

2016-2017 Annual Report to the Chancellor

The College of Natural Resources takes a comprehensive approach to teaching, research and engagement, exploring the many ways that people's physical, economic and social needs can be met while protecting our planet's natural resources for future generations. Our mission is to provide solutions to the challenges of natural resources management and social and environmental sustainability. We aim to be among the very best in the world. We are proud to provide this annual report showing outstanding progress toward the university's strategic goals.

Strategic Initiatives

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

The College of Natural Resources has a long history of educational innovation, and we take great pride in the legacy of professional leadership we have created. This year, our college's first-year retention increased to 96 percent and our six-year graduation rate increased to 80 percent. In 2016, we graduated the largest number of students ever, with 525 B.S., M.S. and Ph.D. degrees conferred. Specific additional accomplishments are as follows:

- Guided the proposed Ph.D. in Geospatial Analytics program to approval by the UNC Board of Governors in May 2017. Pending SACS approval, the first cohort of students will begin fall 2018.
- Instituted a digital symposium and professional showcase at the end of each semester in our Master's of Geospatial Information Science and Technology program to highlight the service-learning activities of graduating professional master's students with their community partners. This event is open to the university community.
- Working with the College of Education, we hosted an Environmental Educator Forum to explore the creation of an environmental education minor. Two new courses will be taught in 2017-2018. With the development of additional courses for the minor, students will earn most of the credits required for Certification in Environmental Education from the NC Department of Environmental Quality's Office of Environmental Education and Public Affairs.

- Led the creation of a cross-college Environmental Science First Year (ENVFY) program, which will be piloted fall 2017. Dr. Steph Jeffries, Teaching Assistant Professor in Forestry and Environmental Resources, was selected as the ENVFY Program Director and ENVFY Advisor Nicole Howe started in June 2017. The participating undergraduate majors (and home departments) for 2017 include: Forest Management, Natural Resources, Environmental Technology and Management and Environmental Sciences (College of Natural Resources/Forestry and Environmental Resources); Sustainable Materials and Technology (College of Natural Resources/Forest Biomaterials); Geology and Marine Sciences (College of Sciences/Marine, Earth and Atmospheric Sciences); Crop and Soil Science, and Soil and Land Development (College of Agriculture and Life Sciences/Crop and Soil Science). In fall 2018, first-year students in Fisheries, Wildlife and Conservation Biology (College of Natural Resources/Forestry and Environmental Resources) and Agriculture and Environmental Technology (College of Agriculture and Life Sciences/Biological and Agricultural Engineering) will join the ENVFY program. We anticipate 150 students in the pilot program and 250 students in the full fall 2018 program.
- Implemented a new exploratory undergraduate recruitment strategy targeting the greater Triangle, Triad, Charlotte Metro and Wilmington areas. Our recruiters visited 152 schools and reached 3,452 students. Compared to 2016, we increased the geographic extent of our enrollment from 47 to 56 counties, increased our yield of first-time, first-year students from 36 percent to 43 percent, and increased our first-time, first-year diversity from 14 percent to 16 percent.
- To enhance graduate student recruiting, build a cohesive ecology community and increase NC State's rankings in ecology, the Department of Forestry and Environmental Resources received funding from the Graduate School to host an annual ecology graduate student recruiting event in February 2017 and 2018. Ten graduate students attended the 1.5 day recruiting event, including a seminar by Dr. Rob Pringle from Princeton University in February 2017, and six of those 10 students (50 percent women) committed to begin graduate studies at NC State.

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.

The college continues to provide mentoring opportunities for new faculty members, including support in teaching, research and engagement, and programs to help faculty build partnerships across the college and around the university. In addition, the college:

- Hired two additional faculty members, one in Parks, Recreation and Tourism Management, and one in Forestry and Environmental Resources and the Chancellor's Faculty Excellence Cluster in Emerging Plant Diseases and Global Food Security. Three additional recruitments are in process.
- Provided funding for the last year of our "Building Interdisciplinary Strengths" collaborative research project, titled "Socio-ecological Solutions to the Salinization of Albemarle-Pamlico Peninsula: An Interdisciplinary Assessment of Land Resources and Community Climate Readiness." Five Ph.D. students, from across the college, will complete their degrees this year.
- The college had an outstanding year in grantsmanship, receiving 224 research awards for a total of \$16.2 million (an almost 50 percent increase since last year). Our efforts to foster interdisciplinary scholarship are also paying off – our faculty are PIs or co-PIs on 18 new cross-college awards (up from 14 in 2015/2016 and 11 in 2014/2015).

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

The college invested in communications and space improvements, including significant efforts in the following areas:

- To improve prospective student communications, we developed a set of new printed materials and webpages (<https://cnr.ncsu.edu/academics/undergraduate/>), with standardized information across all majors, and significantly expanded degree information, storytelling and career information.
- New testing and analytic efforts were implemented using Google Analytics, NUVI, Facebook Insights, Twitter Analytics and Microsoft BI to analyze the effectiveness of the college's communication and marketing efforts, and guide new strategies and adjustments.
- Renovated the Sustainable Materials and Technology office and collaboration spaces and the offices for the BioResources Journal. We also completed minor renovations in Parks, Recreation and Tourism Management departmental offices and collaborative graduate student spaces.
- The Department of Forest Biomaterials renovated several lab spaces during the FY2017 to improve the safety and functionality of the spaces.

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

The college continued its focused attention on external communications and partnership building.

- More than 125 national and international news articles featured the research and accomplishments of the college's faculty, staff and students. This is an increase from about 90 media placements last fiscal year.
- Students participated in study abroad opportunities in Africa, Europe, Australia and Asia.
- The college received a new five-year pledge to endow the CNR Student Assistance and Enhancement Fund that will support undergraduate participation in high-impact learning experiences, including study abroad, internships and professional development programs.

Diversity

In the fall, the second cohort of the Doris Duke Conservation Scholars program, a two-year professional development program for students from underrepresented groups who are committed to diversity issues and conservation of natural resources, will arrive to begin their first semester. Dr. Zakiya Leggett is now leading the program.

The college also hosted Dr. Christine Pribbenow, a senior scientist at the Wisconsin Center for Education Research, and her colleagues to present *Fair Play*, an innovative video game that helps players recognize and empathize with the impacts of implicit bias by putting them in the shoes of an African American student on a university campus.

Instructional Program Advances

In addition to the innovations reported above, the college also:

- Completed a new DE Certificate in Military Land Sustainability that will be available fall 2017. The program focuses on the interrelationships among ecology, economics, policy and culture as influences on natural resource conservation and management and military training on and around military lands. It requires the completion of 14 graduate credit hours and can either complement or serve as part of a full master's degree program.

- Changed the name of the Parks, Recreation and Tourism Management Commercial Recreation and Tourism Concentration to Sustainable Tourism Management. The concentration provides an understanding of local and global tourism opportunities and challenges, and prepares students to create positive experiences for visitors around sustainable livelihoods for their communities.
- Submitted a proposal to create a new graduate certificate in Sport and Entertainment Venue Management, funded by DELTA. The program will provide a foundation for entry and advancement in the public assembly venue management industry. The proposed program will be reviewed by the Graduate Administrative Board in fall 2017.
- Created a pathway for students enrolled in PRT 442 to become Certified Interpretive Guides through the National Association for Interpretation. This certification is nationally accredited and recognized by interpretive organizations ranging from the Association of Zoos and Aquariums to the National Parks Service.
- Transferred the DE Master of Science Program in Ecosystem Assessment, originally created as a partnership between our Department of Forestry and Environmental Resources and the College of Agriculture and Life Sciences Department of Applied Ecology, completely into our college. In spring 2017, the Department of Applied Ecology decided to withdraw from the graduate program and the graduate students advised by Applied Ecology faculty will be transferred to Forestry and Environmental Resources faculty. DELTA awarded our department an additional \$85,000 to assist with the transition and broaden the scope of the program beyond Environmental Toxicology. The long-term vision is to develop tracks in Military Land Sustainability, Renewable Energy Assessment, and Wetland Conservation and Management.

Research

The college submitted 169 proposals for a total of \$58.9 million (compared to \$33.2 million last year), and received 224 awards for a total of \$16.2 million (compared to \$10.9 million last year). Some of the highlights include:

- **Dr. Roland Kays** received \$1million from the NC Wildlife Resources Commission to conduct statewide citizen science camera trap surveys of mammal populations, including deer productivity and coyote occupancy.
- **Dr. Marcelo Ardon Sayao**, a new faculty member in Forestry and Environmental Resources, received an NSF CAREER Award focused on the structure and function of NC wetlands and new methods to forecast changes in these valuable ecosystems.

- **Dr. Ryan Emanuel and colleagues** were awarded an NSF RAPID grant to investigate the effects of Hurricane Matthew-induced flooding on water quality in eastern NC, focusing specifically on the lands of the Lumbee Native American community.
- **Dr. Carla Barbieri and colleagues in Parks, Recreation and Tourism Management** received a \$500,000 USDA NIFA grant focused on agritourism's influences on children's agricultural literacy and how that knowledge transfers to parents' purchase of local foods and agricultural products.
- **Dr. Jason Delborne and colleagues** were awarded an NSF grant for work using Genetically Modified American Chestnut as a case study of public perceptions and policy regarding GMO's.
- **Dr. Kevin Potter and collaborators** received a five-year, \$1 million NSF grant to uncover the underlying biological, geophysical and socioeconomic factors that lead to the emergence of large scale plant and insect invasions.
- **Drs. Josh Gray and Helena Mitsova** led a multi-disciplinary team that was awarded a \$250,000 grant from the NC Department of Transportation to guide the use of unmanned aerial systems for wetland detection and delineation.
- **Drs. Aaron Hipp and Myron Floyd** were awarded \$424,000 by the Robert Wood Johnson Foundation (RWJF) to examine how neighborhood environments in New York City and Raleigh influence physical activity and health among low-income and minority children and families. The grant is part of the recently established multi-disciplinary, multi-institutional Physical Activity Research Center funded by RWJF.
- **Dr. Jason Bocarro and colleagues** received \$87,000 from the NC Division of Public Health to collaborate with Federally Qualified Health Centers (FQHC) to develop an app that will enable FQHC staff to incorporate parks and recreation facilities into prevention and treatment options.
- **Mickey Fearn and colleagues** were awarded a grant by the National Park Service (NPS) to develop tools and trainings to increase the capacity of the NPS to work with ethnically diverse philanthropic partners.
- **Drs. Duarte Morais and colleagues in Computer Science Engineering** received a grant from the Chancellor's Innovation Fund to develop two-way SMS communications technology that will enable underserved populations to access web-based networks.

- **Dr. Richard Venditti and colleagues in Forest Biomaterials, Forestry and Environmental Resources and the College of Education** were awarded a \$2.75 million USDA NIFA grant to prepare a diverse group of college students and rural NC high school teachers with the knowledge and interdisciplinary tools necessary to advance the future of America's bioenergy and bioproduct industries and the bioeconomy.
- **Dr. Dimitris Argyropoulos and colleagues in Chemistry and Biological Sciences** were awarded \$65,000 by the Chancellor's Innovation Fund to commercialize anti-infective nanofibrillated cellulose materials that are active against bacteria, viruses and fungi emerging as major public health threats.
- The NSF recommended a \$500,000 award to develop a Smart and Connected Communities Research Collaboration Network (RCN). Led by the Center for Geospatial Analytics, the grant will build smart city research collaborations across NC State, NC Central University, Duke University, UNC-Chapel Hill, city leaders and NGOs, to collaboratively design place-based serious to increase civic engagement in decision-making.

Extension

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

- Forestry Extension and the Southern Regional Extension Forestry Program offered webinars that attracted more than 38,000 live and on-demand views, with participants from all 50 states, earning more than 8,300 contact hours for professional development requirements from at least 10 organizations. By training online, participants saved more than \$7.9 million in 2016.
- Forestry Extension completed the calculations that the NC Department of Revenue uses to set the Present Use Valuation (PUV) rates for much of the state's 16 million acres of private forest that qualify for PUV. We also provided 12 educational workshops about PUV, serving 987 participants who could save more than \$100 million annually.
- Wood Products Extension developed an outreach program centered on improved utilization and smart processing of wood. This resulted in an estimated economic impact of more than \$10 million in upgraded product quality, improved understanding of markets and opportunities and better processing efficiency for the forest industry.

- In collaboration with the College of Agriculture and Life Sciences, Tourism Extension developed (1) a pilot program under People First Tourism called “Fork to Farmer” to leverage the endorsement of popular chefs to encourage local food lovers to visit small family farms that supply their favorite restaurants, and (2) an outreach program for women in agritourism to strengthen networks and share best practices.
- The Sentinel Landscapes Partnership Program, a collaboration with the Department of Defense (DoD), the State of North Carolina and other partners, was successful in achieving a “Sentinel Landscapes” designation for 33 counties in eastern NC. The DoD Readiness and Environmental Protection Integration (REPI) Program selected the eastern NC Sentinel Landscape Partnership as the recipient of the 2017 REPI Challenge award, which will leverage partner contributions to place conservation easements on more than 17,600 acres adjacent to military lands in the state.

College Rankings and Program Recognitions

- The College moved up in the USA Today rankings from seventh to sixth best U.S. college for studying natural resources and conservation.
- The Center for World University Rankings (CWUR) listed NC State University as the seventh best university for Paper and Wood Materials Science for 2017. The CWUR Subject Rank compares universities in 227 categories based on the number of research articles published in leading journals, according to Clarivate Analytics.
- The Center for Geospatial Analytics Master of Geospatial Information Science and Technology (MGIST) program was ranked fourth in the Geographical Perspectives rankings for online master’s programs in GIS.

Faculty and Staff Honors, Awards and Recognition

Forest Biomaterials

- Dr. Sunkyu Park was named the E. J. "Woody" Rice Associate Professor in Paper Science and Engineering.
- Dr. Yuan Yao was named a board member in the International Society for Industrial Ecology (ISIE) organization’s Life Cycle Sustainability Assessment division.

- Dr. Dimitris Argyropoulos and colleagues received an award from the 2017 Chancellor's Innovation Fund for "Light-activated Anti-infective Coatings: Photosensitizer Embedded Nanofibrillated Cellulose."
- Dr. Marian McCord and her team were recognized for their work on insect bite resistant fabrics and clothing and awarded a 2018 Chancellor's Innovation Fund grant to support their work.
- Dr. Lucian Lucia was awarded an American Chemical Society (ACS) Fellowship.

Forestry and Environmental Resources

- Dr. Ron Sederoff received the 2017 Marcus Wallenberg Foundation Prize (often called the Nobel Prize in Forestry). The prize is to recognize, encourage and stimulate path-breaking scientific achievements that contribute significantly to broadening knowledge and technical developments within the fields of forestry and forest industries. Sederoff will be honored by the King of Sweden in October 2017.
- Dr. Bob Abt was named the Carl Alwin Schenck Professor in Forestry.
- Dr. Ryan Emanuel was named a 2016-2017 University Faculty Scholar.
- Drs. Tom Gower and Erin Sills both received the 2016-2017 Alumni Association Outstanding Research Award and were inducted into the Research Leadership Academy.
- Dr. Larry Nielsen was named Alumni Distinguished Undergraduate Professor and received the Green Brick Award for outstanding achievement in sustainability on campus and in the community.
- Dr. Gary Hodge received the Outstanding Global Engagement Award.
- Dr. Caren Cooper received the Brandwein Medal from the Brandwein Institute and Nature Preserve for her commitment to education, life-long learning, nature and community.
- Dr. Ross Meentemeyer was named a member of Board of Directors for the University Consortium of Geographic Information Science.

Parks, Recreation and Tourism Management

- Dr. Carla Barbieri received the Emerging Scholar Award from the International Academy for the Study of Tourism. Receiving this award is the first step to becoming a Fellow in the Academy.
- Dr. Annette Moore was named CNR's 2016-2017 Outstanding Teacher.
- Kathy Gore won the 2016-2017 Barbara Solomon Award for Academic Advising.
- Dr. Jason Bocarro received a Coventry University Visiting Professor Award, which funded a trip to Coventry for lectures and collaborations with their sport faculty.

Student Honors and Awards

Cumulative List of Major Student Awards

- College of Natural Resources Valedictorians: 5
- Academic Dean's List: 453 for fall 2016 and 427 for spring 2017
- Austin Heine (Forestry and Environmental Resources graduate student) received the Bruce Zobel Award for the most outstanding student presentation at the 2017 [Southern Forest Tree Improvement Conference](#).
- Brandon Smith (Sport Management undergraduate) was awarded the 2017 William N. Wasson Student Leadership and Academic Award from National Intramural-Recreation Sports Association (NIRSA). He also received the 2017 John F. Miller Award from University Recreation.
- David Lovato (Paper Science and Chemical Engineering undergraduate) won the William L. Cullison Scholarship from the Technical Association of the Pulp and Paper Industry (TAPPI).
- Dr. Gareth Jones (Parks, Recreation and Tourism Management 2016 Ph.D. graduate) received the European Association of Sport Management (EASM) New Researcher Award for his work on sport-based youth and community development. He is the first American to receive this award.
- Allie McCreary (Parks, Recreation and Tourism Management 2017 Ph.D. graduate) claimed first place in the NC State Graduate Student Research Symposium: Social Science and Management Category; third place in the same category went to Matthew Jurjonas (Parks, Recreation and Tourism Ph.D. student).
- Ashwin Shashidharan (Center for Geospatial Analytics Ph.D. student) won the student research competition at the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems in San Francisco, California.
- Paul Schrum (Master of Geospatial Information Science and Technology student) patented an innovative approach to roadway design that will reduce the risk of problems such as hydroplaning.
- Laura Belica (Center for Geospatial Analytics Ph.D. student) won the NC Wildlife Federation's Conservation Leadership Grant.
- Anna Petrasova and Vaclav Petras (Center for Geospatial Analytics Ph.D. students) were elected to the GRASS GIS Project Steering Committee.

- Christiana Ade (Center for Geospatial Analytics master's student) was awarded a travel scholarship from the NSF- and NASA-sponsored Ocean Carbon and Biogeochemistry program to present her research at the 2017 International Ocean Color Science meeting in Lisbon, Portugal.
- Brian Pickard (Center for Geospatial Analytics Ph.D. student) served his first year as Graduate Student Representative of the U.S. International Association of Landscape Ecology, holding voting status for all US-IALE matters of the executive council.
- Ryan Held (Fisheries, Wildlife and Conservation Biology undergraduate) and Lucas Kozeniesky (Sport Management undergraduate) participated in the 2016 Olympics in Rio de Janeiro. Kozeniesky participated in the air rifle competition and Held swam the third leg for the U.S. men's 4x100 freestyle relay team to help win the gold medal.

Fundraising

In the last fiscal year, the college raised \$3,221,814 in private support. This represents a 33 percent increase from the last fiscal year and a 16 percent increase from the three-year average (FY14-FY16). We raised a total of \$21,614,427 toward our Capital Campaign goal of \$35 million. Some examples of major gifts include:

- **Sterling and Emily Wall – \$400,000.** The Wall-Minor Family Baptist Children's Homes of NC Scholarship endowment will support a student with need from the Baptist Homes program, with first preference given to a student majoring in a College of Natural Resources degree program.
- **Ronald and Dale Terry – \$250,000.** In 2015, Dr. Terry and his wife, Dale, established the Ron and Dale Terry Student Enrichment and Assistance Fund within the College of Natural Resources through a current use gift. In 2017, the Terry's committed to endowing the fund to provide ongoing support for students who may not otherwise be able to study abroad, pursue research opportunities or take unpaid internships. The fund will be open to all students in the College of Natural Resources.
- **Susan Masaschi – \$150,000.** The John E. Masaschi Graduate Fellowship was established in memory of Susan's husband, who received his Master's in Wood Technology from NC State in 1957 and worked for Georgia Pacific in South Carolina, Texas, Connecticut and Georgia.

- **David and Gayle Hickman – \$100,000.** The Hickmans created the David and Gayle Hickman Professional Golf Management Enhancement Fund to provide unrestricted support to the PGA Golf Management program. They have a passion for the game and hope that their gift will attract others to the game through teaching and extension.

Administrative Achievements and Staff Changes

Leadership Team Reviews

- **Associate Dean for Extension Robert Bardon** underwent a five-year performance review and was reappointed.

New EHRA Non-Faculty Hires

- Robin Banker, College Advancement Manager, College of Natural Resources Advancement
- Kimber Lunsford, Assistant Director of Undergraduate Programs, Forestry and Environmental Resources
- Nichole Howe, Environmental First Year Advisor, Forestry and Environmental Resources
- Louise Vaughn, Extension Associate, Forestry and Environmental Resources
- Elizabeth Mazak, Project Manager, Parks, Recreation and Tourism Management
- Morgan Schulte, Research Associate, Forestry and Environmental Resources
- Peter Lazaro, Research Associate, Forestry and Environmental Resources

New Tenure/Tenure Track Faculty Hires Starting in Spring, 2017-2018

- Dr. Zakiya Leggett, Assistant Professor, Forestry and Environmental Resources
- Dr. Lincoln Larson, Assistant Professor, Parks, Recreation and Tourism Management
- Dr. Kangjae Lee, Assistant Professor, Parks, Recreation and Tourism Management
- Dr. Robert Scheller, Professor, Forestry and Environmental Resources and Chancellor's Faculty Excellence Cluster in Emerging Plant Diseases and Global Food Security

Recommendations and Concerns for the Future

The future for the College of Natural Resources is bright. We have invested heavily in new faculty, both in our core disciplines and in strategically important interdisciplinary areas. Our reputation is growing as our collaborative network and resource base also grows.

However, as the college has grown, we have also become critically short on space, and much of the space we do have is aging and in need of major renovation. Acquiring high-quality space for the growing research programs of our faculty will be critical to retaining them at NC State, and for recruiting and retaining outstanding graduate students for our masters and doctoral programs.