle Field Site](#) - sustainability and environmental infrastructure (Triangle, NC)



[Thailand Field Site](#) - energy, environmental infrastructure, and sustainability (Bangkok, Thailand)

## Sustainability-Related Study Abroad Programs

- [Arava Institute for Environmental Studies](#) (Kibbutz Ketura, Israel)
- [School for Field Studies](#) (Multiple Locations)
- [School for International Training](#) (Multiple Locations)
- [Summer School for Sustainability](#) (Gothenburg, Sweden)
- [UNC Environmental Studies in the Galapagos](#) (San Cristóbal, Galápagos Islands, Ecuador)
- UNC Environmental Sustainability in Australia (Brisbane, Australia; Townsville, Australia)



# Community Engagement

As part of the Town of Chapel Hill, the University strives to create a positive impact outside campus boundaries. We engage with Chapel Hill, Carrboro, and Orange County around sustainability issues to create a better society and a stronger future.

## Center for Public Engagement with Science

A new 5-year program led by the UNC Institute for the Environment’s [Center for Public Engagement with Science](#) (CPES), will use PFAS research as the basis for STEM curricula designed to engage diverse learners and highlight biomedical careers. Teachers from communities where PFAS contamination is high will codevelop the curricula alongside the CPES team and researchers from UNC System schools. Funded by the [National Institute of General Medical Sciences](#), this \$1.25 million program will support 96 teachers in integrating PFAS research into instruction and inspiring the next generation of biomedical researchers. The Center is partnering with science education researchers from the UNC School of Education and the NC State University College of Education, as well as environmental health scientists from the UNC Gillings School of Global Public Health and East Carolina University.

## Orange County

Sustainable Carolina helped plan [Orange County’s first-ever Creek Week](#). Orange County, its Department of Environment, Agriculture, Parks and Recreation; Orange Water and Sewer Authority (OWASA); Hillsborough Stormwater and Environmental Services; the Town of Carrboro; the Town of Chapel Hill; and UNC Environment, Health and Safety spent the months leading up to the March event collaborating and planning. The event celebrated the streams, lakes, and rivers that connect our communities and surrounding ecosystems. Events across the county included a cleanup challenge, DIY Stormwater Runoff 5K, community science BioThon, invasive plant removal, and green infrastructure tours. Sustainable Carolina organized a cleanup at the Dean Smith Outfall on South Campus with UNC EHS.



## Town of Chapel Hill

The University and the Town of Chapel Hill have a history of working together and drawing on each other’s strengths to build a stronger community. In spring 2021, the University and town demonstrated their joint commitment to climate action through release of complementary [climate action plans](#). In 2022, Chapel Hill Transit hosted an unveiling of three new electric buses, which included the electric bus partially funded by RESPC. The Federal Transit Administration, Town of Chapel Hill, Town of Carrboro, and UNC-Chapel Hill also provided funds for the \$3 million electric bus project.



The electric bus RESPC helped fund on display at a Town of Chapel Hill event.

## Bikeshare Program

The first contract for [Carolina’s Tar Heel Bikes program](#) came to an end in May 2022; UNC Transportation and Parking plans to announce a new service in fall 2022. A new bikeshare provider will be selected for the program, which will [include an electric-assist bike \(e-bike\) fleet](#). An e-bike fleet makes the program more accessible and strengthens the link between the surrounding Chapel Hill and Carrboro communities.

Over its 5-year run, Tar Heel Bikes had:



13,000 members

&



140,000 trips



## Outdoor Education Center

The 67-acre Outdoor Education Center is a 10-minute walk from Frank Porter Graham Student Union. In 2019, UNC Environment, Health and Safety [created the Chapel Creek wetland](#) on the property to improve water quality and enhance habitat. Amid the natural areas, students can also find a disc golf course, sand volleyball and tennis courts, multi-use trails, a high ropes course and more. OEC staff hosts the [Carolina Adventures program](#) and works with campus partners to host the [Outdoor Pursuits Learning Program](#) and the [Get Real & Heel Breast Cancer Recovery program](#).



## Morehead in Motion

[Morehead Planetarium's](#) mobile program, [Morehead in Motion: Earth & Beyond](#), allows K-12 students to explore earth science and astronomy concepts, with several sustainability-focused lessons. "Climate Trackers" helps students in grades 6-8 track Earth's vital signs. Through the "Ocean Acidification & Climate Change" program, high school students learn about ocean acidification and use NASA Earth Science data to track the potential path for rising sea levels.



The UNC Herbarium, part of NCBG, released the latest edition of [Flora of the Southeastern United States](#).



Venus flytraps, which are housed at the Garden are [only found naturally](#) in a 90-square-mile area in NC.



Native American experts held workshops at the Native Plant Symposium.

## Carolina Tree Heritage

The [Carolina Tree Heritage program](#) gives second life to downed campus trees by transforming trunks and branches into furniture, sculptures, and other creations. In 2021, the team installed a 5-foot wide, 400-pound table in the South Building's rotunda. The table is made from a 251-year-old post oak tree that stood behind Old West on the edge of McCorkle Place until 2018. Email [Susan Cohen](#) for commissions.



**Carolina  
Tree  
Heritage**

*Carolina Tree Heritage proceeds go toward student internships and scholarships.*

## North Carolina Botanical Garden

The North Carolina Botanical Garden manages 1,200 acres of gardens and natural areas around campus. In the Garden's nursery, staff has started piloting compostable plant containers. The NCBG team collaborated with a team from [NASA DEVELOP](#) to produce maps that predict current and future Venus flytrap habitats. The Garden also partnered with the [UNC American Indian Center](#) to host "[Green Roots, Red Resilience](#)," a symposium celebrating the cultural connections between Native people and plants.





# Communications

Advancing Carolina’s sustainability goals through collaborative partnerships requires deliberate communication of our own initiatives and those taking place within other departments and organizations across campus.

## Sustainable Carolina Podcast

[Sustainable Carolina’s monthly podcast](#) began airing new episodes in September. The podcast examines how innovation and discovery at Carolina can create a more sustainable campus community. Podcast guests include researchers in professional schools, campus staff across various departments, and students making an impact. Episodes are available on Google, Spotify, and Apple Podcasts.



## NC Collaboratory Podcast

[Collaboratory Conversations](#) kicked off in spring 2022 and explores health and environmental research in North Carolina. Chief Sustainability Officer [Mike Piehler is featured](#) in a discussion about the Collaboratory’s Jordan and Falls Lake Nutrient Management Study. Namely, Piehler discusses the importance of water quality in these two lakes in Durham, Chatham, Wake, and Granville counties.



## Innovating to a Clean Economy Podcast

UNC Institute for the Environment’s “[Innovating to a Clean Economy](#)” podcast discusses the people driving cleantech innovations and their contributions to the cleantech economy. Episodes explore sustainable agriculture, building practices, textile manufacturing, and battery storage.



## Sustainable Carolina in the News

- [Digging into Nutrient Cycling in Carolina’s Streams](#), Sustainable Carolina Blog (June 2022)
- [What is Sustainable Carolina](#), The Well (April 2022)
- [A Sustainable Carolina](#), UNC (April 2022)
- [Climate Action Plan | One Year Later](#), Sustainable Carolina (April 2022)
- [Water Plan | 2022](#), Sustainable Carolina (April 2022)
- [Limited-time mask recycling boxes available on UNC’s campus to reduce waste](#), The Daily Tar Heel (February 2022)
- [Electric School Bus Charging | Fleets of the Future](#), Sustainable Carolina Blog (February 2022)

## Sustainability-Related E-News

- [Environment, Ecology and Energy Program Newsletter](#) (E3P)
- [NC Water News Newsletter](#) (UNC Water Institute)
- [Office of Sponsored Programs Newsletter](#) (UNC Research)
- [Sustainability Newsletter](#) (Sustainable Carolina)
- [UNC Environment Newsletter](#) (UNC Institute for the Environment)

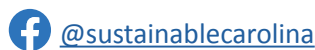
## Recognition

For the third consecutive time, Carolina received an AASHE gold rating in 2020. In 2021, the Princeton Review recognized Carolina as a Green College.



## Contact Us

Questions or comments? Send Sustainable Carolina an email at [sustainable@unc.edu](mailto:sustainable@unc.edu).





# Photography

Scenes from the Old Well. November 16, 2021. (Johnny Andrews/UNC Chapel Hill). <https://unc.photoshelter.com/search/result/I0000uluK.6ndgbs?terms=old%20well&>

Dedication of UNC Hussman School of Journalism and Media's Curtis Media Center. April 7, 2022. (Jon Gardiner/UNC-Chapel Hill). <https://unc.photoshelter.com/search/result/I0000tUrdRboMNk?terms=curtis%20media%20center&>

Research specialist Sonia Deochand opens a refrigeration unit housing biological samples in the Michael Hooker Research Center. (Jon Gardiner/UNC-Chapel Hill). <https://unc.photoshelter.com/search/result/I0000HgKiX5VgnVc?terms=basta&>

Michael Piehler and Martina Bertello collect water from a campus stream. Sustainable Carolina. June 7, 2022. (Melanie Elliott/Sustainable Carolina).

UNC students, under the direction of Mike Piehler, gather data from a creek next to Eastgate Shopping Center. April 14, 2022. (Johnny Andrews/UNC-Chapel Hill).

National Compost Day. May 27, 2020. (Carolina Dining Services). <https://www.facebook.com/photo.php?fbid=420450903422323&set=pb.100063722492709.-2207520000.&type=3>

Breakfast Delivery Trial. April 8, 2021. (Carolina Dining Services). <https://www.facebook.com/CDSatUNC/photos/pb.100063722492709.-2207520000../4023535461040195/?type=3>

Solar Panels Install on Curtis Media Center. November 2, 2021. (Phil Nelson/szostakdesign).

Artist rendering of 136 Rosemary Street. April 10, 2022. (Innovate Carolina). <https://www.unc.edu/posts/2022/04/10/unc-chapel-hill-innovation-hub-gets-green-light-speeds-economic-development-downtown/>

2019 UNC Water and Health Conference. (The Water Institute). <https://waterinstitute.unc.edu/conferences/2019-unc-water-and-health-conference>

Rendering of Kenan-Flagler LEED Building. (UNC Kenan-Flagler Business School). <https://www.kenan-flagler.unc.edu/alumni/invest-in-the-future-today/>

World Summit on Island Sustainability Trips to Cerro Brujo and Loberia. July 20, 2022. (UNC Center for Galapagos Studies). [https://twitter.com/UNC\\_Galapagos/status/1549761265769201664?s=20&t=1QPcjsMWPQcwtSJbDtTtLQ](https://twitter.com/UNC_Galapagos/status/1549761265769201664?s=20&t=1QPcjsMWPQcwtSJbDtTtLQ)

Diamond Holloman. September 4, 2019 (UNC College of Arts and Sciences). <https://college.unc.edu/2019/09/diamond-holloman/>

UNC Institute of Marine Sciences Mural. July 18, 2022. (UNC IMS). <https://twitter.com/UNCims/status/1549011774493626368?s=20&t=aetVces6nSEgV2wd1fjUPO>

Carolina's applied sciences and engineering minor students. June 10, 2022 (UNC Applied Physical Sciences). <https://aps.unc.edu/home-page-news-item/new-minor-teaches-major-skills-in-engineering-entrepreneurship>

World Bee Day. May 20, 2022. (Carolina Dining Services). <https://www.facebook.com/CDSatUNC/posts/pfbid02PDURU6feffy5jP-ZLEkfnV5QZipeUVqncEZAcZvoV49EJNKL8qgtG5oCbEbbS5ds>

Campus-to-Garden Trail tour with LFIT classes. March 6, 2022 (Abigail Brewer/Sustainable Carolina).

Eastern Continental Divide. November 18, 2021. (UNC Highlands Field Site). <https://twitter.com/HighlandsIE21/status/1461558978882805761?s=20&t=CMz7O7CcqeByxgBcV6xQLg>

Lewis Naisbett-Jones uses a portable acoustic tagging receiver as Shayla Birath takes notes. August 25, 2021. (Megan May/UNC Research). <https://unc.photoshelter.com/search/result/I00005XdRRBQHGLc?terms=morehead%20city&>

Postcard from the Field: Thailand Field Site. May 31, 2020. (UNC Institute for the Environment). <https://ie.unc.edu/2020/05/31/22467/>

UNC students, under the direction of Mike Piehler, gather data from a creek next to Eastgate Shopping Center. April 14, 2020. (Johnny Andrews/UNC-Chapel Hill). <https://unc.photoshelter.com/search/result/I0000PISRzL0nY8Y?terms=sustainable%20triangle%20field%20site&>

Postcard from the Field: Claire Bradley '22 – OBX Field Site. February 28, 2020. (UNC Institute for the Environment). <https://ie.unc.edu/2020/02/28/postcard-from-the-field-claire-bradley-22-obx-field-site/>

Chapel Hill Transit electric bus unveiling event. April 8, 2022. (Abigail Brewer/Sustainable Carolina).

Outdoor Education Center wetland. June 2, 2022. (Abigail Brewer/Sustainable Carolina).

Alan Weakley, curator for the UNC Herbarium, looks through samples from the collection in Coker Hall. May 16, 2022. (Johnny Andrews/UNC-Chapel Hill). <https://unc.photoshelter.com/search/result/I0000HE8Y3RoDPO0?terms=botanical%20garden&>

Venus Flytraps. September 13, 2019. (North Carolina Botanical Garden). <https://ncbg.unc.edu/2019/09/13/carnivorous-conservation/>

The Native Plant Symposium was held on November 12, 2021, at the North Botanical Garden in Chapel Hill. November 14, 2021. (Johnny Andrews/UNC-Chapel Hill). <https://unc.photoshelter.com/search/result/I00007yJD57s5ky4?terms=botanical%20garden&>