

## 2018-2019 Annual Report to the Chancellor

The College of Natural Resources continues to make excellent progress towards achieving our strategic goals. Increasingly, we are the go-to place for solutions to grand challenges that advance economic, environmental, and social sustainability. The College continues to serve two of the most important industries in the state, forestry and the products that come from the forest, and tourism. Our graduates are serving with distinction and impact across the state, and around the world.

### Strategic Initiatives

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

The College's academic programs continue to attract highly qualified applicants, and our enrichment programs are providing new opportunities for experiential learning. A hallmark of the College is hands-on learning and all of our students are engaged in one or more significant experiences in this area.

- Our investment in undergraduate recruiting and diversity initiatives continues to return dividends, with another highly qualified incoming class of first time first-year students. The Fall 2019 class includes 213 students with an average SAT of 1279 (1250 last year), ACT of 27 (26 last year), and a weighted GPA of 4.135.
- The Center for Geospatial Analytics has successfully launched its interdisciplinary PhD in Geospatial Analytics. After recruiting a diverse and highly qualified second cohort, the program will grow to 25 students in the Fall of 2019, half of whom are women.
- Using our Terry Enrichment Fund and additional College resources, we supported more than 100 students in high-impact experiences including study abroad, internships, professional meetings, research conferences, and community outreach activities.
- Supported by the Engineering Fee, 25 Paper Science and Engineering students are participating in undergraduate research in the Department of Forest Biomaterials (FB) this summer.
- A second year of the Environmental First Year program (ENVFY) was successfully delivered in the Department of Forestry and Environmental Resources (FER). Total enrollment almost doubled from about 80 in Year 1 to 150 in Year 2.
- Four FB faculty members received USDA training grants that will help grow our graduate programs and improve diversity. Dr. Sunkyu Park and Dr. Ronalds Gonzalez both received National Needs Fellowship grants that will support a total of six PhD students for three years. Dr. Park's students will work on a multidisciplinary approach to developing and testing sustainable biomass-derived animal feed, while Dr. Gonzalez's team will focus on risk analysis and risk

management strategies for biomass supply, biobased materials and biofuels manufacturing. Dr. Perry Peralta and Dr. Ilona Peszlen are partnering with NC community colleges to encourage minority female students to pursue careers in STEM through a program that pairs NC State students with community college students in a peer-mentoring program that also includes student-led projects and scholarships and support services for community college students that transfer to the Sustainable Materials and Technology BS degree program.

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

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

- As a College, we continue to invest in early-career mentoring opportunities for new faculty in all three of our departments, including teaching, research and engagement support both within the College and across the campus.
- Dr. Caren Cooper has led the university effort to brand NC State as the nation's first Citizen Science Campus. NC State co-hosted the March 2019 Citizen Science Association Conference in Raleigh, which was attended by over 800 delegates from 28 countries. The College invested in the first institutional (covering all of NC State) membership in the association to facilitate university-wide participation. Using the unique internet tool, SciStarter, to find, market and manage projects, students and faculty are increasingly engaged in citizen science projects, on campus and beyond. Discussions are ongoing about an institutional partnership with SciStarter.

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

- The College's leadership team held an all-day retreat with the goal of establishing budget principles and financial allocation guidelines, and developing an account management strategy for the College, a key part of transparency, accountability, and ensuring that resources are invested in strategic priorities. This work is ongoing.
- The College also invested about \$120,000 in infrastructure improvements, including a makeover of our central Biltmore lobby and student lounge, and other renovations.

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

- Dr. Ross Meentemeyer, CGA and FER, is the lead PI on an NSF Smart and Connected Cities Research Coordination Network project that is bringing together researchers and stakeholders to design a futuristic game called TomorrowNow, which enables people to interact with models of urbanization and associated changes in stormwater runoff.

- Forestry Extension is coordinating the Southeast Regional Partnership for Planning and Sustainability Prescribed Fire Working Group, which includes members from over 40 organizations and is in its sixth year of success with multiagency funding. Activities included prescribed fire workshops reaching more than 200 landowners, contractors and practitioners, and a regional webinar in partnership with the Southern Fire Exchange that attracted 157 registrations. An archived recording has had an additional 146 views thus far.
- Dr. Yu-Fai Leung, in the Department of Parks, Recreation and Tourism Management (PRTM), served as the Editor-in-Chief of the IUCN’s “Tourism and Visitor Management in Protected Areas: Best Practices Manual,” which was released in November 2018. Dr. Erin Seekamp, Dr. Lincoln Larson and graduate students in PRTM are among the 58 contributing authors of this publication. The publication is aimed at developing capacity for protected area management and has been published in English, Spanish, French and German.

## **Diversity**

The College sought, but was not successful in hiring NC State’s first ever Associate Dean for Diversity and Inclusion. Nevertheless, we continued to implement new activities to recruit students of color and students from rural communities, and to build an inclusive and culturally sensitive community.

- To increase the diversity of our undergraduate applicant pool, we continued our outreach to high schools across North Carolina with both good preparation for college and higher than average enrollments in underrepresented groups. We grew our successful Environmental Career Day, which in our second offering this spring brought 127 students and 98 parents from 73 high schools from around the state to NC State’s campus. Our attendees included 32% who identified as nonwhite, with the largest group being Hispanic/LatinX.
  - As part of the event, we brought alumni currently working in industry to lead career panels and hands-on workshops.
  - In post event surveys of students, 92% in the Engineering and Innovation track, 81% in the Field and Outdoors track, and 91% in the Undecided track said the event increased their likelihood of exploring CNR majors.
- To continue to work towards a more inclusive and welcoming culture across the College, we delivered three new programs:
  - A College-based Green Zone Training was offered as a way to increase knowledge and awareness of military-affiliated students in the College. We also developed a consistent communication process for prospective military-affiliated students that improves coordination across our Academic Affairs Office and NC State Military and Veterans Services and assists students during the recruitment process.

- A student-led initiative – Inclusion in the Classroom – offered in partnership with the GLBT Center, presented a workshop for faculty and staff to increase awareness of how to support students in the GLBT community and be more inclusive in the classroom.
- Another student-originated offering was our first-ever Multi-lingual Research Symposium. This symposium, presented in collaboration with the College of Sciences, offered graduate students in both colleges the opportunity to present their research in their native tongue (or another language). The goals of this event were to showcase different cultures and recognize the importance of inclusion when communicating research.
- Finally, we completed the development of a new accelerated Master of Forestry program with Tuskegee University and have circulated it for campus approval. Tuskegee students with an interest in a Master of Forestry degree can complete their undergraduate degree from Tuskegee in a fourth year at NC State. Then after graduation, if qualified, they can move directly into the Master of Forestry degree at NC State and complete their Masters program in just one additional year. We anticipate welcoming 2-3 highly qualified students into the program each year, with the College committed to co-funding students as needed beyond their Tuskegee financial support.

## **Instructional Program Advances**

The College continues to improve undergraduate and graduate programs in all three departments.

- The Department of Forest Biomaterials is offering a new Process Control Certificate in Paper Science and Engineering that emphasizes industrial automation, logic and PLC programming using coursework in PSE, ECE, CSC and ISE. The certificate will give students a competitive advantage when seeking jobs in process control and automation and with technology suppliers.
- A new Wood Products concentration was created in FB's Sustainable Materials and Technology curriculum, with several new or newly revised courses including Sustainable Business and Innovation, Wood Manufacturing Site Visits, Introduction to the Wood Products Industry, and Wood Processing.
- The 5-year university review of the online Master of Environmental Assessment in the Department of Forestry and Environmental Resources was successfully concluded, and enrollments in this program are growing.
- A Renewable Energy Assessment and Development Certificate in FER was approved by the Graduate Administrative Board following the successful creation of the required courses.
- In the Department of Parks, Recreation and Tourism Management, a graduate minor in Human Dimensions was approved by the Graduate Administrative Board. The minor will be available to students in PRTM, the Fisheries, Wildlife, and Conservation Biology Program, and other graduate programs seeking interdisciplinary perspectives.

## Research

The College submitted 224 proposals this year, with a total of \$48 million, and received 205 awards for a total of \$9.8 million in sponsored projects. Both proposals and awards continue to emphasize interdisciplinary collaborations across departments and colleges. CNR faculty also filed 24 invention disclosures, and based on those, the university has filed 17 patent applications. Several license deals are in discussion. Some highlights follow.

- Dr. Yuan Yao (FB) received a NSF CAREER Award, the agency's most competitive award for early career faculty, to study sustainable applications of biochar, a carbon-rich byproduct of many forest products processes, within the Food-Energy-Water (FEW) nexus.
- Several college faculty members are engaged in research focused on hurricane damage assessment and coastal resiliency following Hurricane Florence. Dr. Bethany Cutts (PRTM) will investigate soil contamination in rural residential soils and how this information changes resident's behavior. Dr. Madhu Katti (FER) is engaging NC State students in collecting and analyzing data from hurricane-impacted urban forests close to their homes; at the conclusion of the project, the students will report results to their home communities. Dr. Ryan Emanuel (FER) and colleagues in COE and CALS are studying hurricane flood-related dispersal of contaminants associated with waste products of animal feeding operations, industrial facilities, wastewater treatment operations and heavy metals associated with coal ash. Dr. Elizabeth Nichols (FER) is working to establish organic chemical "fingerprints" of aquifers in flooded and non-flooded areas and to evaluate changes to organic chemical fingerprints in wells flooded by Florence.
- In our wildlife program, Dr. Chris DePerno (FER) received NCWRC funding to continue the BearWise program, which is designed to educate the public about bears and reduce human attractants in neighborhoods. Dr. Chris Moorman (FER) and Dr. Krishna Pacifici (FER) are teaming with LSU and the NCWRC to assess wild turkey demography in NC. Dr. Roland Kays (FER), a joint appointee with the NC Museum of Natural Sciences, has NSF funding to create biodiversity models of mammal and insect systems driven by variability in tree seed production.
- Several new grants in forest genetics and genomics will bolster FER's leadership in this area. Dr. Fikret Isik (FER) will use high-throughput genetic screening technologies to discover the genetic markers of fusiform rust disease resistance, which has huge implications for loblolly pine breeding and pine wood and fiber production in the southeast U.S. Dr. Robert Jetton (FER) and team are developing a plant volatile screening tool to counter infestation of Frasier Fir Christmas trees by the exotic-invasive Balsam Woolly Adelgid. Another team working on Frasier Fir, led by Dr. Jack Wang (FER), is developing novel genomic tools and genome editing technologies.
- Dr. Jodi Forrester (FER), is leading two new projects funded by USDA focused on forest management, one addressing longleaf pine communities and gopher tortoise habitat in

southeastern N.C., and one best approaches to hardwood forest management practices to increase oak and hickory regeneration in Southern Appalachian forests.

- Dr. Phil Mitchell (FB) and colleagues have been awarded a USDA Forest Service grant to evaluate technologies that can reduce the cost to produce cross-laminated timber (CLT) panels by using modified equipment once used by the furniture industry. The team will also evaluate suitable wood species for lumber and plywood CLT for use in residential homes.
- With a \$2.5 million grant from the Bill and Melinda Gates Foundation to a team from COE, CALS and CNR, Dr. Lokendra Pal (FB) and colleagues have developed a shelf-stable light-weight banana tissue paper for use by farmers in Africa in a 'wrap and plant' product that is pre-treated with ultra-low concentrations of active nematicide to protect the seed through germination.
- Declining hunting participation reduces the resources that state and federal agencies have to support wildlife management and conservation. Dr. Lincoln Larson (PRTM), along with Dr. Nils Peterson (FER) and Dr. Kangjae Lee (PRTM), are working with colleagues at universities across the country to identify opportunities for recruiting new hunters, and to reveal best practices for cultivating positive perceptions of hunting across diverse geographical and cultural contexts.
- With philanthropic funding, a one-day Planning Workshop on Sustainable Forest Systems is being planned to explore the College's strengths and opportunities related to the values that come from forested ecosystems, focusing especially on developing markets for ecosystem services (carbon, water, etc.), innovative strategies for land conservation and consideration of forests as a vital part of healthy communities.

## **Extension**

Forestry, wood products and tourism extension were active across North Carolina and beyond. Some highlights include:

- Forestry Extension promoted the use of technology in program delivery by working with the Southern Regional Extension Forestry Program to enhance its shared webinar portal and offerings. This year's webinars attracted over 55,300 views, with participants from all 50 states, earning over 23,637 continuing education credits for participants. By training online, participants saved more than \$11.8 million over the course of the year.
- The Project Learning Tree program trained 623 Pre-K-12 educators at 35 workshops across the state. The value of these trainings, including program materials and instructor time, was over \$32,000. The program is supported by 20 other organizations across the state.
- Forestry Extension helped to generate more than \$34 billion of deferred real property tax savings on active farm, forest and pasture lands enrolled in the Present Use Valuation Program through statewide education and technical support programs.

- In response to recent natural disasters and severe moisture damages in homes, Wood Products Extension evaluated the accuracy and precision of eight low-cost moisture meters. The recommended meter, along with instructional materials were distributed to over 40 county agents.
- This year, Tourism Extension focused on climate resiliency, coastal communities and cultural heritage. Three educational events that reached 31 federal managers were delivered, increasing awareness and knowledge about climate adaptation planning and threats to cultural resources in coastal National Parks. Five fact sheets and one technical report were also published.
- People-First Tourism (P1t) continues to recruit, mentor and coach micro-entrepreneurs, reaching 80 farmers, artists and nature guides across the state. Through its Fork to Farmer program, P1t is helping to promote the sale of hands-on experiences with small farmers and farm-to-table fine dining with celebrated chefs in 18 counties. With the new Vacationer Supported Agriculture program, P1t is partnering with 15 vacation realty companies in Brunswick, New Hanover and Pender counties to sell produce from farmers from those counties and neighboring rural tier 1 Columbus and Bladen counties.
- The NC Hospitality and Pride Program, designed to support a wide range of businesses working to improve customer service skills, continues to grow with 23 seniors from the Southern Lee High School Academy of Hospitality and Tourism program completing the certification program.

## **Faculty and Staff**

### **Forest Biomaterials (FB)**

- Dr. Yuan Yao, National Science Foundation CAREER Award
- Dr. Joel Pawlak, National Football Foundation Faculty Athletics Representative Award of Excellence
- Dr. Nathalie Lavoine, 2019 Polymer Science and Engineering Young Investigator Award, American Chemical Society
- Dr. Ronalds Gonzalez, 2018-2019 University Faculty Scholar
- Dr. Sunkyu Park, Alumni Association Outstanding Teacher Award
- Dr. Med Byrd, George Blessis Advising Award in the College of Engineering

### **Forestry and Environmental Resources (FER)**

- Dr. Louie River, NC State University Outstanding Engagement Award
- Dr. Gary Blank, NC State Outstanding Global Engagement Award
- Dr. Zakiya Leggett, Chancellor's Creating Community Award for Outstanding Faculty
- Dr. Jason Delborne, University Faculty Scholar
- Jennifer Fawcett, Assoc. of Natural Res. Extension Professionals Early Career Leadership Award
- Erin Champion, 2019 CNR EHRA Award for Excellence

## **Parks, Recreation and Tourism Management (PRTM)**

- Dr. Carla Barbieri (with colleagues in CALS), 2018 National Diversity Team Award from the National Association of Community Development Extension Professionals
- Dr. Jason Bocarro, Provost Faculty Fellow; and elected to the Academy of Leisure Sciences
- Dr. Kyle Bunds, awarded a Guest Professorship at Technical University of Munich for research and teaching on sport and environmental sustainability
- Dr. Whitney Knollenberg, Rising Star Award, Travel & Tourism Research Association
- Dr. Duarte Morais (with CALS colleagues), the NC Grange NCCE Foundation Search for Excellence Awards in Extension Search for Excellence Award
- Dr. Erin Seekamp, awarded a 2019 International Center for the Study of the Preservation and Restoration of Cultural Property Fellowship
- Gabriella Sinkovic, Student Services Coordinator for PGM, selected for the PGA of America Leadership Program (PGA LEAD) class of 2019-2020

## **Center for Geospatial Analytics**

- Dr. Anna Petrasova and Dr. Vaclav Petras (Postdoctoral Scholars) were winners in the 2018 NC State Envisioning Research contest
- Dr. Helena Mitasova (Associate Director of Geovisualization, MEAS Assoc. Prof) received a Lifetime Achievement Award from the Geomorphometry Society
- Rachel Kasten (University Program Associate) graduated from the 2018-2019 Equal Opportunity Institute with special recognition
- Mary Hicks (Business Services Coordinator), 2019 CNR SHRA Award for Excellence

## **Students**

### **Forest Biomaterials**

- Brianna Klimek and Matthew Rice, University Scholars Program graduates
- Franklin Zambrano (PhD Student), Grand Prize, CNR Graduate Student Research Symposium

### **Forestry and Environmental Resources**

- Daniel Choi, University Honors Program graduate
- Erika Fye, Jackie Hausle, Kirby Lau, Nick Loschin, Austin Mueller, Wilder Person, Megan Tumpey, Emma Vtipil, and Riley Zoldi, University Scholars Program graduates
- Alexa Wood (PhD Student), Namkoong Family Fellowship for excellence in conservation and ethics
- Meredith Hovis (PhD Student), Arthur W. Cooper Fellowship for excellence in social sciences
- Nicholas Gould (PhD Student), Charles B Davey Fellowship for excellence in biological sciences
- Kelsey Bakken (MS Student), FER Faculty Fellowship for excellence in education and service

- Tina Mozelewski (PhD Student), FER Faculty Fellowship for excellence in education and service
- Melina Martinez (PhD Student), Space Grant 2019 Fellowship

### **Parks, Recreation and Tourism Management**

- Diquan Edmonds (MS Student), received the SHIFT (Shaping How We Invest for Tomorrow) Emerging Leader Award, The Center for Jackson Hole
- Danielle Lawson (PhD Student), Southeastern Climate Science Fellowship (2018-2019); and AFRI NIFA Postdoctoral Fellowship, United States Department of Agriculture
- Jenna Hartley (PhD Student), 2018 Governor's Conservation Achievement Award for Environmental Educator of the Year
- Olivia Vilá (PhD Student) Chancellor's Creating Community Award for Outstanding Graduate Student; and Minority Scholars from Underrepresented Groups in Engineering and Social Science (SURGE) Capacity in Disasters Fellowship, National Science Foundation

### **Center for Geospatial Analytics**

- Joshua Turner (MS Student) won the 2018 USGIF Ken Miller Scholarship for Advanced Remote Sensing Applications
- Megan Coffey (PhD Student) placed third in the Agricultural Sciences and Natural Resources category at the university-wide Graduate Research Symposium
- Umesh Gupta (PhD Student) and his team won the NC Open Pass Civic Camp Hackathon and the NC Open Pass DataPalooza
- Megan Coffey (PhD Student) was selected to participate in the AAG-UCGIS Summer School

## **Fundraising**

The College raised over \$2.5 million in FY19 to reach a total of \$28.5 million towards our Think and Do the Extraordinary Campaign College goal of \$35 million.

- On the NC State Day of Giving, the College raised \$177,728 from 296 donors and 467 contributions. Of these, 96 were first time ever donors.
- Support for experiential learning was a priority this year. Ron and Dale Terry made an additional commitment to their Student Enrichment Fund, and we received two new gifts to support experiential learning in our Parks, Recreation and Tourism Management program: the Thomas Blair Hines Endowment and the Parks & Recreation Experiential Learning Endowment.
- Corporate giving for undergraduate scholarships in Paper Science and Engineering continued to be strong. In addition, two new scholarship endowments were created, one by John Prichard '68, and one by Clark Hight '86 and her daughter Alex '18, the Hight Family Scholarship, which will be awarded with preference to students who reside outside of North Carolina, and with special consideration to students from underrepresented groups.

- Funding to support Christmas Tree Research and Extension exceeded \$200,000, including the newly established Sexton Christmas Tree Farm research endowment.

## **Administration Achievements and Staff Changes**

### **New Administrators**

- Dr. Melissa Pasquinelli, Associate Dean for Academic Affairs, Dean's Office

### **New Non-Tenure-Track Faculty Hires 2018-2019**

- Brittney Townsend, Lecturer, FER
- Martha Brown, Lecturer, PRTM
- Davin Olsen, Lecturer, PRTM
- Sonya Shaw, Lecturer, PRTM

### **New Tenured/Tenure-Track Faculty Hires Starting in 2019-2020**

- Dr. Caren Cooper, CFEP Public Science, Associate Professor, FER
- Dr. Ayse Ercumen, CFEP Global WaSH, Assistant Professor, FER
- Dr. Jordan Kern, CFEP Global Environmental Change, Assistant Professor, FER
- Dr. Kitt Payn, Assistant Professor, Tree Improvement Cooperative, FER
- Dr. Mirela Tulbure, CFEP Geospatial Analytics, Associate Professor, FER

### **Offers Made and Accepted**

- Dr. Keith Howard, Assistant Teaching Professor, PRTM
- Dr. Jennifer Richmond-Bryant, Associate Professor of the Practice, FER

## **Recommendations and Concerns for the Future**

The College is very well positioned for the future. Our academic programs are strong, and our enrollments are growing in many majors. Our research and engagement efforts are addressing critical issues in our disciplines as well as interdisciplinary grand challenges that are central to the university and our society. The transition to a new dean in the coming year will create some uncertainty for both faculty and staff, and external constituents. However, the College has a strong base of supporters, and with a timely search, should weather this leadership change well.

Space continues to be the most critical constraint in the College, and will require attention soon if we are to retain the excellent faculty members we have recruited over the last several years. Both new space and renovation of our aging infrastructure are needed. About one-third of our T/TT faculty have been recruited in the last four years and faculty retirements are continuing, so the need will only become more acute in the coming years.