

2019-2020 Annual Report to the Chancellor

The College of Natural Resources continues to make progress toward achieving its strategic goals. Through academic instruction, research, and extension and engagement, we work at the forefront of solving critical challenges that advance economic, environmental, and social sustainability. The College continues to serve some of the most important industries in the state, including: forestry, wood products, and tourism. These industries support communities and livelihoods across North Carolina.

Strategic Plan

Goal 1: Enhance the success of our students through educational innovation.

- Investments in undergraduate recruiting continue to yield significant returns. Our incoming class represents 15 states and 45 counties in NC. The entering class of fall 2020 included 226 students with an average SAT of 1269 (1279 last year), ACT of 28 (27 last year), and a weighted GPA of 4.08.
- Using its endowment funds, the Department of Forest Biomaterials initiated the Student Enhancement Fellowship Program to strengthen student educational experiences. The program supports attending conferences, purchasing materials and supplies for research, and attending non-credit bearing training courses. Thirty-seven fellowships were awarded this year.
- With the loss of internships due to COVID-19, the Department of Forest Biomaterials developed alternative, stay-at-home summer projects supported by the engineering fee and departmental endowment funds. In total, 44 Paper Science and Engineering and 15 Sustainable Materials Technology students participated in undergraduate research internships.
- PRT 200, Health, Wellness, and the Pursuit of Happiness, taught by Dr. Michael Kanters, was the first course from the College of Natural Resources to be officially certified by Quality Matters. Quality Matters, a nationally recognized, faculty-centered, peer-review process that certifies the quality of online courses, has recognized this course for its commitment to quality assurance by designing courses that meet Quality Matters standards.

Goal 2: Enhance scholarship and research by investing in faculty and infrastructure.

- With assistance from the Provost, the College invested approximately \$400,000 for faculty startup, laboratory renovations on Centennial Campus, and classroom updates in Jordan Hall.
- We partnered with Energy Management to complete a \$350,000 project to install LED lighting throughout Biltmore Hall, Robertson Hall, and Pulp and Paper Labs.

- We completed fiber optic installation at Camp Slocum at Hill Forest for Wi-Fi that will support classroom instruction during summer camp for Forest Management and Fisheries, Wildlife and Conservation Biology students.
- With the support of the Natural Resources Foundation Board, the College initiated a program to award each department a \$20,000 research assistantship to recruit or retain top PhD students. Departments have the discretion to supplement the \$20,000 stipend.
- As part of the ongoing revitalization of Wood Products Extension, the Department of Forest Biomaterials purchased and installed a batch manufacturing scale Cross Laminated Timber cold press. This gives NC State a unique capability unavailable at other universities in the US.

Goal 3: Enhance interdisciplinary scholarship to address the grand challenges of society.

- Led by Dr. Kathryn Stevenson, the Department of Parks, Recreation and Tourism Management partnered with the Department of STEM Education in the College of Education to create an interdisciplinary undergraduate minor in Environmental Education.
- Two new graduate courses were developed in the Center for Geospatial Analytics, GIS/LAR 517 GIS Applications in Landscape Architecture and Environmental Planning, led by the College of Design, and GIS/MEA 584 Mapping and Analysis Using UAS.
- The Department of Forest Biomaterials became part of the CESMII (Smart Manufacturing Institute) Smart Manufacturing Innovation Center (SMIC) at North Carolina State University. NCSU-SMIC comprises pilot facilities for biomanufacturing, papermaking, nonwoven textiles, and advanced manufacturing.
- The Coastal Resilience and Sustainability Task Force was launched and is coordinated by Dr. Mary Watzin.

Goal 4: Enhance organizational excellence by creating a culture of constant improvement.

- Initiated strategic planning with Tidal Equality, a strategic consulting firm, to begin August 2020 and be completed June 2021.

Goal 5: Enhance local and global engagement through focused strategic partnerships.

- Dr. Jason Bocarro (PRTM) participated in NC State's Global Leadership minor. Dr. Bocarro taught one of the four courses (PRT 359-Leadership and Supervision in Sport, Tourism and Recreation) in London, England.
- Tourism Extension expanded educational outreach in Spain and Italy, reaching 115 professionals, students, farmers, and entrepreneurs by delivering programs on best practices and building entrepreneurial skills in marketing and promotion of agritourism and culinary tourism.

- Dr. Yu-Fai Leung (PRTM) received an AC21 Special Project as the PI to travel to Antarctica to advance his research on sustainable recreation and tourism, bringing together collaborators from New Zealand, China, Ecuador, and Spain.
- Dr. Louie Rivers (FER) partnered with the Parks with Purpose program sponsored by The Conservation Fund to install new green spaces in socially vulnerable urban communities (<https://www.conservationfund.org/projects/parks-with-purpose-in-raleigh>), to address environmental justice issues in southeast Raleigh.

Changes in the Service Environment

- Economic conditions resulting from the COVID-19 pandemic are certain to impact all programs within the College. The College had \$75,000 in COVID-19 related expenses through 06/30/2020.

Diversity

- In summer 2019, the College hosted the inaugural Women in the Environment Conference, an innovative educational event designed to introduce young women and non-binary identifying individuals to careers in natural resources and environmental fields. We had 187 attendees and 67 faculty, staff and alumni volunteers with 23% of attendees identifying as non-white.
- In January 2020, Dr. Stacy Nelson was appointed interim Associate Dean for Diversity and Inclusion. In response to COVID-19, Dr. Nelson initiated a survey of faculty, staff and graduate students to assess adequacy of resources to support remote working, teaching and learning, and work-life balance.
- The College leadership team and communications staff members throughout the College participated in a training workshop focused on diversity, equity and inclusion.
- Recent MS graduate Deja Perkins (Fisheries, Wildlife and Conservation Biology) was a primary organizer of Black Birders Week (May 31 - June 5, 2020) in response to the well publicized incident of racism directed at a Black bird watcher in New York's Central Park. The event generated national interest and participation among birders from across the country.
- The College received \$15,000 from the Duke Energy Foundation (\$5,000 per year for three years) to support retention of underrepresented students.
- The Forester of the Future Fund was established by a gift from Resource Management Service, LLC (RMS), global leader in timberland management and holder of the Hofmann Forest timber deed. The Fund will support recruitment and retention of students from historically underrepresented populations in the Department of Forestry and Environmental Resources.

Research

- The College submitted over 269 proposals for the year, for a total of \$55.3 million in grants, and has received 250 awards for \$11.3 million in support. Proposals and awards continue to include interdisciplinary collaborations across departments and colleges. In fact, 23 grants involved collaborators with other colleges, totaling \$6.1 million. Research expenditures were \$9.6 million.
- Sixty-three percent of active grants were from national funding agencies: the top five were National Science Foundation (\$19.3 MM), USDA-NIFA (\$16.9 MM), USDA-Forest Service (\$11.4 MM), US Geological Survey (\$10.8 MM), and Department of Energy (\$9.2 MM).
- Start-ups and spin-offs involving College faculty include Tethis, TreeCo, and Tissue Analytica companies. Tethis produces renewable biopolymer products and garnered \$17.6 million in 2018 in Series C investments. TreeCo uses genome editing to improve forestry productivity by addressing pests, storms, and changing weather patterns. Tissue Analytica was created to provide business analytics support to the hygiene tissue industry.
- The 3rd Annual College of Natural Resources Graduate Research Symposium co-sponsored by Eastman Chemical was held on February 26, 2020, with 50 student presenters, 30 judges, 20+ visitors, and 30 faculty registered. External judges included representatives from Enviva, Eastman Chemical, NC Forestry Association, Moffatt & Nichol, Strata Solar, GEOI Solutions LLC, Tethis, NC Wildlife Resources Commission, and the U.S. Fish and Wildlife Service.
- Several College faculty members have submitted proposals in COVID-19 research. These include use of nano-graphitic adsorbents with natural antipathogenic compounds, containerboard with anti-pathogenic coatings from tree derived polymers, family farms resilience and challenges under COVID-19 containment measures, and the use of hemp as an anti-pathogenic.
- The Center for Geospatial Analytics (CGA) new federal cooperator partnership with USDA Animal and Plant Health Inspection Service (APHIS) is generating \$1M+ per year in perpetuity to forecast and control the spread of invasive pests and pathogens in the United States.
- Dr. Zakiya Leggett (FER) received a USDA National Needs Fellowship grant to support six MS students. The grant builds upon an existing 3+2 collaboration with Tuskegee University.
- Dr. Jennifer Richmond-Bryant (FER) received a \$10.8 million, 5-year National Institute of Environmental Health Sciences Superfund Research Center grant. This high-profile project characterizes toxicology, cardiovascular effects, and human exposure to environmentally persistent free radicals (EPFRs) emitted by a hazardous waste treatment facility in LA.
- Dr. Jack Wang (FER) received awards from the NC Department of Agriculture and NC State Chancellor's Innovation Fund to develop advanced CRISPR genome editing technologies in diverse forest tree species including poplar, hemlocks, and Fraser fir Christmas trees.

- Dr. Sunkyu Park (FB) was awarded a \$2.5 million US Department of Energy - Energy Efficiency and Renewable Energy grant to use industrial, municipal and agricultural wastes to produce chemicals that can be used to make sustainable plastics.
- Dr. Ronalds Gonzalez (FB) and co-researchers received funding from the Chancellor's Innovation Fund based on technology they have developed (patent pending), Tissue Paper with Reduced Fiber and Methods of Manufacture. This technology could lower production costs by up to 14% — potentially saving manufacturers more than \$1 billion a year.
- Drs. Richard Venditti and Joel Pawlak (FB) are leading research on the generation and fate in the environment of microfibers from clothes laundering. They estimate that 700,000 particles are released in one washing load.
- The National Science Foundation awarded a grant to Drs. Whitney Knollenberg, Erin Seekamp, and Bethany Cutts (all PRTM) to study disaster recovery decision making in remote tourism-dependent coastal communities.
- Dr. Lincoln Larson and PRTM colleagues conducted a survey on the impact of the COVID-19 pandemic on college students' health and well-being. The study involved 1,500 students, 70% undergraduates and 30% graduate students.

Extension

- Forestry Extension delivered a webinar series that led 90 landowners and land managers to increase profitability by over \$300,000 and impact over 85,900 acres of forest land through the implementation of one or more land management practices learned through the webinars.
- Forestry Extension assisted Christmas tree growers in implementing Fraser Fir harvest date guidelines for improved needle retention and reduced incidence of problem trees. Major growers delayed harvest in 2019 a week to ten days based on the extension guidelines, leading to better quality trees in the \$50 million Christmas tree market.
- The Project Learning Tree (PLT) program trained 433 North Carolina pre-K-12 educators on how to integrate environmental education into their teaching. The value of these trainings was over \$37,000 and is supported by NC State Extension and 15 other organizations across the state.
- Wood Products Extension conducted six statewide workshops with industry and North Carolina citizens to promote effective utilization and smart processing of wood. We estimate this resulted in an economic impact of \$4.1 million in terms of upgraded product quality, improved understanding of markets and market opportunities, and better processing efficiency.
- Wood Products Extension received funding from the NC State Outreach and Engagement Incentive Grants Program to assess wood waste processing and disposal in Wake County. The project seeks to encourage more sustainable wood waste utilization practices. It addresses the

landfilling of 4,080 metric tons of wood waste per month in the second most populated county in the state.

- Wood Products Extension secured \$249,739 in funding from the USDA Forest Service to assess and review the current state of the North Carolina forest and wood products industry to identify marketing issues and needs, develop solutions and assist the industry to exploit opportunities.
- With funding from the NC State Office of Outreach and Engagement, the Agritourism and Societal Wellbeing program expanded outreach activities into the craft beverage industry. The project sought to increase awareness of community resources needed to support a sustainable craft beverage industry in North Carolina.
- People-First Tourism helped North Carolina farmers generate more than \$48,000 in farm revenue through the Vacationer Supported Agriculture Program (VSA). Offered in three coastal counties, the VSA program (i.e., sale of produce bags to week-long vacation home renters) was supported by over 20 local farmers who supplied 1,047 tourists with one or more bags of produce.

Faculty and Staff Honors, Awards and Recognition

Forest Biomaterials (FB)

- Dr. Nathalie Lavoine, NC State Global Engagement Institute
- Dr. Lucian Lucia, Fellow, Royal Society of Chemistry
- Barbara White, Eastman Chemical Leadership in Safety Award

Forestry and Environmental Resources (FER)

- Dr. Marcelo Ardon, Outstanding Graduate Faculty Mentoring Award
- Dr. Robert Bardon, Association of Natural Resources Extension Professionals Distinguished Career Leadership Award
- Dr. Ryan Emanuel, NC State Alumni Distinguished Graduate Professorship and the Steve Wing International Environmental Justice Award from the NC Environmental Justice Network; and Donnelley Family Fellowship at the National Humanities Center
- Jennifer Fawcett, NC State University Outstanding Extension Service Award, NC State Academy of Outstanding Faculty Engaged in Extension, Association of Natural Resources Extension Professionals Outstanding Education Material Gold Award for Newsletters
- Laurel Kays, Association of Natural Resource Extension Professionals Outstanding Education Material Gold Award for Newsletters and Outstanding Education Material Gold Award for Websites-Apps-Educational Technology
- Dr. Zakiya Leggett, NC State Black Alumni Society and Alumni Association 2019 40-for-40 Award
- Kimber Lunsford, 2020 CNR EHRA Award for Excellence
- Dr. Megan Lupek, NC State RED Core Learning Teaching Certificate

- Dr. Katie Martin, Water Resources Research Editor's Choice Award
- Jeff Owen, NC Christmas Tree Association 2020 Outstanding Educator Award
- Dr. Robert Scheller, 2019-2020 University Faculty Scholar
- Sydna Willis, NC State Energy Management Energy Champion Award

Parks, Recreation and Tourism Management (PRTM)

- The Department of Parks, Recreation and Tourism Management, 2020 National Leadership Award from the Society of Outdoor Recreation Professionals
- Dr. Carla Barbieri, US Department of State Fulbright Scholar 2019-2020
- Dr. Kimberly Bush, NC State DASA GPS Analytics Award
- Dr. Jonathan Casper, Outstanding Teacher Award
- Dr. Myron Floyd, Fellow, American Academy for Park and Recreation Administration
- Dr. Aaron Hipp, Interdisciplinary Research Leaders 2019 Cohort, a program of the Robert Wood Johnson Foundation
- Dr. Yu-Fai Leung, Society of Outdoor Recreation Professionals 2020 Individual Service Award
- Dr. Annette Moore, DELTA Faculty Fellow
- Dr. Erin Seekamp, 2019-2020 University Faculty Scholar
- Dr. Candace Goode Vick, 2020 LEGEND Award, Indiana University Department of Recreation, Park, and Tourism Studies
- Dr. Jelena Vukomanovic, University Consortium for Geographic Information Science (UCGIS) 2020 TRELIS Fellow

Center for Geospatial Analytics (CGA)

- Dr. Perver Baran, Accepted to fall 2019 NC State I-Corps
- Rachel Kasten, 2020 CNR SHRA Award for Excellence
- Dr. Ross Meentemeyer, Goodnight Distinguished Professor of Geospatial Analytics
- Dr. Helena Mitasova, University Consortium for Geographic Information Science (UCGIS) 2020 Research Award
- Dr. Megan Skrip, Membership in the National Association of Science Writers

Student Honors, Awards and Recognition

Forest Biomaterials (FB)

- Leah Flanders, Social Innovation Fellow
- Jaylan Paige, Phillips Family Leadership Incentive Award
- Hyeonji Park, 2020 CNR Graduate Symposium Award for Sustainable Materials Innovation
- Joe Sagues (PhD Student), US Department of Energy Office of Science Graduate Student (SCGSR) Fellowship

- Marielis Zambrano (PhD Student), Molecular Biotechnology Symposium Poster Competition (3rd Place) and Wilkinson Graduate Fellowship
- Franklin Zambrano (PhD Student), Eastman Chemical Fellowship
- Sarah Coull, Benjamin Helms, Daniel Richardson and Madelie Samet, Sustainability Stewards

Forestry and Environmental Resources (FER)

- Erica Rieder (PhD Student), University Graduate Fellowship
- David Moscicki (PhD Student), University Graduate Fellowship
- Piyush Pandey (PhD Student), University Graduate Fellowship
- Kirsten Keleher and Anna Poston, Hollings Scholarships
- Sriya Gottumukkula, 2020 NC State Sustainability Award Winner
- Joshua Pil, 2020 City of Raleigh Community Action Volunteer Award
- Cheyana Bassham, Benjamin A. Gilman International Scholarship
- Martina Gonzalez Bertelli, Sriya Gottumukkula, Haley Hall, Kenan Hill, Maya Hoon and Princess Mutasa, Sustainability Stewards
- Haley Hall and Olivia Merritt, Social Innovation Fellows
- LP Mancini, Caldwell Fellow
- Princess Mutasa, NC Association of Flood Plain Managers Scholarship

Parks, Recreation and Tourism Management (PRTM)

- Claudia Gil Arroyo (PhD Student), Wilkinson Graduate Fellowship
- Margaret van Bakergem (PhD Student), Graduate School Doctoral Dissertation Completion Grant
- Nicole Benbow (MR Student), Suzie D. Walston and Mac Walston Fellowship
- Victoria Fuda, Social Innovation Fellow
- Lauren Gibson (PhD Student) and Jae In Oh (PhD Student), University Graduate Fellowships
- Jenna Hartley (PhD Student), National Oceanic and Atmospheric Administration Scholarship
- Zeynab Jouzi (PhD Student), Beth Wilson Doctoral Fellowship
- Hailey Post (MS Student), Marketing Outlook Forum, John and Joan Markham Marketing Award
- Caitlin Reilly (MS Student), Warren-Wolfpack Graduate Fellowship

Center for Geospatial Analytics (CGA)

- Megan Coffey (PhD Student), EPA Mason Hewitt Award for GIS Technical Excellence
- Umesh Gupta (PhD Student), Advanced Short-Term Research Opportunity (ASTRO) Fellowship through Oak Ridge National Laboratory; student runner up in NC State's Envisioning Research contest in the Graphics and Data Visualization category
- Nikki Inglis (PhD Student), NC State 2020 Esri Development Center Student of the Year

- Kate Jones (PhD Student) and Katie McQuillan (PhD Student), Global Change Graduate Fellowships from Southeast Climate Adaptation Science Center
- Nick Kruskamp (PhD Student), 1st place in the College of Natural Resource Three Minute Thesis competition; Outstanding Student Presentation Award at the (American Geophysical Union) AGU 2019 Fall Meeting
- Rohith Matli (PhD Student), 1st place in Land, Wildlife and Forest System Management category at College of Natural Resources Graduate Research Symposium
- Vini Perin (PhD Student), 1st place in Human Dimensions and Community Health category at the College of Natural Resource Graduate Research Symposium

Fundraising

- As of June 30, 2020, the College is at 93% of its \$35M goal (\$32,546,725) with 84% of time elapsed. FY2020 year-to-date, we have raised \$3,880,337 (13% higher than our three-year-to-date average).
- The Karla A. Henderson Distinguished Professorship was established by a \$1 million gift to support the activities of a professor of any rank in the Department of Parks, Recreation and Tourism Management with an active research program in areas that contribute to social justice related to parks, recreation and leisure in communities and/or in the outdoors.
- The Dr. Richard J. and Margaret M. Thomas Endowed Lecture in Natural Resources was created to support an annual lecture in the Department of Forest Biomaterials.
- In response to COVID-19, the College encouraged donors to support the Student Emergency Fund/Feed the Pack Pantry to financially assist our students during the period immediately following the move to online education and the unexpected need for emergency funding to support their continued education. As of May 26, 147 College of Natural Resource donors have raised \$20,100 for these funds.
- In response to COVID-19, the Forest Biomaterials faculty, by private donations, contributed 10,000 surgical and general masks (total value of more than \$20,000) to long-term care facilities and healthcare organizations serving rural and underrepresented populations in North Carolina in more than 15 locations.

Administration Achievements and Staff Changes

New Administrators

- Dr. Myron Floyd, Dean, College of Natural Resources
- Dr. Michael Kanters, Interim Department Head, PRTM
- Dr. Christopher Moorman, Interim Associate Department Head, FER
- Dr. Stacy Nelson, Interim Associate Dean for Diversity and Inclusion, Dean's Office

- Dr. Erin Sills, Interim Department Head, FER
- Dr. Richard Venditti, Interim Associate Dean for Research, Dean's Office

New EHRA Non-Faculty Hires 2019-2020

- Christopher Jones, Research Scholar, CGA
- Rashawn King, Recreation Consultant, PRTM
- Vaclav Petras, Geospatial Research Software Engineer, CGA
- Anna Petrasova, Geospatial Research Software Engineer, CGA
- Georgina Sanchez, Research Associate, CGA
- Lindsey Smart, Research Associate, CGA
- Chelsey Walden-Schriner, Research Scholar, CGA
- Kalysha Wall, Academic Advisor, FER

New Non-Tenure Track Faculty Hires 2019-2020

- Dr. Dennis Hallema, Assistant Research Professor, FER
- Dr. Keith Howard, Assistant Teaching Professor, PRTM
- Dr. Jennifer Richmond-Bryant, Associate Professor of the Practice, FER
- Dr. Vashnavi Thakar, Assistant Teaching Professor, CGA

New Tenured/Tenure Track Faculty Hires 2019-2020

- Dr. Leah Rathbun, Assistant Professor of Forest Biometry, FER
- Dr. Mirela Tulbure, Associate Professor in CFEP Geospatial Analytics Cluster, FER

Recommendations and Concerns for the Future

Despite disruptions created by the COVID-19 global pandemic, the College enjoyed another strong year. Our College demonstrated remarkable resilience and adaptability to serve our students and stakeholders during this time. While uncertainty surrounds the near future, the College continues to be ideally positioned to address some of the most critical economic, environmental, and social challenges in North Carolina, the US and world. We are particularly positioned to address the challenge of environmental justice. College of Natural Resources faculty include some of the leading scholars on this topic, and we are thus well poised to take a national leadership role on education, research, and outreach in this domain. Heightened awareness of racial equity issues also created an opportunity to refocus and work on intentional responses to address diversity, equity, inclusion and anti-racism in the College.

A significant challenge in the coming year will be the transition to new leadership. Two departments currently have interim department heads. The associate dean for research and associate dean for diversity and inclusion are also held by interim appointments. As recommended in previous reports, labs and facilities upgrades are needed to maintain high quality teaching, research, and technical services.