

**V(A). Planned Program (Summary)**

**Program # 3**

**1. Name of the Planned Program**

Natural Resource Management

Reporting on this Program

**V(B). Program Knowledge Area(s)**

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	20%	0%	0%	30%
112	Watershed Protection and Management	35%	0%	61%	20%
122	Management and Control of Forest and Range Fires	10%	0%	0%	0%
123	Management and Sustainability of Forest Resources	10%	0%	13%	0%
131	Alternative Uses of Land	5%	0%	0%	20%
133	Pollution Prevention and Mitigation	10%	0%	13%	20%
134	Outdoor Recreation	5%	0%	0%	10%
135	Aquatic and Terrestrial Wildlife	5%	0%	13%	0%
	<b>Total</b>	100%	0%	100%	100%

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	20.0	1.0	8.7	1.0
<b>Actual Paid</b>	16.0	0.0	4.7	1.0
<b>Actual Volunteer</b>	0.0	0.0	0.0	0.0

**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
591749	0	310194	223146
1862 Matching	1890 Matching	1862 Matching	1890 Matching
591749	0	371009	179340
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	122414	0

## V(D). Planned Program (Activity)

### 1. Brief description of the Activity

Current Clemson University research will help develop cost-effective technologies that can be deployed throughout the Farm and Forest to both understand the impact of land cover and management on water quality/quantity and to help develop strategies to maximize the efficiency of water use in agriculture and forest production.

Ongoing research is underway to determine the impacts associated with recreational trails on the water quality of streams they intersect with. More research looks to understand the cellular and molecular mechanisms that govern virulence of the food-borne pathogen, *Entamoeba histolytica*. Also, our research on the fate and effects of nanomaterials in aquatic ecosystems is being continued.

Research is being conducted to develop a decision support framework that can be used to choose cyanobacterial bloom monitoring and management options based on application of various decision criteria.

Extension programs sought to inform and involve audiences that directly impact water resource quantity and quality. Nearly 5 million impacts were achieved from direct programming assistance and indirect outreach methods.

Sustainable forest management activities encouraged landowners to develop management plans by providing them with alternative silvicultural systems and methods that are suitable for their individual objectives. Agents and specialists delivered educational programs on wildlife conservation and management on private lands, explored and developed synergistic solutions and techniques to overcome wetland and urban wildlife challenges to the benefit of people and wildlife in South Carolina. Clemson Extension continues to deliver forestry programs through County Forestry Associations and the SC Forestry Commission. Clemson Extension Forestry & Natural Resources Agents offered programs that included the use of herbicides in longleaf management; Urban Species Selection ([www.treessc.org](http://www.treessc.org)); upgrading the Certified Tree Farm Program to provide more tree farm benefits (i.e., landowner involvement, forest education, advocacy and financial sustainability); delivering the US Forest Service Open Space Webinar Series; the online Deer Steward program; the online Forest Roads program; the online Master Wildlifer program; an entomology webinar; Tax School; assisting with logging cost analysis; and teaching forestry ethics. They aided with disease and insect identification, helped landowners with wildlife food plots and provided advice on timber management.

Master Naturalist training was conducted to expand the statewide corps of volunteers who provide education, outreach and service dedicated to the beneficial management of natural resources in South Carolina. Those trained provided 16,398 hours of service. SC Master Naturalists have participated in projects such as the backyard bird count, conducted water quality sampling, assisted youth with 4H20 activities; taught students about the salt marsh ecosystem; and collected, measured, and tagged horseshoe crabs for study. They assist in the delivery of new courses and by taking or leading advanced training classes throughout the state.

Under the 1890 Research Natural Resource Management goal, the researcher presented one paper at a conference as well as published one paper. An environmental research and teaching lab was established on the SC State campus. The researcher reviewed literature and collected existing field measurement data and site characterization information.

**2. Brief description of the target audience**

The target audience includes farm and forest landowners, Extension agents, administrators, natural resource professionals, land management agency personnel, user groups, nature-based tourism operators/industry, South Carolina citizens, tourists, children in school, after-school, summer and 4-H programs, agents and volunteers, urban, suburban and rural residents, farmers, ranchers, poultry and swine producers, foresters urban agents, agency personnel, urban planners and land owners/managers, municipal officials, and local community groups statewide, managers, government officials and recreation and tourism operators.

**3. How was eXtension used?**

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**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	25352	807881	0	0

**2. Number of Patent Applications Submitted (Standard Research Output)**

**Patent Applications Submitted**

Year: 2014  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

<b>2014</b>	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Actual</b>	0	30	30

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Disclosures

<b>Year</b>	<b>Actual</b>
2014	1

**Output #2**

**Output Measure**

- Licenses

<b>Year</b>	<b>Actual</b>
2014	0

**Output #3**

**Output Measure**

- Number of people completing educational workshops

<b>Year</b>	<b>Actual</b>
2014	16502

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of people gaining knowledge.

## **Outcome #1**

### **1. Outcome Measures**

Number of people gaining knowledge.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	16014

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

The Natural Resources Management Program promotes the use of Best Management Practices of forest systems, water, and other natural resources to improve and promote natural resource conservation and productivity in South Carolina. While water resources seem to be abundant in South Carolina, many of the rivers and beaches are suffering from impaired water quality largely from non-point pollution from urban runoff.

#### **What has been done**

Extension partnered with other agencies to conduct a program covering aspects of prescribed burning and the benefits to the ecosystem. Extension Forestry Specialists delivered programs that included on-site tours, the US Forest Service Open Space Webinar series, and the Deer Steward online program and surveys. Over 187,000 forest acres were affected by Extension programs. Master Naturalist volunteers provided 16,398 hours of service, which is valued at \$330,424 in program support. Water quality and/or quantity best management practices were installed as demonstrations.

#### **Results**

Over 6,375 pounds of trash removed from regional waterways. Landowners and producers reported enhanced income opportunities from natural resources. Nearly 5 million impacts were achieved from direct programming assistance and indirect outreach methods. As an example, one contractor-focused program that provides state regulatory certification supported 1,260 jobs and \$57.3M in salary and wages in FY 13-14 for participating technical staff.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation
134	Outdoor Recreation

#### **V(H). Planned Program (External Factors)**

##### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations
- Competing Programmatic Challenges

##### **Brief Explanation**

Efforts have been made to restore the longleaf pine ecosystem within its natural range after the devastating effects of the February 2014 ice storm. Agents represented SC to the USDA Task Force during the Southern Regional Farm Bill symposium.

#### **V(I). Planned Program (Evaluation Studies)**

##### **Evaluation Results**

Of the 16,502 persons attending Natural Resource Management programs, 97% gained knowledge. Over 70% indicated that they used the information that they learned.

##### **Key Items of Evaluation**