

Department of Forestry and Environmental Conservation Strategic Plan 2016 – 2021



“Excellence in natural resource and environmental conservation teaching, research, and outreach”

“We must maintain and strengthen natural resources education at all levels to have the informed and engaged citizenry, civic leaders, and practicing professionals needed to sustain the natural resources, ecosystems, and ecosystem services of the United States.” Association of Public Land-Grant Universities, Board on Natural Resources, May 2014

**Department of Forestry and
Environmental Conservation
Strategic Plan
2016 – 2021**

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Introduction

South Carolina's natural resources have an estimated annual impact of \$30 billion, the largest economic impact of any industry in the state (Division of Research, South Carolina Moore School of Business 2009). Of the state's 19.3 million acres, 67% (12.9 million acres) are in forests which provide multiple benefits to the state's economy, natural resource base, ecological services, and quality of life of South Carolinians. South Carolina's natural resources are essential for economic development and contribute 230,000 jobs to the state's economy (South Carolina Moore School of Business, 2009). Timber products alone deliver over \$870 million annually and are the state's most valued agricultural crop, generating \$18.6 billion to the state's economy (South Carolina Forestry Commission, 2015). The state's forest industry ranks first in employment among South Carolina's manufacturing sectors, employing 90,320 South Carolinians. In addition to producing food and fiber, South Carolina's forest lands provide ecological and environmental services, such as clean water, air, and biodiversity that contribute to healthy communities and quality living that residents and vacationing visitors value. Recreation in South Carolina's forests provides economic benefits to the state as well as to private landowners. For example, wildlife-related recreation adds \$3.7 billion annually to the state's economy and is a major economic driver in rural South Carolina communities (2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation).

Natural resources and healthy ecosystems are a bedrock to strong national and global economies. George Perkins Marsh and Gifford Pinchot noted over a hundred years ago that the growth of society and careful management of land and water went hand in hand. Today, we know that ecosystem services including clean water and air, food, and fiber, as well as intangibles like non-game wildlife, depend on well-informed management of land and seascapes (Daily 1997). The Association of Public and Land Grant Universities writes that the grand challenges of natural resource management have significant social, environmental, and economic impact, and need to be met by improvement of our current teaching, research, and extension abilities (APLU, 2014).

The Department of Forestry and Environmental Conservation (Department), in the College of Agriculture, Forestry, and Life Sciences (CAFLS), is a major supporter of natural resources and healthy natural systems in South Carolina and beyond through our strong teaching, research, and outreach programs. Our students come from diverse backgrounds, yet for the most part are motivated by strong personal connections to land and water. The purpose of this plan is to provide a vision and road map for the Department for the next 5 years to continue enhancing natural resources and a healthy environment in South Carolina, the Nation, and the World.

Mission

Our mission is to provide excellence in natural resources and environmental conservation in teaching, research, and outreach for the people of South Carolina, the nation, and the world.

Vision

To be a national leader in generating and communicating science-based knowledge in sustainable management of natural resources and environmental conservation and known for graduating highly trained, nationally recognized students in these fields.

Values

We value ...

- Our students, faculty, staff, alumni, partners, and friends.
- Diversity of people, places, perspectives, and ideas.
- Collaboration with our peers, stakeholders, cooperators, and partners.
- Academic excellence in all of its forms - the scholarship of discovery, teaching, information transfer, and scientific integration.
- Science that is innovative, transdisciplinary, relevant, and of high impact.
- Engagement with communities in South Carolina, the nation, and the world.

Core Goals

Goal 1 Restore and re-establish the Department's teaching and research capacity in order to enhance the quality of undergraduate and graduate programs.

Goal 2 Restore and re-establish the extension forestry and wildlife programs.

Goal 3 Increase research capacity and productivity in the Department, being responsive to critical environmental and natural resource needs.

Goal 4 Increase quality, number, and diversity of students enrolled in departmental degree programs.

About the Department of Forestry and Environmental Conservation

Seven degree programs are housed in the Department which includes Environmental and Natural Resources (B.S.), Forest Resource Management (B.S.), Forest Resources (Master of Forest Resources – M.F.R., M.S., Ph.D.), and Wildlife and Fisheries Biology (B.S., M.S., Ph.D.) (Appendix 1). As of 2016, twenty seven Regular and Special Rank Faculty, Research Scientists, and nine staff support these programs (Appendix 2).

Inside of FEC are numerous program cooperators including the South Carolina USGS Cooperative Fish and Wildlife Research Unit, the U.S. Forest Service Restoring and Managing Longleaf Pine Ecosystems Unit, the U.S. Forest Service Center for Forest Disturbance Science, the U.S. Forest Service Upland Hardwood Ecology and Management Unit, and the National Council for Air and Stream Improvement, Inc. Departmental faculty and staff are located on the main campus of Clemson University and at the Baruch Institute of Coastal Ecology and Forest Science (BICEFS) outside of Georgetown, South Carolina.

The Department utilizes the 17,500 acre Clemson Experimental Forest (<http://www.clemson.edu/cafls/cef/>), and is academic home for the Director of the Experimental Forest and the South Carolina Botanical Gardens. The Department uses both facilities extensively for teaching, research, and extension. The Department is the academic home of the Kennedy Waterfowl and Wetland Conservation Center at BICEFS <http://www.clemson.edu/cafls/departments/kennedycenter/>.

Research in FEC has been funded by South Carolina Department of Natural Resources, U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, National Science Foundation, Department of Defense, private energy industry, private forest industry, and not-for profit organizations.

Faculty members have garnered tens of millions of dollars in research funding, served on national boards, been featured in national media, and published hundreds of scientific articles and books. The Department has two Endowed Professorships and one Endowed Chair. More information about the Department can be found on the website <http://www.clemson.edu/cafls/departments/fec/>.

Core Goals and Objectives by Teaching, Research, and Extension

The Department's goals support the mission and vision of the Department and priorities of CAFLS and Clemson University. The four core goals of FEC are organized below under Teaching, Research, and Extension, with corresponding Objectives.

Teaching: Core Goals 1 and 4

Goal 1 Restore and re-establish the Department's teaching and research capacity in order to enhance the quality of undergraduate and graduate programs

Goal 4 Increase quality, number, and diversity of students enrolled in departmental degree programs.

Objective 1 – Determine faculty and staff hiring needs to support teaching and develop a hiring plan for the next 5 years, with a focus on diversity and excellence.

Strategy: Update the Department's hiring plan using a transparent, structured decision making approach (Appendix 3).

Time-Frame: Ongoing; revise after 3 years.

Responsibility: Department Chair working with faculty.

Outcome: A new and updated 5-year hiring plan that meets current and future program needs, improves the quality and efficiency of instruction, and the ability to offer more leading edge courses that prepare our students for a quantitatively focused career, in our respective disciplines.

Budget: Investment of time.

Objective 2 - Modernize undergraduate content and experiences to emphasize scientific and technical aspects of management of natural resources and to prepare students for graduate study at R1 institutions, and beginning a professional career.

Strategy: Expand and intensify curricula review of degree programs to strengthen and modernize our undergraduate course offerings in ENR, FOR, and WFB.

Time frame: Completed in 2 years.

Responsibility: Curricula chair(s) working with faculty who teach or advise students within each degree program.

Outcome: Improved and strengthen undergraduate curricula which prepare graduates for the job market or graduate school.

Budget: Investment of time.

Objective 3 – Rigorously revise WFB and FOR graduate curricula to build a core of courses that reflect topics of lasting and universal importance while maintaining flexibility to respond to emerging issues.

Strategy: Review current graduate course offerings, and where needed, ensure a core of quality course offerings at the 8000 level that can be regularly taught, while maintaining flexibility to respond to emerging topics.

Time-Frame: Completed in 2 years.

Responsibility: Graduate Coordinator and faculty who advise graduate students within their degree program.

Outcome: Stronger graduate curricula which prepares MS students for highly competitive doctoral programs and doctoral students for teaching-research positions at R1 universities or equivalent agency, NGO, and private industry positions.

Budget: Investment of time.

Objective 4 – Review and revise the Department’s assessment plans for degree programs to improve reporting and quality of our programs.

Strategy: Assessment Committee working with faculty to review and modify current assessment plans.

Time-Frame: Ongoing.

Responsibility: Assessment Committee working with faculty.

Outcome: Effective assessment plans for degree programs that allows annual review and improvement of degree programs.

Budget: Investment of time.

Objective 5 – Utilize the expertise of BICEFS faculty in departmental undergraduate and graduate teaching.

Strategy: Develop a process for delivering courses from BICEFS to departmental students via distance technology; institutional involvement necessary in terms of PSA appointments involved in teaching.

Time-Frame: 2 year initial development; 5 year assessment.

Responsibility: Department and Curriculum Chair(s) working with faculty; PSA involvement to deal with appointments/teaching.

Outcome: Enriched educational experiences for our students and enhanced teaching capacity of the Department.

Budget: Investment of time.

Objective 6 – Develop a program for the new professoriate by helping graduate students have quality teaching experiences, experience with grant writing, and experience with research publication.

Strategy: Develop a process for departmental graduate students to contribute to teaching within the Department.

Time-Frame: 2 years.

Responsibility: Department Chair and Graduate Coordinator working with the faculty; faculty will mentor the student.

Outcome: R1-ready graduates who will enhance Clemson’s reputation by developing their own teaching and research programs at R1 institutions.

Budget: Provide stipend match for RAs in faculty research grants, up to 100% of the RA for the semester in which the student will teach.

Objective 7 – Expand interdisciplinary, collaborative, cross-college, and campus programs.

Strategy: Utilize campus and off-campus expertise to build multi-layered curricula that offers choices for students. Focus on modernizing the Forestry aspects of our curriculum through collaboration. Better define the ENR concentrations, refine, and promote. Improve the WFB program by minimizing imposed distinctions related to hunting and fishing, versus other wildlife-related interests.

Time-Frame: Ongoing; 5 year assessment.

Responsibility: Curriculum Chair(s) and faculty.

Outcome: A curriculum that reflects the interdisciplinary complexity of solving natural resources problems, and appeals to sophisticated students and their parents.

Budget: Investment of time.

Objective 8 - Build the capacity of the Department to offer online courses to current and non-traditional students.

Strategy: Hire a full time lecturer to develop and coordinate the online courses; use the current online WFB Master’s certification degree business plan model for developing and delivering online courses for the Department.

Time-Frame: 2 year initial development; 5 year assessment.

Responsibility: Dr. Thea Hagen working with the Department Chair and faculty.

Outcome: Ability to deliver courses to remote and non-traditional students and increase revenue to invest in departmental programs.

Budget: Online Coordinator \$50,000, course development \$3000/3 credit course, instructors \$6000/3 credit course.

Objective 9 – Improve the understanding among our undergraduate students of career options and expectations in natural resources, through expanded academic advising and career mentoring.

Strategy: Improve Freshman and Sophomore year advising by facilitating faculty interaction with Undergraduate Program Coordinator so she can better communicate degree programs and career tracks. Improve Junior and Senior year advising by recognizing efforts by faculty to support and mentor students, and better utilizing faculty expertise. For all students, improve mentoring about graduate school, especially.

Time Frame: 2 year implementation window; 5 year assessment.

Responsibility: Faculty with assistance from Undergraduate Program Coordinator

Outcome: Successful students that are more connected to Clemson and the natural resources professional world through improved career and graduate school mentoring.

Budget: Faculty travel award of \$2000/faculty for working with Undergraduate Program Coordinator to implement successful new mentoring program.

Objective 10 - Improve marketing of degree programs, recruitment of students, and data collection about student careers post-graduation.

Strategy: Implement a social media campaign through a department Facebook page and Twitter feed.

Time Frame: 1 year implementation window, 3 year assessment.

Responsibility: Department staff assisted by social media-literate student employees.

Outcome: Increased visibility throughout society including potential students, parents, politicians, funders, and employers.

Objective 11 – Foster a vibrant, diverse, and sustaining undergraduate enrollment in Forest Resource Management (B.S.) of at least 100 students.

Strategy: Implement a recruiting plan targeted toward all high schools and technical colleges in the state, and encouraging under-represented groups.

Time-Frame: Assess progress to goal after 2 years.

Responsibility: Amy Sanders working with Department Chair and faculty.

Outcome: Increased enrollment of Forest Resource Management B.S. program.

Budget: \$10,000 materials and travel/year.

Objective 12 – Develop an effective system for tracking undergraduate and graduate students after graduation.

Strategy: Utilizing existing student data bases and technology.

Time-Frame: 1 year implementation; assess after 3 years.

Responsibility: Amy Sanders working with Clemson University Alumni Association.

Outcome: Engaged alumni that provide input and support to departmental programs.

Budget: Investment of time.

Research: Core Goals 1 and 3

Goal 1 Restore and re-establish the Department’s teaching and research capacity in order to enhance the quality of undergraduate and graduate programs.

Goal 3 Increase research capacity and productivity in the Department, being responsive to critical environmental and natural resource needs.

Objective 1 – Facilitate an increase in large grant submissions, so that our total submissions are 30% greater within 5 years.

Strategy: Identify groups of faculty and individuals with great ideas and appropriate qualifications for specific grant programs and provide them with Department support and reduced teaching and service expectations for specified period of time, so they can complete submissions. Recognize and reward faculty for productivity through social media attention, release time, and Department support. Build a reliable system for evaluating research productivity on the time scales that make sense for funding and publication cycles.

Time-Frame: An increase of 5% annually for the next 5 years; assess annually.

Responsibility: Faculty with a % research appointment, staff support, Department Chair arrangement of duties to accommodate.

Outcome: Increased scholarship leading to improved national and international reputation which will attract students and future funding; increased research money which will hire graduate students, technicians, and post-doctoral scholars; increased indirect returns to the Department and faculty.

Budget: Investment of time.

Objective 2 – Build grant-making capacity in the Department by assisting faculty with all aspects of grant development and submission, investigation of RFPs, assembly of faculty teams.

Strategy: Hire a grant coordinator – writer in FEC. Proposal and position description developed and submitted to the Dean and VP for funding.

Time-Frame: Complete hire within 1 year; assess effectiveness annually.

Responsibility: Department Chair with input from faculty.

Outcome: Support for faculty in proposal development, writing, submission, and reporting. Better relationships with funders who often see Clemson as a difficult place to move money to for projects.

Increased research revenue, indirects returned to the Department and faculty, and increased research publications and products.

Budget: \$50,000 plus fringe. First 3 years covered by VP for research, after that salary generated from grants.

Objective 3 – Increase the Department’s research capacity by increasing the number of FTE research faculty and technical support.

Strategy: As part of the Department’s 5-year hiring plan.

Time-Frame: 5 years.

Responsibility: Department Chair working with upper administration.

Outcome: Improved production of new information for scholarly and natural resource field application; improved teaching of advanced classes by application of new methods and information; increased research revenue, increased indirects returned to the faculty and the Department, increased research publications and products.

Budget: See faculty and staff 5-year strategic hiring plan, Appendix 3.

Objective 4 – Leverage existing departmental, CAFLS, Clemson, and partner strengths to build stronger collaborative research programs.

Strategy: Continue and expand collaborative efforts with multiple traditional and non-traditional partners.

Time-Frame: Ongoing, assess after 5 years.

Responsibility: Faculty and Department Chair.

Outcome: Improved quality and productivity of research programs.

Budget: Investment of time.

Objective 5 – Obtain consistent and meaningful investment from forest industry for our programs and students.

Strategy: Reach out to industry partners through existing contacts (e.g., NCASI, Weyerhaeuser) through a written prospectus; invite investment in endowed professorships; invite research partnerships with faculty; promote students for hiring.

Time-Frame: Prospectus finished within 6 months, partners contacted within 1 year, assess effectiveness after 3 years.

Responsibility: Department Chair with input from faculty.

Outcome: Sustained funding to support research projects and students.

Budget: Investment of time.

Objective 6 – Develop and implement a vision for research in the Clemson Experimental Forest including plans for long-term collaborative research in Forestry, Wildlife and Fisheries Biology, and Environmental Conservation.

Strategy: Facilitate an interdisciplinary working group of faculty within and outside the Department to develop a vision and plans for long-term research.

Time-Frame: Ongoing, assess after 3 years.

Responsibility: Department Chair, Director of CEF, Manager of CEF, faculty.

Outcome: Use the CEF for its original intended purpose to understand ecosystem function and restoration for improved natural resource management; establish research use patterns to help preserve the CEF from development for financial gain.

Budget: Investment of time.

Extension: Core Goal 2

Goal 2 Restore and re-establish the extension forestry and wildlife programs

Objective 1 – Provide extension agents with high quality knowledge based on contemporary research in natural resources.

Strategy: Hire three PSA-supported Wildlife and Forestry faculty and give them specific Extension responsibilities.

Time-Frame: 2 years.

Responsibility: Department Chair and Extension administration.

Outcome: Extension faculty to support natural resource programming for the citizens of South Carolina.

Budget: Funding provided by the legislature.

Objective 2 – Improve the integration of research and teaching programs with extension activities.

Strategy: Identify faculty and Extension personnel who have similar subject matter responsibilities and facilitate collaborations.

Time-Frame: Ongoing, assess after 3 years.

Responsibility: Department Chair working with faculty, staff and Extension personnel.

Outcome: Enhanced service-learning opportunities for our students in communities in South Carolina.

Budget: Investment of time.

Objective 3 – Encourage grant writing collaborations among faculty and Extension personnel especially for grant RFPs that have a required outreach component.

Strategy: Improve the understanding by faculty of extension expertise at Clemson; identify faculty and Extension personnel who have similar interests; actively send RFPs to those “teams.”

Time-Frame: Ongoing, assess after 3 years

Responsibility: Department Chair working with faculty, staff and Extension personnel.

Outcome: Efficiencies gained for extension, teaching, and research so that public money is leveraged across those activities.

Budget: Investment of time.

Improvement of Departmental Operation

We recognize that achievement of all of the previous goals and objectives is possible only with an efficient and productive working environment for faculty, administration, students, and staff. This section is dedicated to describing improvements in departmental management.

Goal 1 Identify, obtain, and maintain and building and grounds needs for the Department, with facilities that reflect the unique natural resource focus, attract students by being attractive working areas, and convey the central importance of natural resources to the people of South Carolina.

Objective 1 - Ensure that needs for classrooms, laboratories, offices, and meeting rooms are met for the Department’s teaching, research, and extension programs.

Strategy: Develop an assessment of current and future use, including integration of teaching and research technology.

Time-frame: Assessment complete within 2 years.

Responsibility: Faculty and staff led space committee to make recommendations to the Department Chair.

Outcome: A learning and working environment that conveys a sense of excitement and attracts students, funders, and faculty; productive working spaces reflecting best technologies; learning environment that conveys concepts of “sustainable environment.”

Budget: Cost unknown. Support from university.

Goal 2 Fund the expansion of our programs based on a mission-driven business plan.

Objective 1 – Double the Department’s operating budget in 5 years.

Strategy: Develop a comprehensive business plan for the Department that aggressively seeks traditional and non-traditional sources of funding to build upon the Department's base funding. Funding sources may include, but not limited to, private donors (e.g., Department alums), summer courses, online courses/degree program opportunities, increased indirect returns from research expansion noted above, and pursuit of teaching program development granting opportunities (e.g., USDA National Needs, NASA STEM, NSF STEM).

Time-Frame: Business plan complete within 2 years.

Responsibility: Chair with faculty and staff. May be a good opportunity for teaching-oriented faculty to participating in writing large teaching-oriented grants.

Outcome: Ability to respond to opportunity with internal funds; enrich our teaching, research and extension programs; decrease dependence on College and University funds.

Budget: Investment of time.

Objective 2 - Incentivize summer teaching and non-traditional income generation by faculty through return of funds to faculty.

Strategy: Increase revenue sharing of all funds brought by faculty to incentivize revenue generation. This includes the return of 30% of revenue returned to the department from summer teaching in excess of faculty/TA pay and fringe.

Time-Frame: Ongoing; assess after 3 years.

Responsibility: Department Chair working with faculty.

Outcome: Increased funding to support faculty programs.

Budget: (See policy developed by the faculty and approved by the Chair).

Objective 3 - Retain faculty and keep morale high by preventing salary compression and inversion.

Strategy: As new tenure-track faculties are hired, funds are requested from the central administration to increase the salary of existing faculty to prevent salary inversion and compression.

Time-Frame: Implement program within 1 year

Responsibility: Department Chair working with upper administration and faculty.

Outcome: Increased faculty salaries.

Budget: From university budget as planned by the Provost.

Goal 3 Improve understanding of the mission, goals, and objectives of our Department in the Clemson community, statewide, and nationally.

Objective 1 – Develop and implement an effective communications plan that utilizes social media, in addition to traditional methods.

Strategy: A communications plan will be developed, finalized, and implemented to include, but not limited to, a departmental annual report, newsletter, website, and social media specifically Facebook site for FEC, and an FEC Twitter feed.

Time-Frame: Implement within 1 year; assess after 3 years.

Responsibility: Chair working with Jonathan Veit, CAFLS communication team, faculty and staff.

Outcome: Broad increase in understanding about FEC mission and activities leading to better student recruitment, funding opportunities, media attention, and public opinion.

Budget: Investment of time.

Objective 2 – Develop a system by which FEC internet presence is rigorously maintained so that the information we present about ourselves is current, accurate, and compelling.

Strategy: Interface with the CAFLS web team so that the FEC page follows the CAFLS template.

Time-Frame: On-going; assess annually.

Responsibility: Vickie Byko will take the lead in maintaining and continuously updating the departmental website with input from faculty and staff.

Outcome: Increased visibility of departmental programs for prospective students, partners, and external clientele.

Budget: Investment of time.

Objective 3 –Develop a system for communicating specifically with Department alumni so that they feel engaged and want to contribute financially and hiring graduates.

Strategy: Using social media and traditional methods, build a database and engage alumni from all three degree programs (Environmental and Natural Resources, Forest Resource Management/Forest Resources, and Wildlife and Fisheries Biology); specifically explain changes to Department foci so that alums appreciate the past but also accept future directions reflected by new hires, programs.

Time-Frame: Develop system within 1 year; assess after 3 years.

Responsibility: Department Chair working with Amy Sanders.

Outcome: Engaged alumni who are ambassadors and supporters of our Department, programs, and students.

Budget: Investment of time.

Goal 4 Increase operational effectiveness of the Department.

Objective 1 – Share roles and responsibility of support staff with faculty.

Strategy: Share written roles and responsibilities of each staff position with faculty.

Time-Frame: Roles and responsibilities distributed within 6 months.

Responsibility: Department Chair.

Outcome: Improve efficiency and effectiveness of departmental operation.

Budget: Investment of time.

Goal 5 Develop a lasting culture of shared achievement and excellence

Objective 1 – Recruit, mentor, retain, recognize, and reward faculty and staff.

Strategy: Rely on competitive national searches to attract world-class tenure track faculty, and support them when they are here to achieve their best.

Time-Frame: Ongoing; assess after 5 years.

Responsibility: Department Chair and Faculty Search Committees.

Outcome: Excellent faculty to support our students and departmental programs.

Budget: See Appendix 3; faculty and staff 5-Year hiring plan and replacement hires.

Objective 2 – Increase the number of support staff.

Strategy: As the Department faculty numbers increase, a proportional number of staff should be hired.

Time-Frame: On-going; assess annually.

Responsibility: Department Chair.

Outcome: Excellent staff to support faculty, students and departmental programs.

Budget: See Appendix 3; faculty and staff 5-Year hiring plan and replacement hires.

Objective 3 – Develop a transparent, nurturing, and rigorous system of evaluation through TPR and Form 3s.

Strategy: Develop benchmarks for success for tenure and promotion that reflect teaching, research, and service; clearly communicate those benchmarks in a timely and productive fashion; document benchmarks in TPR guidelines; fairly apply benchmarks.

Time-Frame: Develop system within 2 years, assess after 5 years

Responsibility: Department Chair and tenured faculty (those who can serve on TPR), in consultation with Faculty Senate and the Office of Human Resources.

Outcome: Productive and happy faculty who can predict when and how they can be promoted.

Budget: Investment of time.

Objective 4 – Develop an FEC mentoring program for new faculty.

Strategy: Develop a system by which a newly hired faculty member can choose a mentor, or group of mentors, from among senior faculty and reward those senior faculty for their mentoring activities e.g., through annual evaluations.

Time-Frame: 1 year; assess after 5 years.

Responsibility: Developed by senior faculty, evaluated by Chair.

Outcome: Productive and happy faculty moving in a positive fashion through tenure and promotion.

Budget: Investment of time.

Objective 5 – Recognize and reward outstanding achievements of faculty and staff on an annual basis.

Strategy: Develop a departmental program that recognizes and rewards faculty for outstanding contributions to teaching, research, and extension, and staff for excellent in department service.

Time-Frame: Implement within 1 year; assess after 5 years.

Responsibility: Developed by Chair with input from faculty and staff.

Outcome: Recognizes outstanding faculty and staff, builds departmental morale, provides an incentive for excellence, and helps recognize and retain faculty and staff.

Budget: Annual allocated budget of \$10,000.

Goal 7 Maintain faculty with cutting edge knowledge in teaching, research, and extension, and staff knowledge of administrative and student services.

Objective 1 – Provide support for faculty to attend conferences and workshops external to Clemson.

Strategy: Provide a specific annual budget to each faculty member that they can apply to a professional development activity such as attending a meeting or workshop; encourage faculty to seek those opportunities and discuss with Chair; encourage faculty to present research in highly visible conferences.

Time-Frame: Implement within 1 year; assess after 3 years.

Responsibility: Department Chair.

Outcome: Faculty operating at the cutting edge of their disciplines so that our students and stakeholders are receiving the best available information and support.

Budget: Annual allocation of \$2000/year/faculty or staff.

Objective 2 – Provide support for staff to attend on campus and within-state workshops. .

Strategy: Provide a specific annual budget to each staff member that they can apply to a professional development activity such as attending a training or workshop; encourage staff to seek those opportunities and discuss with Chair.

Time-Frame: Implement within 1 year; assess after 3 years

Responsibility: Department Chair.

Outcome: Staff operating at the cutting edge of their disciplines so that our students are receiving the best available support.

Budget: Annual allocation of \$1500/year/staff.

Literature Cited

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Appendix 1. Description of Degree Programs

Environmental and Natural Resources (B.S.) (131 students, Spring 2016)

The Department provides an interdisciplinary approach to teaching environmental and natural resource issues to students at the undergraduate level. Students interested in environmental and natural resource topics can obtain a B.S. degree in Environmental and Natural Resources that produces professionals who have a broad awareness and understanding of environmental and natural resources conservation topics and issues, as well as the ability to provide thoughtful solutions to environmental and natural resource problems. Protection of rare and endangered species, preventing and controlling invasions of exotic and non-native species, protecting old growth forests, restoring degraded ecosystems, and balancing the resource demands of society with environmental quality are some of the challenging issues. Three concentrations are offered within the Environmental and Natural Resources B.S. major and include Conservation Biology, Natural Resources Management, and Natural Resource and Economic Policy.

Departmental ecology faculty have also teamed up with faculty from across the university to form an interdisciplinary working group (Welcome to Ecology at Clemson! <http://www.clemson.edu/cafls/ecology>) to enhance ecology teaching, research, and outreach at Clemson University. Utilizing the collective ecological expertise of faculty from various discipline areas (plant ecology, marine ecology, vertebrate ecology, microbial ecology, restoration ecology, and conservation biology) enhances teaching and research to provide Clemson students with a strong ecological background and understanding of biodiversity from the individual organism to ecosystem level. Research and dissemination of solutions to some of our most challenging environmental and ecological issues is also a focus of the working group's efforts.

Forest Resource Management (B.S.)/Forest Resources (M.F.R., M.S., Ph.D.) (B.S. 74 students, M.F.R./M.S. 11 students, Ph.D. 9 students; Spring 2016)

The Department's forestry programs focuses on teaching, research, and outreach in forest ecology and management. The program offers a B.S., M.S., M.F.R. (Master of Forest Resources), and a Ph.D. in Forest Resources. The B.S. degree program is accredited by the Society of American Foresters and combines a broad education in the arts and sciences providing the necessary foundation for the scientific and applied management of forest for various resources, products, and services. Graduates with a B.S. in Forest Resource Management are qualified for a broad spectrum of employment opportunities in the public and private sectors as managers and administrators working in forest-based businesses; as technical specialists in the production of timber, usable water, wildlife, aesthetic values, and

recreational uses of forests; or as professionals in other areas where the conservation of natural resources is a concern. The Department's forestry faculty are engaged in research on a variety of topics such as sustainable forest management, production forestry, and integration of forest and wildlife habitat management. Research partnerships with the U.S. Forest Service Silviculture Research Unit and the National Council for Air and Stream Improvement, Inc., located at Clemson University and within the Department, enhances the Department's capacity for teaching, research, and outreach in forest ecology and management. The 17,500 acre Clemson Experimental Forest, located adjacent to the main Clemson campus, provides an outdoor classroom for teaching, research, and outreach efforts. The Department is part of an active forestry outreach effort, led by the Extension Forestry and Natural Resources Team, which develops and targets educational programs toward private landowners on topics such as forest management, forest productivity and profit, taxation, forest sustainability, urban forestry, and invasive species management. Unique efforts, such as the distance education program Master Tree Farmer targeted toward landowners interested in managing their forests for timber and other resources, are a part of the forestry outreach program.

Wildlife and Fisheries Biology (B.S., M.S., Ph.D.) (B.S. 162 students, M.S. 26 students, Ph.D. 16 students; Spring 2016)

The Wildlife and Fisheries Biology program in the Department is focused on conservation issues that face wildlife and fisheries resources in our state, region, nation, and globally, with faculty and students working in Africa, Asia, the Caribbean, and many other parts of the world. The program has a strong teaching, research, and outreach component supported by faculty and staff with a diversity of expertise. Increased interest in wildlife and fisheries conservation requires highly qualified students in the areas of wildlife, fisheries, natural resources planning, management, monitoring, education, research, policy, and regulatory matters. The Department offers a B.S., M.S. (Thesis and Non-Thesis option), and Ph.D. degree in Wildlife and Fisheries Biology that provides a solid foundation for wildlife and fisheries ecology and management, basic and applied sciences, communication skills, and the social sciences. The program provides opportunities for students to receive credit for field training and experience with a variety of conservation and natural resources organizations through internships, creative inquiry, and study-abroad wildlife conservation courses. Students also have the opportunity for professional certification through The Wildlife Society. Graduate projects focus on applied wildlife and fisheries conservation and research issues on a state, regional, national, and international level. Exceptional B.S. students also have an option to pursue a M.S. degree in Wildlife and Fisheries Biology during their junior year as part of a B.S. to M.S. degree track. The research program in wildlife and fisheries is an interdisciplinary approach supported by departmental faculty and cooperating units that focuses on conservation issues affecting a variety of wildlife and fish

species and habitats not only in South Carolina, but across the world. Faculty routinely publish their work and findings in leading academic journals. Forestry and Environmental Conservation is the host department for the USGS South Carolina Cooperative Fish and Wildlife Research Unit, which is an integral part of our graduate program. Unit scientists function as graduate faculty members and conduct applied research in wildlife, fisheries, and natural resources primarily through graduate students, teaching and advising graduate students, and provide technical assistance to agency collaborators. The U.S. Forest Service Threatened and Endangered Species Research Unit, and the National Council for Air and Stream Improvement, Inc. are additional cooperative units within the Department that enhance wildlife research and students' educational experience. The Department is also part of a cooperative agreement with the South Carolina Department of Natural Resources (the state wildlife and fisheries agency), to facilitate cooperative efforts in teaching, research, and outreach in wildlife and fisheries conservation. The outreach component of the wildlife and fisheries program focuses on private landowners and provides the latest research-based information for management of wildlife and fish and their habitats. These programs, led by the Extension Forestry and Natural Resources Team, emphasize wildlife and fisheries conservation in managed systems (forestry and agricultural production), mitigation of human-wildlife conflicts through wildlife damage management techniques, maintenance and enhancement of biodiversity in managed landscapes, and urban wildlife management. Unique efforts, such as the distance education program Master Wildlifer that provides landowners with the latest research-based information to manage their lands for wildlife and fisheries, are also part of the outreach program.

Appendix 2. Faculty and Staff

<u>Faculty¹</u>	<u>Area of Specialization</u>	<u>Appointment</u>
Dr. George Askew	VP PSA, Dean CALFS, Forest Genetics	Administration 100%
Dr. Rob Baldwin	Lund Endowed Chair, Conservation Biology/GIS/ Landscape Ecology	Teaching 50%, Research 50%
Dr. Kyle Barrett	Ecology/Biodiversity Conservation/Water/Wildlife	Teaching 50%, Research 50%
Dr. Alex Chow	Soil and Water Chemistry/Biogeochemical/Ecosystem Health (BICEFS ²)	Research 100%
Dr. William Conner	Forested Wetlands/Forest Ecology/Silviculture (BICEFS)	Research 100%
Dr. Jamie Duberstein	Forested Wetlands/Microtopography/Hydrology/Soils (BICEFS)	Research 100%
Dr. Rickie Davis	Wildlife Biology/Extension	Teaching 50%, Extension 50%
Dr. Troy Farmer	Fisheries Ecology	Teaching 50%, Research 50%
Dr. Larry Gering	Forest Measurements/GIS/GPS	Teaching 100%
Dr. Susan Gynn	Continuing Education Coordinator	Extension 100%
Dr. Don Hagan	Forest Ecology/Forest Soils/Invasion Ecology	Teaching 75%, Research 25%
Dr. Patrick Hiesl	Forest Harvest Systems, Procurement	Teaching 50%, Research 50%
Dr. Cathy Jachowski	Wildlife Ecology	Teaching 50%, Research 50%
Dr. David Jachowski	Wildlife Ecology	Teaching 50%, Research 50%
Dr. Patrick Jodice	USGS Unit Leader, Wildlife (Avian) Ecology/Conservation Biology/Energetics	Research 100%
Dr. Alan Johnson	Ecological Modeling/Ecological Risk Assessment	Teaching 80%, Research 20%
Dr. Bob Jones	Provost, Forest Ecology	Administration 100%
Dr. Richard Kaminski	Director of the Kennedy Waterfowl and Wetland Conservation Center, Waterfowl & Wetlands Ecology/ Habitat Conservation (BICEFS)	Research 100%
Dr. Puskar Khanal	Forest Economics	Extension 50%, Teaching 50%
Dr. Drew Lanham	Distinguished Alumni Professor, Wildlife (non-game) Ecology/Management	Teaching 35%, Research 65%
Dr. Pat Layton	Director of Wood Utilization and Design Institute	Administration 80%, Teaching 10%, Research 10%
Dr. Patrick McMillan	Hillard Endowed Chair; Director, SC Botanical Garden,	Extension 78%, Teaching 22%

	Bob Campbell Geology Museum and Clemson Experimental Forest	
Dr. Elena Mikhailova	Soil Genesis and Classification/Pedology	Teaching 50%, Research 50%
Dr. Marzieh Motallebi	Ecological Services/Economics (BICEFS)	Research 100%
Dr. Thomas O'Halloran	Ecological Sensing (BICEFS)	Research 100%
Dr. Brandon Peoples	Fisheries Ecology	Teaching 50%, Research 50%
Dr. Chris Post	GIS/Environmental Information Science	Research 60%, Teaching 40%
Dr. Thomas Rainwater	Wildlife Biology (reptiles, birds, and mammals)/ Environmental Pollution (BICEFS)	Research 100%
Dr. John Rodgers	Ecotoxicology/Risk Mitigation/Wetlands/Aquatic Ecology	Research 80%, Teaching 20%
Dr. Shari Rodriguez	Human – Wildlife Dimension, Wildlife Conservation	Teaching 50%, Research 50%
Dr. Beth Ross	USGS Assistant Unit Leader, Wildlife Population Demography and Community Dynamics	Research 100%
Dr. Bo Song	Landscape Ecology (BICEFS)	Research 100%
Dr. Tom Straka	Forest Economics	Teaching 41%, Research 59%
Dr. Skip Van Bloem	Director of BICEFS, Disturbance Ecology (BICEFS)	Administration 100%
Dr. Geoff Wang	Silviculture/Forest Ecology/Fire Ecology	Teaching 25%, Research 75%
Mr. Rick Willey	4-H Natural Resources/Extension	Teaching 50%, Extension 50%, Lecturer support in PRTM
Dr. Greg Yarrow	Department Chair, Wildlife Ecology and Management/ Human-Wildlife Conflicts	Administration 100%

¹Includes Regular, Special Faculty, and Research Scientists.

²Located off campus at the Baruch Institute for Coastal Ecology and Forest Science (BICEFS)

Staff

Ms. Vickie Byko
Dr. Wayne Chao
Ms. Brenda Green

Responsibility

Departmental administrative support
Analytical and laboratory support
Shared between two departments. Accounts management for the Department, and the Department of Agricultural and Environmental Sciences

Ms. Jennifer Hooper	Shared between two departments. HR for the Department, and the Department of Agricultural and Environmental Sciences
Ms. Andrea Kesler	Administrative support for the Chair and the Department
Ms. Amy Sanders	Student Services Coordinator for the Department
Mr. Michael Stephens	Vehicle Fleet Manager, laboratory safety, inventory
Ms. Charlotte Swafford	Shared between two departments. Accounts management for the Department, and the Department of Agricultural and Environmental Sciences
Ms. Carolyn Wakefield	USGS Unit administrative support

Appendix 3. Faculty and Staff 4-year Hiring Plan

Faculty

2017-2018	2018-2019	2019-2020	2020-2021
Rickie Davis retires 12/2017. Salary line roles over to Cathy Jachowski as part of targeted spousal hire.	Larry Gering retires 12/2019. Salary line to hire a biometrician faculty.	Tom Straka retires 1/2020. Salary line to hire a forest economist/management faculty.	William Conner retires 12/2020. Salary line to hire a forest wetland ecologist faculty.
Fisheries/Aquatic Ecology Assistant Professor 50/50 T&R (search underway) replacement for Yoichiro Kanno who leaves August 2107			
Forest Health Assistant Professor 50/50 T&R. High priority hire requires new funding from the Provost Office.			
Forest Wood Products Assistant Professor 50/50 T&R, \$100,000 startup already secured.			

High priority hire requires new funding from the Provost Office.			
Packet submitted to the legislature to hire 2 Extension Forestry Specialist/Faculty, 1 Extension Wildlife Specialist/Faculty based on campus.			
Fisheries Research Scientists (split appointment with Dr. Mark Scott, SCDNR). Teach and research, minimal investment. Should complete fisheries program hires.			

Staff

2017-2018	2018-2019	2019-2020	2020-2021
Grants Writer, funded 3 years by VPR, afterwards off grants	Departmental Technician		Wayne Chao retires 1/2021

Positions that Require New Investment by the Provost Office in Order of Priority

1. Assistant Professor Forest Health (see above) – Critical in teaching required courses (FOR 4130 Integrated Forest Pest Management, FOR 4131 Lab, and FOR 2210 Forest Biology) and research in invasive species management. Currently being taught by a Ph.D. student, Adam Coates.
2. Assistant Professor Wood/Biomass Products (see above) – Critical in teaching Wood and Paper Products FOR 4080 and supporting the Wood Products Minor and research in collaboration with the Wood Utilization and Design Institute.
3. Assistant Professor Watershed Ecologist
4. Assistant Professor Wildlife Disease Ecologist
5. Assistant Professor Habitat Ecologist
6. Assistant Professor Wildlife Physiology/Nutrition
7. Assistant Professor Conservation Genetics

Positions Lost and Not Filled Since 2008

<u>Name/Rank</u>	<u>Description/Split</u>	<u>Status</u>	<u>Disposition</u>
1. Roy Hedden/Professor	Forest Management/Pest Management 50% E&G, 50% PSA	Retired 6/27/08	Vacant
2. Rockie English/Assoc. Professor	Aquatic Ecology/Stream Restoration 18% E&G, 82% PSA	Retired 7/1/15	Search Underway
3. Tom Schwedler/Professor	Aquaculture/Fisheries 51% E&G, 49% PSA	Retired 12/26/08	Vacant
4. Jeff Foltz/Professor	Fish Management 100% E&G	Retired 6/30/10	Vacant
5. Andy Lee/Professor	Wood Products 50% E&G, 50% PSA	Retired 10/1/12	Vacant
6. John Sweeney/Professor	Wildlife Ecology/Management 92% E&G, 8% PSA	Retired 1/30/09	Vacant
7. Tammy Cushing/Assist. Professor	Forest Management/Taxation 18% E&G, 82% PSA	Left 6/3/14	Search Underway
8. William Bowerman/Professor	Wildlife Toxicology/Disease	Left 7/1/11	Vacant

9. Karen Hall/Lecturer	50% E&G, 50% PSA Natural Resources/Master Naturalist 100% PSA	Left 6/22/13	Vacant
10. Ron Johnson/Professor	Wildlife-Agriculture Interactions 50% E&G, 50% PSA	Left 3/1/13	Vacant
11. Pat Layton/Professor	Forest Policy/Communications 100% E&G	Administration	Vacant
12. Jack Whetstone/Res. Assoc.	Pond Management/Invasive Species 100% PSA	Retired 6/30/10	Vacant
13. David Guynn/Professor	Forest Wildlife 29% E&G, 71% PSA	Retired 12/31/09	Vacant
14. Greg Yarrow/Professor	Wildlife Ecology/Management/Damage 50% E&G, 50% PSA	Administration	Vacant

Appendix 4. Budget

Current annual operating budget allocated to run the department includes \$101,106 (PSA), \$192,000 (E&G), and \$40,200 (lab fees). This does not include salaries or revenue generated from summer sessions, distance education, or indirects.

Many of the goals and objectives of our strategic plan require only an investment of time by faculty, staff, and the Department Chair. Listed below are items in the plan that will require additional costs to the Department. Also listed are possible sources of revenue to off-set these costs.

<u>Positions</u>	<u>Estimated Cost</u> (Salary/Fringe/Startup)	<u>Source of Support</u>
1. Assistant Professor Forest Health (9-month)	\$ 75,000/22,575/100,000	Provost Office
2. Assistant Professor Wood Products (9-month)	\$ 75,000/22,575/100,000	Provost Office
3. Extension Silvicultural Specialist (12-month)	\$ 90,000/32,670	Legislature
4. Extension Invasive Species Specialist (12-month)	\$ 90,000/32,670	Legislature
5. Extension Wildlife Specialist (12-month)	\$ 90,000/32,670	Legislature
6. Assistant Professor Watershed Ecologist	\$ 75,000/22,575/100,000	Provost Office
7. Assistant Professor Disease Ecologist	\$ 75,000/22,575/100,000	Provost Office
8. Assistant Professor Habitat Ecologist	\$ 75,000/22,575/100,000	Provost Office
9. Assistant Professor Wildlife Physiology/Nutrition	\$ 75,000/22,575/100,000	Provost Office
10. Assistant Professor Conservation Genetics	\$ 75,000/22,575/100,000	Provost Office
11. Fisheries Research Scientist (SCDNR split)	\$ 20,000/6,020	Department
12. Grants Coordinator/Writer	\$ 50,000/15,050	VP Research (3 years)
13. Departmental Technician	\$ 50,000/15,050	Departmental
 <u>Initiatives</u>		
Departmental student recruiting budget	\$10,000/year	Department
Recognition of outstanding faculty/staff	\$10,000/year	Department
Professional development of faculty	\$40,000/year	Department

Professional development of staff
Increase TA numbers/salary
Increase lab fee returns by 25%
Faculty retention

\$10,000/year
\$30,000/year
\$10,000/year
As needed

Department
Provost Office
Provost Office
Provost, CAFLS,
Department