Executive Summary

The Ashley Cooper Stormwater Education Consortium (ACSEC) experienced another exciting year of providing stormwater education and involvement opportunities that proved both inspirational and innovative. In reporting Year Five, July 1, 2012 to June 30, 2013, approximately 2.7 million educational impacts were recorded, including 2,641,464 through indirect outreach methods and 92,187 through direct outreach methods.

In Year Five, the ACSEC teamed up with a local television station to conduct street interviews and community news segments in an effort to raise general watershed and consortium awareness. During Year Five, ACSEC internet resources continued to develop; the ACSEC website was revamped to include an events calendar and live ACSEC Facebook feed. A new factsheet series, *H2Ownership*, provided information on water-related issues including illicit discharges and shorescaping.The ACSEC electronic newsletter, *Ripple Effect*, continued to provide information about ACSEC-related activities as readership increased to well over 1000 recipients and archived editions were housed on multiple websites.

During Year Five, additional permanent learning exhibits were created including the Berkeley County Extension Office at Cypress Gardens and a makeover of the Carolina Yard at the Exchange Park in Ladson. These sites, joined by the 15 other permanent exhibits across the Tri-County area, were visited by over 64,000 individuals and provide an important opportunity to learn about stormwater best management practices.

Program efforts became increasingly diversified in Year Five to include online learning and additional involvement opportunities. In the spring of 2013, the Carolina Yards Online Guide to Environmentally Friendly Gardening course was piloted in the Ashley Cooper region. This five-week class taught nearly 40 participants the basics of land based activities to protect water quality while also beautifying communities. In Year Five, Rainwater Solutions, Charleston County Government and Carolina Clear partnered to host the inaugural ACSEC rain barrel sale and 150 rain barrels were sold to the general public at a discounted price. Furthermore, the ACSEC hosted five rain garden workshops as part of public programming and training for Master Gardeners and Master Naturalist.

Guinn Garrett joined the Clemson Carolina Clear program in December 2012, and began working alongside Kimberly Counts to co-coordinate the ACSEC. Lastly, on May 17, the ACSEC recieved a Captain Pride Award from Community Pride,Inc. for efforts undertaken to improve the environment.

Kim Counts & Guinn Garrett
Water Resources Agents

Kim and Guinn are Water Resources Agents for the Clemson Carolina Clear program, and work to co-coordinate the Ashley Cooper Stormwater Education Consortium. Kim's professional interests include rainwater harvesting, rain gardens, native plants and community involvement projects. Guinn's professional interests include water quality monitoring, stormwater pond management and commercial and construction best management practices. In their spare time, Kim and Guinn can both be found outside enjoying SC's water resources.

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Year Five Highlights

- In Year Five, Guinn Garrett was hired as a Water Resources Extension Agent for the Clemson Carolina Clear program and serves as co-coordinator of the ACSEC. Guinn previously worked for the Town of Mount Plesant as the National Pollutant Discharge Elimination System Program Coordinator.
- In a street interview segment, the ACSEC teamed up with the local Fox News channel to ask the local public about their definition of a watershed. Answers were compiled into a one minute commercial that aired on Fox and MyTV, as well as YouTube.
- In Spring 2013, the Carolina Yards Online Guide to Environmentally Friendly Gardening class was piloted with nearly 40 participants. This five week online course was designed to help Carolina gardeners learn to grow and maintain an aesthetically pleasing landscape that also considers water quality and environmental impacts.
- In the spring of 2013, the ACSEC partnered with Rainwater Solutions to offer Ivy rain barrels at a discounted price to residential audiences. Ivy rain barrels were made available through a general public rain barrel sale as well as select ACSEC programming. Through this effort, nearly 200 individuals began harvesting rainwater or expanded their existing systems in the Ashley Cooper region.
- On May 17, 2013, the ACSEC recieved a Captain Pride Award from Community Pride, Inc., a non-profit organization that promotes environmental stewardship among all citizens of Charleston County. Community Pride, Inc. provides awards on an annual basis and has done so for over 40 years.

TOTAL OUTREACH ACTIVITIES AND TOTAL NUMBER REACHED (*estimated*)

1. ACSEC internet resources including ACSEC E-newsletter, Facebook page, new factsheet series and updated website. **NUMBER REACHED: 76,401**
2. Mass media campaign including "What is a Watershed" street interviews, billboard roations, radio, and communitiy pieces on local news channels. **NUMBER REACHED: 1,496,393**
3. Permanent demonstration sites across the Ashley Cooper region demonstrate diverse best management practices for protecting water quality. **NUMBER REACHED: 64,200**
4. ACSEC representation at fairs and festivals, providing information on ACSEC and ways to protect water quality. **NUMBER REACHED: 131,450**
5. Diverse array of public workshops, trainings, presentations and conferences pertaining to stormwater. **NUMBER REACHED: 11,726**
6. ACSEC public involvement opportunities including rain garden installations, storm drain marking, litter sweeps, oyster reef construction, water quality monitoring and rain barrel sales. **NUMBER REACHED: 10,041**

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

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Community Partners

The majority of designated Small Municipal Separate Storm Sewer Systems (SMS4) communities in the Charleston Urbanized Area, representing approximately 90% of the population, have committed to the ACSEC regional collaboration. These communities are represented by a dedicated group of public servants who have been engaged for many years in building the partnership.

Local SMS4 Consortium Representatives

SMS4	Consortium Representatives
Berkeley County	Clint Busby, Sonia Shahnaj
Charleston County	Charles Jarman, Nilesh Desai, Stuart Ruelle
Dorchester County	Jack Ellis
City of Charleston	Fowler Del Porto
City of Folly Beach	Inter-Governmental Agreement (IGA) with Charleston County
City of Goose Creek	Steve Price, Chick Foster
City of Isle of Palms	Represented by Charleston County via IGA
Town of Lincolnville	Represented by Charleston County via IGA
City of North Charleston	Mike Dalrymple, John Peckham, Merry Barton
Town of Sullivan's Island	Represented by Charleston County via IGA
Town of Summerville	Ross Cornette

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Education Partners

Collaboration is integral in developing and delivering a successful watershed-scale outreach program that reaches diverse audiences. The ACSEC is fortunate to have a variety of organizations in the Charleston Tri-County region that have joined the effort. Education partners include universities, state and local government agencies, utilities and non-profits. Each brings unique expertise, resources, ideas and programs to the ACSEC. The ACSEC fosters communication among organizations and programs are being created or enhanced through this cooperative effort.

Carolina CLEAR — A Public Service of Clemson University

CLEMSON COOPERATIVE EXTENSION

Sea Grant — S.C. Sea Grant Consortium

ACE Basin — National Estuarine Research Reserve

Keep Charleston Beautiful

South Carolina Department of Natural Resources — DNR

South Carolina Oyster Restoration and Enhancement Program

Charleston County Park & Recreation Commission — Where Fun Comes Naturally!

SURFRIDER FOUNDATION — CHARLESTON CHAPTER

ADOPT A HIGHWAY

Charleston Conservation District

COLLEGE of CHARLESTON

The South Carolina Native Plant Society 1996

The Sustainability Institute

CENTER for WATERSHED EXCELLENCE — Clemson University Restoration Institute — CLEMSON UNIVERSITY INSTITUTE of APPLIED ECOLOGY

South Carolina CLEAN MARINA

South Carolina Aquarium

Charleston Water System

RECYCLE — CHARLESTON COUNTY

BERKELEY COUNTY BCWS WATER & SANITATION

KEEP DORCHESTER COUNTY BEAUTIFUL — Be like Ollie the Otter and, "Make recycling part of your HABITat"

Lowcountry EARTH FORCE

CHARLESTON WATERKEEPER®

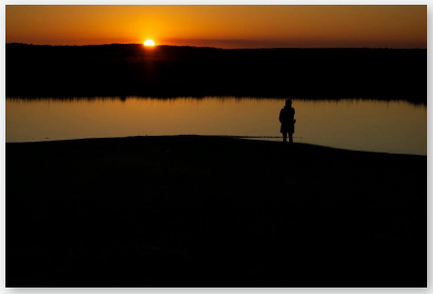
Mission and Goals

ACSEC MISSION STATEMENT

Improve water quality within the Ashley and Cooper River basins by providing educational opportunities on stormwater impacts and on our community roles in supporting healthy, fishable, and swimmable waterways.

PROGRAM GOALS

- Develop and implement an education plan that defines a cohesive education strategy which outlines target audiences and associated target pollutants relevant to the region using a prioritized approach.
- Facilitate compliance with existing and future educational regulatory requirements by capitalizing on local resources and service providers.
- Foster citizen involvement in stormwater management through ACSEC education and participation programs.
- Encourage behavioral change towards environmental quality improvement through stormwater education.
- Utilize mainstream and developing technologies and tools to maximize citizen exposure to ACSEC stormwater goals and objectives.
- Create an interactive reporting process to facilitate information exchange and dissemination among member entities.



"Humanity is not apart from, but rather must be a vital part of the balanced environmental equation. We should be neither conquerors who control the land, nor tourists just passing through." - Robert M. Thomas, 1995 Wetlands Award Nominee.

"Water is the driving force of all nature." - Leonardo da Vinci

Annual Report of Activities Format

The annual report utilizes the same general format as the previous four ACSEC reports and the other regional stormwater consortiums in South Carolina. This annual report, the fifth for the Consortium, is intended to give the reader a comprehensive look at the ACSEC from July 1, 2012 to June 30, 2013. This report delineates activities into public education and public involvement categories. For each activity, a brief description is provided as well as information on lead provider, supporting partners, date, number of impacts, and target audiences. Public education activities are identified as either direct or indirect outreach strategies.

Clemson University Carolina Clear developed an online database in the first ACSEC reporting cycle to record detailed information on activities conducted by consortium partners. The data collected in the online database includes information on target audiences, pollutants, activity type, lead service providers, supporting partners, number of impacts, location and several other categories. This annual report provides a condensed version of the information collected in the online database as well as additional, supplementary information sourced from ACSEC partners.

The activities in the report are listed in table format. Due to space limitations, target audiences are abbreviated as follows:

Target Audience Abbreviations

GP	General Public
R	Residential-Homeowners and Renters
YT	K-12 Youth and Teachers
HE	Higher Education
T	Technical Engineers, Contractors, Developers, Staff
EA	Elected and Appointed Officials and High Level Staff
C	Commercial
SP	Stormwater Pond Managers
B	Boat Owners, Operators, and Marinas
P	Pet Owners

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Year Five Highlights

Welcome Guinn Garrett

Clemson's Carolina Clear program hired Guinn Garrett in December 2012 to serve as a Water Resources Extension Agent to the Berkeley, Charleston, and Dorchester counties as well as to serve alongside Kim Counts as co-coordinator of the ACSEC.

Guinn comes to the ACSEC from the Town of Mount Pleasant, where she worked as NPDES Coordinator in the Stormwater Division of the Public Services Department. While at the Town of Mount Pleasant, Guinn assisted in the implementation of the Town's Stormwater Management Plan. Guinn gained experience in implementing best management practices (BMPs) in a variety of targeted areas and enjoyed organizing outreach and participation opportunities for Town residents. Guinn also helped coordinate the land disturbance permit program at Mount Pleasant and handled a portion of the Town's inspections for construction projects. Guinn is a Certified Erosion Prevention and Sediment Control Inspector (CEPSCI), a Certified Stormwater Inspector, and trained in OSHA Level II Hazardous Materials Operations. Prior to her work with the Town of Mount Pleasant, Guinn spent time as a laboratory technician at Mount Pleasant Waterworks and conducted a portion of the utility's drinking water and wastewater analysis, and developed the laboratory's standard operating procedures for the analysis of several regulated water quality parameters.

Guinn grew up in Atlanta, Georgia and attended Furman University in Greenville, SC, where she obtained a Bachelor of Science in Earth and Environmental Science in 2007. In 2010, Guinn graduated with a Master of Science in Environmental Studies degree from the College of Charleston where she completed a thesis exploring the use of end-member mixing analysis to identify sources to stream flow in lowland watersheds of coastal SC. A portion of Guinn's research, entitled "Groundwater-Surface Water Interactions in a Lowland Watershed: Source Contribution to Stream Flow" was published in 2012 in the scientific journal *Hydrological Processes*.

Guinn is excited to collaborate with ACSEC partners in promoting watershed stewardship and water resource protection in the Tri-County.

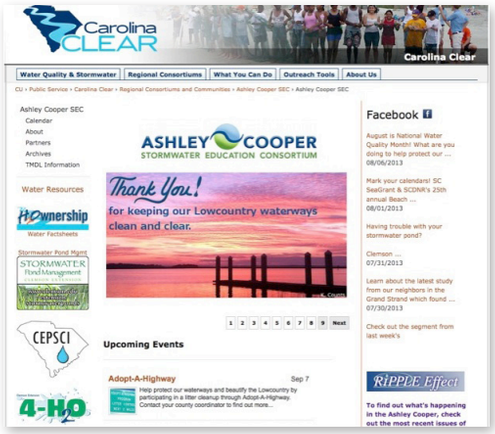
Public Education

Public education activities are classified into two broad categories, **direct** and **indirect** outreach methods, to express mechanisms by which information has been communicated to the public. Direct methods include activities that are implemented via direct personal contact. Examples of direct methods include workshops, presentations, trainings and public involvement activities. In contrast, indirect outreach methods refer to contacts through traditional media channels including television, radio, print and billboards. Indirect methods generally reach a much greater portion of the population due to the nature of their mediums; however, it is often more difficult to gauge specific impacts. Whereas when dealing with direct methods, smaller numbers of people are reached yet the ones that are reached generally provide a forum for direct evaluation and feedback. Each method is important in the overall education campaign, and are part of the five year educational strategy for the ACSEC. Throughout the document, the words "direct" or "indirect" are provided at the top of each reporting table to indicate which category an effort belongs.

Data provided are as accurate as possible and are reviewed by multiple individuals involved in the reporting process. However, due to the nature of indirect outreach initiatives, indirect impact numbers are often estimates.

Internet (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	Clemson University	Website: Clemson Extension (storm-water related only), Carolina Clear, and ACSEC websites: Impacts are based on Google Analytics page views.	Continuous	61,906	GP, R, P, SP, T, B, C, YT



WEBSITE: *The ACSEC website is part of the Carolina Clear website, which continues to add new features and resources for the public. For example, in Year Five, the website added links to H2Ownership factsheets. The ACSEC website also includes archived information including annual reports, meetings, as well as the ACSEC Strategic Education Plan. In Year Five, an online calendar was added to the ACSEC website as well as archived editions of the ACSEC e-newsletter, the "Ripple Effect." Also available through Clemson Extension is a Stormwater Pond Management website and the Carolina Yard website. The Stormwater Pond Managment website provides targeted information for pond function and water quality protection, while the Carolina Yard website serves as a gateway to information on BMPs for an environmentally friendly lawn and garden.*

Internet (Indirect) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	ACSEC Education Partners and SMS4s	ACSEC Electronic Newsletter: *Ripple Effect*: Bi-monthly Consortium e-newsletter.	Bi-monthly (6 editions total)	1,170	GP, R, HE, EA, P, T, B, C, YT, SP

ELECTRONIC NEWSLETTER: *The ACSEC e-newsletter "Ripple Effect" was designed to provide awareness of ACSEC-related activities, including past, ongoing and future events. The "Ripple Effect" also includes links to pertinent electronic resources providing information on good stewardship practices. "Ripple Effect" is issued on a bi-monthly basis. ACSEC community and education partners are encouraged to submit information for inclusion in the "Ripple Effect" and also to distribute the e-newsletter to others. "Ripple Effect" is archived on multiple partner websites therefore, number of impacts is likely underestimated. Archived editions can be viewed at www.ashleycooper.org.*

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	ACSEC Education Partners	ACSEC Facebook Page: Provides daily/weekly information regarding ACSEC activities, news and events.	Continuous	13,325	GP, R, HE, EA, P, T, B, C, SP, YT

ACSEC FACEBOOK PAGE: *As social media becomes an increasingly effective tool in day to day communication, a Facebook page was established for the ACSEC in Year Four. The page provides time sensitive information including camp and workshop registration deadlines, volunteer opportunities, watershed stewardship reminders and other pertinent news items. The ACSEC Facebook page is visually driven, utilizing photographs to provide awareness of Consortium-related activities and information. Facebook allows for an additional avenue for communication as followers may post to the page or message the administrators (ACSEC co-coordinators).*

During Year Five, 178 people followed the ACSEC Facebook page, 127 posts were made totaling 13,325 "views." Average Facebook views were 104 per post.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Television (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Public Service	SC Education Television (ETV), Clemson Carolina Clear	Television: *Making It Grow*: Award-winning weekly one-hour TV program on ETV. Live call-in show airs Tuesday evenings from 7-8PM and answers home gardening and landscape questions from around South Carolina. New to Year Five, a member of the Clemson Carolina Clear team is on the show weekly to highlight water-related stewardship practices and address questions concerning best management practices for protecting water quality.	Continuous	600,000	GP, R
Clemson Carolina Clear	Fox 24 News	Television: *Street Interviews*: Street interviews were conducted in Summerville, North Charleston, Goose Creek, and Charleston to ask passers-by, "What is a Watershed?" Answers were compiled into a one minute segment which concludes with a message about Tri-County watersheds (see highlight p.10). Aired on Fox News, MyTV and YouTube.	Continuous	245,000	GP
Clemson Carolina Clear	Fox 24 News	Television: *Community Piece*: In partnership with local Fox News, interview segments were filmed and aired on stormwater related topics including proper fats, oil and grease disposal and residential BMPs for protecting water quality.	October 30, 2012; November 20, 2012; May 7, 2013	145,575	GP
Clemson Carolina Clear		Television: "We Al Live Downstream" commercial segment. Mass media campaign highlighting the connection between clean water and quality of life in SC	July to November, 2012	245,000	GP

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Radio (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Public Service	SC ETV	Radio: *Your Day*: One hour weekly radio program on NPR.	Continuous M-Th Noon-1PM	30,000 state-wide each week	GP

RADIO: *"Your Day" is a radio program produced as a public service of Clemson University Radio Productions, featuring a wide range of topics of interest to South Carolina residents and visitors alike. Each Monday through Thursday at noon, "Your Day" provides programming in the NPR tradition, but with a South Carolina flavor. Recurring programs highlight horticulture, entomology, pesticides and natural resources. For Year Five, program segments of particular water resources relevance included the following:*

August 8, 2012	If Storm Drains Could Talk
September 3, 2012	The Importance of Septic System Maintenence
September 17, 2012	Rain Gardens and Rain Barrels
October 15, 2012	Preventing Water Pollution
November 12, 2012	If Storm Drains Could Talk
December 17, 2012	Water Resources Issues in SC

December 31, 2012	The Importance of Septic System Maintenance
January 28, 2013	Water Resources in SC
February 18, 2013	Protecting Our Rivers
March 4, 2013	Environmental Studies
April 15, 2013	SC's Water Resources
May 20, 2013	Water Policy: One South Carolina Town's Story

Billboards (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		Billboard: ACSEC "We All Live Downstream" billboard located at Highway 17 south of Interstate 26.	July to November, 2012	158,047	GP
Clemson Carolina Clear		Billboard: ACSEC "We All Live Downstream" billboard located at Rivers Ave less than one mile west of Montague	July to November, 2012	72,771	GP

BILLBOARD: *The statewide "We All Live Downstream" billboard was diversified in a series in the Tri-County to emphasize pollutants and behaviors that are of particular importance to the ACSEC region, including: bacteria and proper disposal of pet waste, auto oil and recycling, and greater awareness of storm drains and their connection to waterways. The billboards were featured in high profile locations including Interstate 26. The billboard rotation concluded November 1, 2012. Number of impacts represents daily estimated counts.*

Year Five Highlights

ACSEC Street Interviews

In the fall of 2012, the ACSEC partnered with Fox24/MyTV to launch and create the "Street Interview" series, a new outreach strategy. As part of the ACSEC mass media campaign, the crew traveled throughout the Ashley Cooper region to find out what residents know about their relationship with our waterways. Footage of the interviews is compiled into a one-minute segment that incorporates a positive message on stormwater pollution prevention.

During the first segment, filmed on October 24, 2012, the ACSEC traveled to Summerville, Goose Creek, and downtown Charleston to ask, "What is a Watershed?" The answers were compiled with a take-away message on protecting Tri-County watersheds into a one-minute segment that aired on Fox24 news and MyTV local channels. The segment was shown during news and sports coverage, as well as during evening prime time in November and December 2012. Total impacts from this first segment are 245,000 potential viewers.

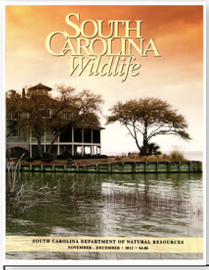
The second segment of the ACSEC "Street Interview" series was filmed on March 10, 2013 and asked Summerville, North Charleston, and downtown Charleston residents, "Where does stormwater go?" The interviews were concluded with a message on the importance of preventing stormwater pollution and directed viewers to learn more at the ACSEC website. The one-minute segment was aired in July 2013 on Fox24/MyTV and potential impacts will be included in the Year Six report.

The interview segments have offered a unique way to reach out to the general public and engage them in learning behaviors to minimize impacts on water resources. To view both segments in the "Street Interview" series, visit the Carolina Clear YoutTube page at: http://www.youtube.com/CarolinaClear.

Publications (Indirect)

ARTICLES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Post and Courier	Keep Charleston Beautiful	ARTICLES: Newspaper: "Keeping Greens Green"	August 11, 2012	96,005	GP, R
Post and Courier	Clemson Extension	ARTICLES: Newspaper: "Plant This Not That"	September 23, 2012	96,005	GP, R, C
SC Wildlife Magazine	SC DNR, SC Sea Grant, Clemson Carolina Clear	ARTICLES: Magazine: "From Seeds to Shoreline"	November/ December 2012	450,000	GP, R, YT



SOUTH CAROLINA WILDLIFE MAGAZINE *The South Carolina Wildlife magazine is a publication of the South Carolina Department of Natural Resources (SCDNR) and highlights South Carolina's unique natural resources, heritage, and outdoor opportunities. South Carolina Wildlife is published six times per year and has been in production since 1954. Subscription to South Carolina Wildlife helps to support the conservation work of SCDNR. The November/December 2012 edition, included an article that highlighted an area youth involvement project entitled "Form Seeds to Shoreline," see appendix page 46.*

Post and Courier	Clemson Carolina Clear	ARTICLES: Newspaper: "Barrels Can Save Rainwater and Money"	December 16, 2012	96,005	GP, R, C
Lakeside Magazine	Clemson Carolina Clear	ARTICLES: Magazine: "Shorescape Your Lake Property"	February 8, 2013	3,000	GP, R
West Of	Clemson Carolina Clear	ARTICLES: Newspaper: "Where Does Your Water Shed?"	March 20, 2013	10,000	GP, R, YT
SC Department of Agriculture	Clemson Carolina Clear	ARTICLES: Newspaper: SC Department of Agriculture's Market Bulleting news-letter, "Rain Barrels"	March 21, 2013	20,000	GP, R, C, T
Lakeside Magazine	Clemson Carolina Clear	ARTICLES: Magazine: "Collect Rainwater to Make Home Chores Easy and Free"	April 5, 2013	3,000	GP, R
Post and Courier	Clemson Carolina Clear	ARTICLES: Newspaper: "Minimize Pollu-tion From Runoff"	April 21, 2013	96,005	GP, R, C, P
Post and Courier	Charleston County, Clemson Carolina Clear	ARTICLES: Newspaper: "Soggy Earth, Chilly Breezes Don't Deter Crowds from Celebrating Earth Day"	April 21, 2013	96,005	GP, R
Soil and Water Conservation District		ARTICLES: Newsletter: *Conservation Corner*: Reports on water quality outreach intiatives	April 2013	1,100	GP, R
Lakeside Magazine	Clemson Carolina Clear	ARTICLES: Magazine: "Are Canada Geese Nuisance?"	June 18, 2013	3,000	GP, R

Outreach Materials (Indirect)

BROCHURES, BOOKLETS, MANUALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	SC DHEC	Booklet: *Carolina Yardstick Workbook*, utlized to highlight Carolina Yards & Nieghborhood principles for residential audiences.	Continuous	170	GP, R, P

The Carolina Yardstick Workbook *provides a guide to the nine principles of the Carolina Yards and Neighborhood (CYN) program. This statewide program provides guidance on environmentally friendly home landscaping to minimize impact on SC's natural resources. The program focuses on techniques for water resource management, including stormwater runoff, and continues to be one of Clemson Extension's primary outreach methods for residential audiences. Workbooks were distributed at public events, individual workshops and presentations.*

Clemson Carolina Clear		Manual: *Rain Gardens-A Rain Garden Manual for South Carolina*: Provides overview and procedures for installing a rain garden in the landscape.	Continuous	250	GP, R
Clemson Carolina Clear		Manual: *Rainwater Harvesting for Homeowners:* Provides an overview and procedures for installing a residential rainwater harvesting system.	Continuous	250	GP, R

Clemson Carolina Clear produced the "Rainwater Harvesting for Homeowners" *and* "Rain Gardens" *manuals specifically for residential audiences in South Carolina. The* Rainwater Harvesting *manual is written to assist homeowners with designing and installing small-scale rainwater harvesting systems, primarily rain barrels. The* Rain Garden *manual provides information on constructing a rain garden and emphasizes the step-by-step planning process including site selection, planting design, and soil preparation. Both manuals are distributed within the Ashley Cooper region during public events, including fairs and festivals, as well as a part of workshops and presentations. The publications are also made available, as a free download, on the Carolina Clear website to best serve the public and water resource protection.*

Outreach Materials (Indirect) continued

POSTCARDS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		POSTCARD: *What is a Rain Garden?*: Provides brief description and purpose of a rain garden and links interested individual to online resources and additional information.	Continuous	200	GP, R, YT
Clemson Carolina Clear		POSTCARD: *Trashing Our Environment:* Provides information on what can be done to prevent litter in SC.	Continuous	200	GP, R, YT
Clemson Carolina Clear		POSTCARD: *What To Do About Pet Waste:* Provides information to pet owners on how to prevent pollution from pet waste.	Continuous	200	GP, R, YT, P
Clemson Carolina Clear		POSTCARD: *We All Live Downstream:* Emphasizes that stormwater is not treated, common ways to prevent stormwater pollution.	Continuous	200	GP, R, YT
Clemson Carolina Clear		*POSTCARD: Septic Systems Care and Maintenance:* Tips for maintaining septic systems to reduce negative impacts on water quality.	Continuous	50	GP, R
Clemson Carolina Clear		*POSTCARD: Better Manage Fats, Oil and Grease:* Provides information on the threat of FOGs and how to properly dipose of to prevent clogs and protect water quality.	Continuous	50	GP, R, C
Clemson Carolina Clear		POSTCARD: *A More Green Way to Clean*: Provides tips on minimizing the impact pressure washing can have on stormwater pollution.	Continuous	50	GP, R, C
Clemson Carolina Clear		POSTCARD: *What is a Rain Barrel?*: Describes a rain barrels purpose and why they are beneficial in the yard as well as for water quality.	Continous	200	GP, R, YT

In the Year Five reporting year, staff representing the ACSEC maintained tables at a variety of events including fairs, festivals, conferences, and meetings. In order to meet the needs for representation at such events, while also providing quality take-home education material, postcards were utilized. Postcards highlighted stormwater topics including rain gardens, litter, pet waste, rainwater harvesting, rain gardens, FOGs, and septic systems. All postcards provide links to find more information online.

Outreach Materials (Indirect) continued

PROMOTIONAL ITEMS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		PROMOTIONAL ITEM: Stormwater Pond Management Sticker: Utilized to promote the Clemson Stormwater Pond Management website.	Continuous	80	P, T, C, R, GP, SP
Clemson Carolina Clear		PROMOTIONAL ITEM: AshleyCooper.org Sticker: ACSEC logo and website utilized to promote website visitation and Consortium awareness.	Continuous	400	GP, R, YT
Clemson Carolina Clear		PROMOTIONAL ITEM: Pocket Ashtray: Encouraged responsible disposal of cigarette butts	Continuous	50	GP, R
Clemson Carolina Clear		PROMOTIONAL ITEM: Chip Clips: Promoted the ACSEC, distributed at public outreach events.	Continuous	150	GP, R, YT
Clemson Carolina Clear		PROMOTIONAL ITEM: Clean Water Hero Bracelets: Promoted water stewardship, distributed to youth during programs.	Continuous	211	GP, YT
Clemson Carolina Clear		PROMOTIONAL ITEM: Thank You! Reusable Bags: Promoted the ACSEC and protecting local waterways.	Continuous	150	GP, R
Clemson Carolina Clear		PROMOTIONAL ITEM: ACSEC Koozies: Promoted the ACSEC, distributed at events and programs.	Continuous	200	GP, R, YT
Clemson Carolina Clear		PROMOTIONAL ITEM: Fish Sponges: Distributed to youth at tabling events and presentations.	Continuous	100	GP, YT
Clemson Carolina Clear		PROMOTIONAL ITEM: Dog Bag Dispenser: Distributed to dog owners at tabling events to remind owners to pick up pet waste.	Continuous	120	GP, R, P
Clemson Carolina Clear		PROMOTIONAL ITEM: Dog Bandanna: Distributed at tabling events to remind owners to pick up pet waste.	Continuous	50	GP, R, P

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Public Education

Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Cooperative Extension	Tri-County Master Gardeners, Clemson Carolina Clear	PERMANENT EXHIBITS DEVELOPMENT: Rain garden demonstration area created at the Berkeley County Extension Office.	Continuous	200	GP, R, YT, HE, T, EA, P, C

In Fall of 2012, Clemson Cooperative Extension, the Tri-County Master Gardeners, Clemson Carolina Clear and members from the general public installed a rain garden at the Berkeley County Extension Office. The rain garden is located at the entry-way to the building and includes interpretive signage. This rain garden demonstration site provides an opportunity to view a rain garden in a residential setting.

Clemson Carolina Clear	Clemson University Research and Education Center (CREC)	PERMANENT EXHIBITS DEVELOPMENT: The "Ed Shed" located at CU's CREC was developed to host educational work-shops. Features include rain gardens, rainwater harvesting, native plants, porous concrete and previous pavers.	Continuous	500	GP, R, YT, HE, T, EA, P, C

The "Ed Shed" located at Clemson University's Coastal Research and Education Center (CREC), provides a demonstration and training area with several examples of stormwater best management practices (BMPs). Pervious hardscapes are one of the BMPs demonstrated at the "Ed Shed" and include pervious pavers and pervious concrete. The site also showcases both above-ground and below-ground rainwater harvesting systems, rain gardens and bioretention cells, and landscaping utilizing native plants and no-till gardening techniques. In reporting Year Five, a gravel-paved grid parking area was completed to showcase another pervious hardscape, as well as an additional rain garden and native plant interpretive signage. To date, various meetings, workshops, and trainings have been held at the "Ed Shed."

Permanent Exhibits (Indirect) continued

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Cooperative Extension	Tri-County Master Gardeners, Clemson Carolina Clear, Exchange Club	PERMANENT EXHIBITS DEVELOPMENT: The Exchange Park in Ladson hosts the *Carolina Yard Living Classroom*. Stormwater BMP features include pervious pavers, a rain barrel, rain garden and landscaping with native plants. This demonstration site is particularly impactful during the Coastal Carolina Fair hosted on Exchange Park grounds during the fall. Clemson Master Gardeners staff the site to answer questions of fair attendees. During the fall of 2012, the rain garden was reshaped and given additional plantings and a solar panel pump was installed on the rain barrel.	Continuous	50,000	GP, R

SC Department of Natural Resources	Clemson Carolina Clear, Charleston County Parks and Recreation Commission	PERMANENT EXHIBITS DEVELOPMENT: *Ft. Johnson Community Garden is* a demonstration garden adjacent to the SCDNR outdoor classroom. Stormwater BMPs present include two rain gardens, a 1500 gallon cistern, native plants and drip irrigation. During the spring of 2013, Master Naturalists revamped the rain garden and SCDNR installed native plant interpretive signage.	Continuous	5,000	GP, R, YT

Permanent Exhibits (Indirect) continued

EXISTING SITES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plants Society	Charles Towne Landing State Historic Site, Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain Garden demonstration site at the Legare-Waring House at Charles Towne Landing State Historic Site. This site includes interpretive signage on rain gardens and is frequented by public both walking the grounds of Charles Towne Landing as well as those visiting for other public and private events.	Continuous	1,000	GP, R
SC Aquarium	Clemson Carolina Clear	PERMANENT EXHIBITS EXISTING: Rain barrel display at the SC Aquarium, located at entrance.	Continuous	1,000	GP, R, YT, HE, T, EA, P, C
Clemson Carolina Clear	Clemson Extension Master Gardeners	PERMANENT EXHIBIT EXISTING: Bowens Island Rain Garden is a 900 square foot large-scale rain garden managing nearly 2000 square feet of roof area runoff. This popular dining destination provides rain garden exposure to the public.	Continuous	1,000	GP, R, C
Clemson Extension, Tri-County Master Gardeners	Clemson University Coastal Research and Education Center, Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: *Urban Research and Demonstration Area (URDA)* is located at the Clemson Coastal Research and Education Center. This site is maintained by Clemson Extension Master Gardeners and includes a rain garden with interpretive signage and highlights native plants for use in home landscaping.	Continuous	1,000	GP, R
Sustainability Institute	Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: The Sustainability Institute's *Green Home Demonstration Site* features stormwater BMP's including pervious concrete walkways and an extensive rainwater harvesting system. Tours are provided to visitors on a weekly basis.	Continuous	300	GP, R, YT, C

Permanent Exhibits (Indirect) continued

SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: The Green Teaching Garden demonstrates stormwater BMPs at the Grice Marine Lab. Features include a rain garden, cistern, multiple rain barrels, composting station, native plants and raised beds. Tours are provided upon request.	Continuous	500	HE, GP, R, YT
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: Rainwater harvesting cistern and pump located adjacent to the Political Science Building on College of Charleston's downtown campus.	Continuous	500	HE, GP, R, YT, C
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: Early Childhood Development Center features rain barrels to raise awareness of water quality sustainability features.	Continuous	100	YT, HE, GP, R

COLLEGE of CHARLESTON

Permanent Exhibits (Indirect) continued

SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		PERMANENT EXHIBITS: SCHOOL INITIATIVES: 300 gallon cistern located at Ashley River Creative Arts School, utilized for raised bed irrigation.	Continuous	100	YT, GP, R
St. Julian Divine Community Center	City of Charleston, Charleston Horticulture Society, Clemson Carolina Clear	PERMANENT EXHIBITS: COMMUNITY CENTER: Two 55 gallon rain barrels were installed at the entry-way to the St. Julian Divine Community Center. The rain barrels are connected to drip irrigation utilized for adjacent landscaping.	Continuous	1,500	GP, YT, R

Farms to Schools Initiative	Clemson Extension, Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: Alston Middle School utilizes harvested rainwater and drip irrigation for raised beds.	Continuous	900	YT, GP
Charleston Children's Garden Project	Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: 300 gallon rainwater harvesting system installed at Stono Park Elementary School.	Continuous	400	YT, GP
Charleston Children's Garden Project	Clemson Carolina Clear	PERMANENT EXHIBITS: SCHOOL INITIATIVES: Mount Zion Elementary School is host to schoolyard sustainability features including compost bins, rain barrels and a rain garden.	Continuous	200	YT, GP

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Public Events (Indirect)

FAIRS AND FESTIVALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	EXHIBITS: *SC Horticulture Industry Tradeshow:* Provided information, gauged interest, and gathered feedback on the Carolina Yards Program from nursery and landscape professionals.	Feb 6-8, 2013	350	C
Charleston Soil and Water Conservation District	Multiple	EXHIBITS: *Southeastern Wildlife Exposition:* Provided informational handouts on water quality, soils, and other conservation topics.	Feb 14-16, 2013	25,000	GP, YT, R, C
Keep Dorchester County Beautiful	Clemson Carolina Clear	EXHIBITS: *Flowertown Festival:* Hosted in downtown Summerville, this well-attended event provides an opportunity to raise awareness of ACSEC efforts within the region and distribute educational and promotional material.	April 6, 2013	100,000	GP, R, YT
Medical University of South Carolina	Multiple	EXHIBITS: *MUSC Earth Day Festival:* This event is hosted on the MUSC campus and multiple ACSEC partners are present to provide pertinent information to MUSC staff, students and general public.	April 16, 2013	1,000	HE, GP, R
Charleston County	Multiple	EXHIBITS: *Charleston County Earth Day Festival*: Seeks to raise awareness of environmental issues in a celebratory manner. The festival is hands-on, science based-experience with multiple ACSEC education partners providing information on watershed stewardship. This event was also host to the 2013 Tri-County Lawn Mower Exchange.	April 20, 2013	5,000	GP, R, YT
Surfrider Foundation		EXHIBITS: Folly Beach Second Sunday: Surfrider tabled three of the Second Sunday events held at the Folly River Park. Tabling provided information to participants about the impacts of pet waste, cigarette butts and other forms of pollution.	Multiple	100	GP, R, YT

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

In-Person, Phone, Email (Direct Contacts)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Master Gardeners		In-Person, Phone, Email: In the Tri-County, Clemson Extension Agents and Master Gardeners answered questions relating to a variety of home landscaping issues, topics including compost, mulch, fertilizers, native plants, irrigation, etc.	Continuous	66,202	GP, R, C
Clemson Extension	Clemson Carolina Clear	In-Person, Phone, Email: Clemson Extension Agents answered questions and provided services to a variety of Tri-County audiences regarding water resources and stormwater-related BMPs.	Continuous	45	P, R, C, YT, HE, T, GP, SP
Clemson Extension, Clemson's Agricultural Service Lab		Soil Samples: Clemson Extension, in cooperation with Clemson's Agricultural Service Lab processed soil samples for the Tri-County residents and commercial audiences.	Continuous	Berkeley: 758 Charleston: 2511 Dorchester: 904 Total 4173	R, C, GP

CLEMSON COOPERATIVE EXTENSION

The Charleston Tri-County area is home to 12 Clemson Extension Agents and nearly 450 active Master Gardeners. Throughout the year, Extension Agents and Master Gardeners in the Berkeley, Charleston, and Dorchester County Extension offices respond to calls, walk-ins, and emails from the public, as well as field questions during public events. Information is requested by individuals representing both the private and commercial sectors, with diverse interests ranging from agriculture, forestry, home landscaping, horticulture, and pond management. Each question is addressed by a dedicated group of Master Gardener volunteers and Extension Agents. Extension offices also provide services in concert with the University, including processing soil samples, irrigation water analysis, plant and weed identification, and identification of plant problems. These direct contacts with the public yield some of the most positive results in addressing specific concerns and problems, most of which relate to water quality at some level.

Public Education

Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources, Clemson Extension Service	National Association of County Agricultural Agents (NACAA), Clemson Carolina Clear	PRESENTATION: As part of the NACAA annual conference, county extension agents from across the country learned about efforts to protect SC's natural resources while traveling aboard the SCDNR's Discovery vessel.	July 17, 2012	30	T, HE
Clemson Extension Service, Clemson Carolina Clear	National Association of County Agricultural Agents (NACAA)	PRESENTATION: As part of the NACAA annual conference, a site tour was provided to participants highlighting the efforts of the ACSEC and demonstration sites featuring structural BMPs.	July 19, 2012	50	T, HE
Clemson Carolina Clear, Clemson Extension Service	SC Association of Stormwater Managers	PRESENTATION: The results of the pilot Charleston Area Stormwater Pond Management Conference (reported in Year Four) were presented to stormwater professionals from across the state.	September 27, 2012	100	T, C
Clemson Carolina Clear	Center for Watershed Excellence	PRESENTATION: Poster presentation at the SC Water Resources Conference on stormwater BMPs and demonstration sites within the ACSEC.	October 11, 2012	100	T, HE, C
Clemson Extension Service	Clemson Carolina Clear	PRESENTATION: Native plant presentation to Tri-County Master Gardeners in training, with an emphasis on stormwater and the use of natives as a BMP.	October 25, 2012	30	R
Surfrider Foundation	Five Gyres	PRESENTATION: Presentation and event held to raise awareness of marine debris, emphasis on stormwater runoff as the leading source of plastic pollution in the world's oceans.	November 5, 2012	40	GP, YT, HE
Clemson Extension Service, Cypress Gardens	Clemson Carolina Clear	PRESENTATION: As part of Garden Gathering event, one hour program highlighting the use of native plants as good stewardship practice.	November 10, 2012	40	R
Clemson Extension Service	Clemson Carolina Clear	PRESENTATION: Stormwater presentation to Tri-County Master Gardeners in training, emphasis on BMPs.	December 6, 2012	35	R

Presentations (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	PRESENTATION: Continuing Education program to Tri-County Master Gardeners on the urban water budget and rainwater harvesting 101.	January 8, 2013	30	R
Clemson Carolina Clear	Charleston Garden Club	PRESENTATION: To Charleston Garden Club on the benefits of using native plants in the home landscape.	February 13, 2013	35	R
Clemson Carolina Clear	Ashley Scenic River Advisory Committee (ASRAC)	PRESENTATION: To ASRAC regarding the potential to utilize a new Dorchester County park for an ACSEC demonstration site and rain garden installation workshop area.	February 20, 2013	10	R, T
Clemson Extension Service, Exchange Park	Clemson Carolina Clear	PRESENTATION: As part of the Carolina Yard Gardening School, a one hour program was held highlighting native plants as good stewardship practice in the home landscape.	March 16, 2013	40	R
SC Native Plants Society	Clemson Carolina Clear	PRESENTATION: Rain Garden plant recommendations as well as general site and design considerations.	March 19, 2013	40	RE, HE
Clemson Carolina Clear	Trident Technical College (TTC)	PRESENTATION: Site tour of the CU CREC's "Ed Shed" and presentation with focus on stormwater BMPs was provided to TTC's Sustainability Class.	April 1, 2013	30	HE

Presentations (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	PRESENTATION: Charleston County Advisory Committee comprised of diverse stakeholders including farmers, economic development staff, Master Gardeners, etc, were provided information on stormwater education and involvement opportunities within the ACSEC.	April 4, 2013	20	HE, T, C, R
Surfrider Foundation	Clemson Carolina Clear	PRESENTATION: "Rainwater Harvesting 101" presentation provided as part of a Surfrider Charleston Chapter monthly meeting, included rainwater harvesting system design and considerations as well as general information on stormwater.	April 11, 2013	20	R, GP, YT
Clemson Carolina Clear		PRESENTATION: Presented on rainwater harvesting efforts in the ACSEC at the Gulf and Atlantic Shell Fisheries Conference.	May 14, 2013	50	HE, C, T
Clemson Extension Service	Clemson Carolina Clear	PRESENTATION: Continuing Education program for the Tri-County Master Gardeners on irrigation water testing.	May 21, 2013	6	R
Clemson Extension Service, Santee Cooper Electric Cooperative	Clemson Carolina Clear	PRESENTATION: As part of the Santee Cooper "Lunch and Learn " series, presentation highlighted rain gardens, rainwater harvesting and other BMPs for managing stormwater runoff.	May 29, 2013	25	R
Clemson Carolina Clear	Charleston Permaculture Guilde	PRESENTATION: "Rainwater Harvesting 101" presentation on rainwater harvesting system design considerations and potential uses of harvested rainwater.	June 18, 2013	30	R
Clemson Carolina Clear		PRESENTATION: "Stormwater Ponds, Purpose and Management" presentation to Lake Edmond HOA on water quality, stormwater ponds, and suggested BMPs.	June 18, 2013	19	R, P

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Presentations (Direct)

YOUTH PRESENTATIONS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		PRESENTATION: Youth: Enviroscape activity at Ashley Hall School.	October 22, 2012	40	YT
SC Sea Grant Consortium	Clemson Carolina Clear	PRESENTATION: Youth: Enviroscape activity with third graders from Murray LaSaine Elementary School.	November 28, 2012	23	YT
Clemson Carolina Clear		PRESENTATION: Youth: Enviroscape activity as part of the Sedgefield Elementary School Science Night.	January 10, 2013	30	YT, R
Clemson Carolina Clear, Clemson Extension Service		PRESENTATION: Youth: Enviroscape activity as part of Sanders Clyde Elementary School Science Night.	January 24, 2013	100	YT, R
Clemson Carolina Clear		PRESENTATION: Youth: Enviroscape activity as part of James Island Middle School's Scientist Day.	February 19, 2013	100	YT
Berkeley County	Clemson Carolina Clear, SC Sea Grant	PRESENTATION: Youth: Enviroscape activity as part of the Berkeley County Kids Who Care About The Environment event.	March 27, 2013	2,339	YT
Clemson Carolina Clear		PRESENTATION: Youth: Enviroscape activity with fourth graders from Ashley River Creative Arts School.	May 21, 2013	30	YT

The Enviroscape is a watershed model used to demonstrate the cumulative effects of non-point source pollution on water quality. This interactive tool provides an opportunity to engage students and make connections between land-based activities in their community and potential impacts on water resources.

Presentations (Direct) continued

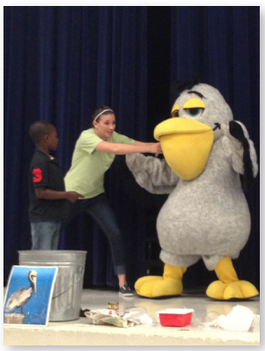
YOUTH PRESENTATIONS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		PRESENTATION: Youth: Sullivan's Island Elementary School Environmental Club participated in Enviroscape with discussion on stewardship projects.	November 15, 2012	30	YT
Clemson Carolina Clear		PRESENTATION: Youth: As part of a TedX event held at Pinewood Preparatory School, the presentation "Living in a Watershed" provided information on good watershed stewardship.	March 20, 2013	100	YT, GP
Charleston County, Lowcountry Earthforce	Clemson Carolina Clear	PRESENTATION: Youth: The Charleston County Sustainability Symposium was held at Wannamaker County Park in North Charleston. Students from across Charleston County were invited to attend to learn more about environmental issues and sustainability. Activities included enviroscape and rainwater harvesting mathematics.	May 24, 2013	257	YT
Surfrider Foundation, SC Department of Natural Resources	Moultrie Middle School	PRESENTATION: Youth: The Surfrider Foundation and SCDNR spoke to four sixth grade classes about plastic pollution in the marine environment and marine debris prevention programs. The students made t-shirt bags to be used as reusable shopping bags.	May 28, 2013	80	YT

Presentations (Direct) continued

YOUTH PRESENTATIONS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Keep Charleston Beautiful		PRESENTATION: Youth: Clean City Clara Education Program, K-5; focused on litter prevention for youth audiences.	Continuous	4,479	YT
Charleston Soil and Water Conservation District		PRESENTATION: Youth:"Where Does Your Water Shed?": contest provided a better understanding of water-sheds, where stormwater runoff goes, and the impact that pollution has on water quality.	May 2013	400	YT
SC Department of Natural Resources SC Oyster Restoration and Enhancement (SCORE)		PRESENTATION: Youth: SCORE presented information to students on oyster reef ecology and threats to water quality. During Fall 2012 to Winter 2013, SCORE presented to area schools including Jennie More Elementary, James Island Middle School, Murray LaSaine Elementary, St. Andrews and Lincoln Middle School.	Continuous	439	YT



ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

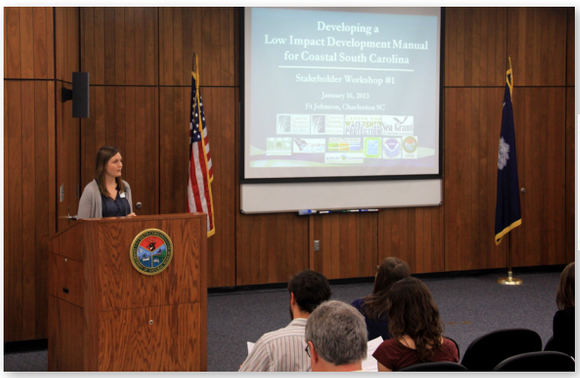
Public Education

Workshops (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson University Center for Watershed Excellence	Clemson Carolina Clear, CU Restoration Institute	WORKSHOP: *Onsite Wastewater Treatment Training*: Full day training on design considerations and maintenance of septic systems with emphasis on water quality protection.	July 31, 2012	19	C, T, R
Clemson Extension Service, Cypress Gardens	Clemson Carolina Clear	WORKSHOP: *The Garden Gathering*: Full day event featuring keynote speaker and concurrent sessions providing information on residential home landscaping topics including rain garden installation, gardening with native plants, compost and more.	November 10, 2012	44	R
South Carolina Marine Association	Clemson Carolina Clear	WORKSHOP: *Clean Marina Workshop*: The Clean Marina Program Workshop is an opportunity for marina owners to meet with members of the Clean Marina Committee to discuss best management practices for marina operation and site maintenance to improve and protect water quality.	March 12, 2013	5	B
Clemson Extension Service, Tri-County Master Gardeners	Clemson Carolina Clear	WORKSHOP: *Carolina Yard Gardening School*: Full day event featuring keynote speaker, concurrent sessions, demonstrations, and trade show. Water-related segments included rain barrels for sale, rain garden installation workshop and native plant lecture.	March 16, 2013	125	R
SC Sea Grant Consortium	SC Department of Natural Resources, Clemson Carolina Clear	WORKSHOP: *From Seeds to Shoreline (S2S) Teacher Workshop*, a full day training held at the Fort Johnson Marine Center, provided curriculum and step-by-step information for teachers on how to grow *Spartina* with students. Workshop allowed for hands-on training opportunities including greenhouse construction and salt marsh exploration.	June 25, 2013	14	YT

Workshops (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
ACE Basin National Estuarine Research Reserve (NERR) Coastal Training Program	Army Corps of Engineers	WORKSHOP: Coastal Wetland Identification: Full day training sought to increase the ability of local decision-makers to identify wetlands and wetland boundaries based on the hydrologic, soil, and vegetative indicators commonly found in Lowcountry wetlands.	November 15, 2012	20	EA, T, C
ACE Basin NERR Coastal Training Program	North Inlet Winyah Bay NERR, Center for Watershed Protection, SC Department of Natural Resources, SC Sea Grant, Clemson Carolina Clear	WORKSHOP: Low Impact Development Manual Workshop: The ACE Basin and North Inlet-Winyah Bay NERRs, the Center for Watershed Protection, and SC Sea Grant Consortium are developing a Low Impact Development Manual for Coastal SC. Two initial stakeholder workshops were held to obtain input on tailoring an LID Manual for coastal South Carolina. Participants also learned about existing tools, BMP specifications, model stormwater ordinances, and case studies from guidance manuals in other states.	January 16, 2013; April 16, 2013	71	EA, T, C
ACE Basin NERR Coastal Training Program	NOAA Coastal Services Center	WORKSHOP: Planning for Meaningful Evaluation: Coastal resource managers, local decision-makers, and outreach professionals attended this two-day NOAA Coastal Services Center-led course. During this program, participants obtained the knowledge, skills, and tools to create a comprehensive evaluation plan using their existing logic model.	January 29-30, 2013	14	HE, EA, T



COASTAL TRAINING PROGRAM ACE Basin National Estuarine Research Reserve

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	TRAINING: Master Gardener Training: Multi-day class spanning four months resulting in certified Master Gardeners.	Fall 2012	35	GP, R
Clemson Extension Service		ONLINE TRAINING: Master Gardener Online Training: Spans four months of online programs resulting in certified Master Gardeners.	Fall 2012; Spring 2013	120	GP, R

The Master Gardener (MG) program in the Charleston Tri-County area trained 35 individuals to become MG's during Year Five, and an additional 120 were trained through the online MG program.

South Carolina Master Gardener a Clemson Extension Program

As part of the MG coursework training, information and programs are incorporated on both structural and behavioral stormwater best management practices (BMPs). Once an individual has completed the course, their status remains active by performing internship and volunteer hours focused on community outreach. The MGs provided support to the ACSEC during Year Five in a variety of ways including assistance with rain barrel sales, rain garden installation workshops, and demonstration site projects. Furthermore, MGs are an enormous asset to the Charleston Tri-County area as each year this dedicated group of volunteers provide garden and landscape information to thousands of people from the public via phone, email, office visits, etc. (as reported in "Direct Contacts", p.21). The MGs have the opportunity to learn more or refresh content pertaining to stormwater BMPs as part of the MG continuing education opportunities (as reported in "Presentations," p.22-24).

The home gardener can reduce many of the negative impacts on water quality caused by land-based activities by serving as a steward to the environment and helping to protect the integrity of natural resources for generations to come. The MGs are an integral piece in communicating with communities to increase awareness and understanding of how actions on land impact waterways.

Training and Certifications (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear, College of Charleston	ONLINE TRAINING: *Carolina Yards and Neighborhoods, Online Guide to Environmentally Friendly Gardening.*	April-May, 2013	39	GP, R

The Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening is a five week course that was piloted in the Charleston Tri-County area during spring of 2013. At the end of the course, participants can choose to have their yard certified as a Carolina Yard (see highlight, p.34).

Charleston County Parks and Recreation Commission	Clemson Extension Service, College of Charleston, SCDNR	TRAININGS: Master Naturalist Certification Programs in Fall 2012 and Spring 2013.	Fall 2012, Spring 2013	24	GP, R

Charleston County Parks and Recreation Commission is the lead provider for the Charleston Area Master Naturalist program. Master Naturalists receive training in a 13-week field study course led by a variety of experts. Participants learn about coastal ecology by visiting unique habitats ranging from oyster shell middens to cypress swamps. Water resource education is a fundamental component of the program, as participants learn about stormwater runoff and associated water quality issues. During Year Five, all Master Naturalists in training participated in an oyster reef restoration build and a rain garden installation. Master Naturalists help disseminate information to the public, ideally becoming leaders in their community to support conservation and education of coastal resources. Participants become a certified Master Naturalist once volunteer hour requirements have been met.

Training and Certifications (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson University		TRAININGS: Clemson's Department of Pesticide Regulation provides materials and testing for commercial, non-commercial, and private applicator licenses. The number of impacts represents the number of certifications current through 2014 in the Tri-County.	Certification exams given quarterly	1196	C, R, GP
Clemson University		TRAININGS: Clemson provides training and certification for the Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) to assist in pollution prevention control for construction projects.	July 12, 2012 to June 19, 2013	196	C, T

The purpose of the Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) Program is to educate field personnel on the proper installation, maintenance, and inspection of erosion prevention and sediment control measures. Clemson University initiated this program in 2004 and since has certified over 4,000 individuals. CEPSCI involves a series of one-day workshops to teach attendees the latest techniques for erosion prevention and sediment control. Land disturbing activities and sediment pollution have significant potential to adversely impact water quality.

SC DNR-SCORE Program		TRAININGS: SCORE program trained new volunteers to monitor water quality parameters in the Charleston Harbor and vicinity.	2012-2013	12	GP, YT

SC Department of Natural Resources SCORE (SC Oyster Restoration and Enhancement) program annually trains volunteers to monitor water quality at designated sites around the Charleston Harbor vicinity. In 2012-2013, SCORE trained 12 new water quality monitoring volunteers, who join nearly 50 other trained volunteers to monitor 18 sites around the region. Volunteers monitor temperature, pH, salinity, turbidity, and dissolved oxygen. Water quality data is available online through the SCORE website at www.score.dnr.sc.gov.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Education

Conferences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston Soil and Water Conservation District, SCDNR	NRCS	CONFERENCE: SC Annual Partnership Conference: This event highlights awards and achievements accomplished in conservation and water quality. Presentations and displays are provided on water quality and associated stewardship activities.	February 26-27, 2013	250	T, EA, HE, C
Center for Watershed Excellence	Multiple	CONFERENCE: 2012 Water Resources Conference: Forum for collaboration regarding the protection of SC's water resources.	October 9-10, 2012	320	GP, T, C, EA, HE

CENTER for WATERSHED EXCELLENCE

CLEMSON UNIVERSITY INSTITUTE of APPLIED ECOLOGY

The South Carolina Water Resources Conference is a biennial event coordinated by Clemson University's Center for Watershed Excellence, in conjunction with a statewide planning committee. The 2012 conference, held at the Columbia Metropolitan Convention Center in downtown Columbia, brought together statewide academic, technical, private and public sector audiences with the objective of working on a collaborative management effort to protect water resources across South Carolina and the region. Participants were invited to learn about the latest research, management, and outreach initiatives by attending two-days of oral and poster presentation sessions, including those initiatives of the ACSEC and partners the College of Charleston, Clemson University, and Carolina Clear. Highlights of the event included a moderated panel discussion on state water resource issues with members of South Carolina's legislature and plenary addresses from the Director of the DNR, Col. Alvin Taylor, the Director of DHEC, Catherine Templeton, and the South Carolina Secretary of Commerce, Robert Hitt. The next South Carolina Water Resources Conference will be held October 15-16, 2014.

Year Five Highlights

Carolina Yards Online Course

Online learning has become increasingly popular as users are able to access course content at their own pace and from the comfort of their own home. Continuing education providers are utilizing web-based resources to meet increased demand and to provide online training and coursework. In Year Five, the ACSEC created, launched and piloted a five week online course based on Clemson Extension's Carolina Yards program, entitled "The Carolina Yards Online Guide to Environmentally Friendly Gardening."

The objective of the Carolina Yards Online course is to teach yard owners and yard keepers how to grow and maintain an aesthetically pleasing landscape that also considers water quality and environmental impacts. During the course, participants earn "inches" on their Carolina YardStick by performing recommended gardening activities such as installing a rain barrel, establishing a home composting system, planting native vegetation, having their soil tested, and more. At the end of the course, participants can obtain certification and have their yard recognized as a "Carolina Yard." One week modules were held to provide information and guidance on activities; module topics included healthy soils, right plant-right place, fertilizing and managing yard pests, water-wise techniques and wildlife gardening. The course duration was five weeks, yet was open to participants for more than eight weeks to allow self-paced learning and ample opportunity to obtain course content. Participants also received take home materials including a book (*Bringing Nature Home* by Douglas Tallamy), manuals, rain gauge and ACSEC promotional items, and had the opportunity to purchase an Ivy rain barrel at a discounted price.

The 2012-2013 ACSEC graduate student intern, Sara Pachota, made the pilot effort her graduate project as a candidate in the College of Charleston Master of Environmental Studies graduate program. The online course was housed on E-Xtension which provided the ability for forum discussions, pre and post testing, progress tracking, photo upload, resource libraries and video and presentation content. The discussions and feedback of the 39 participants was analyzed to measure knowledge gained and to gauge adjustments needed for future course offerings.

The Carolina Yards Online Guide to Environmentally Friendly Gardening Course provides an integral piece in the ACSEC education strategy regarding residential audiences. In Year Six, the course will be offered again and expanded to address soil, climate and plant needs across the state, leveraging resources already developed for a greater audience reach.

Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC Department of Natural Resources	LITTER SWEEPS: Beach Sweep/River Sweep: Annual litter cleanup event focused on shoreline debris.	September 15, 2013	1,422	GP, R, C

During the 2012 Beach Sweep/River Sweep litter cleanup, 1,422 volunteers in Berkeley, Charleston, and Dorchester Counties collected 19,626 pounds of litter from nearly 72 miles of local beaches, waterways, and surrounding uplands. *Through the use of volunteers and funding provided by the private sector, the annual Beach Sweep/River Sweep litter cleanup contributes to the economic, environmental, and societal well-being of the state. By participating in Beach Sweep/River Sweep, the public is more informed about natural resource issues, such as litter's detrimental effects on the landscape and wildlife, and people are empowered to take action and become environmental stewards. Statewide results of the 2012 event are available online at www.scseagrant.org.*

Adopt-a-Highway, Community Pride Inc, Clemson Extension Service	SC Department of Transportation	LITTER SWEEPS: Adopt-a-Highway conducts four sweeps seasonally each year. Volunteers adopt two mile stretch of highway.	Quarterly	2,659	GP, R, C

Initiated in South Carolina in 1988, the Adopt-A-Highway program utilizes the volunteer time of caring citizens to combat litter along SC highways. After cleanups, volunteers complete a report card which provides information on number of volunteers, bags of trash collected and hours worked. The program helps to remove thousands of pounds of debris from roadsides, preventing this litter from entering area waterways and improving South Carolina's scenic beauty. **During the 2012-2013 reporting cycle, 2,659 volunteers adopted 560 miles of highway to remove 110,850 pounds of litter in the Tri-County!**

2012-2013 ADOPT-A-HIGHWAY TOTALS FOR TRI-COUNTY

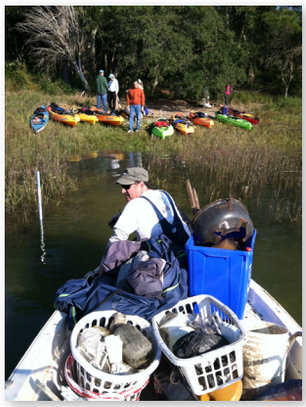
County	Total Pounds Collected	Total Miles Adopted	Total Groups Participating	Total Volunteers Participating
Berkeley	45,700	142	52	475
Charleston	51,200	342	171	2,032
Dorchester	13,950	76	38	152
Totals	110,850	560	261	2,659

Litter Sweeps (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Keep Charleston Beautiful (KCB)	Palmetto Pride	LITTER SWEEPS: KCB coordinates volunteers to participate in a variety of litter cleanups throughout the year.	Continuous	2,932	C, R, GP, YT

Keep Charleston Beautiful (KCB) is dedicated to promoting the cleanliness and beautification of the City of Charleston through education, public awareness and community involvement. KCB strives to teach litter prevention and waste responsibility through their education programs and public awareness campaigns, all of which are offered free of charge to the community. **During the 2012-2013 reporting year, KCB organized 2,932 citizens whom volunteered 12,974 hours of community service and removed 2,275 bags (38,352 pounds) of trash.**

Surfrider Foundation Charleston Chapter		LITTER SWEEPS: Surfrider conducts marsh and beach cleanup efforts throughout the year.	Continuous	200	GP, R, YT, C



The Charleston Chapter of The Surfrider Foundation concentrates on reducing litter in area beaches and waterways and works to raise awareness of the importance of ocean stewardship. The Charleston Chapter of The Surfrider Foundation has roughly 300 members. New to Summer 2013, the Surfriders hosted one beach sweep a month, each in separate locations, including Sullivan's Island, downtown Charleston, James Island and Folly Beach. One such event was the Barefoot Beach Rescue Project which took place in June 2013. As part of this event, 60 volunteers worked together to remove 200 pounds of trash from Folly Beach. During the 2013 winter season, Surfrider hosted it's first ever Marsh Island Cleanup event removing some 500 pounds of trash from the Folly River hammock islands and marshes. **During the 2012-2013 reporting year, the Surfriders removed approximately 1,500 pounds of litter from area waterways.**

Strorm Drain Marking (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	West Ashley High School	STORM DRAIN MARKING: Storm drains were marked (approx. 50) at and near West Ashley High School.	November 13, 2012	20	YT, R
Clemson Carolina Clear	Villages of St. Johns Woods	STORM DRAIN MARKING: Storm drains were marked (approx. 65) in the Villages of St. Johns Woods neighborhood on Johns Island.	January 2, 2013	5	R
Clemson Carolina Clear	Americorps, Lowcountry Earth Force, WINGS	STORM DRAIN MARKING: Storm drains were marked (approx. 21) in the Eastside neighborhoods of peninsula Charleston.	January 18, 2013	23	YT, HE, R
Clemson Carolina Clear	Quail Run Neighborhood	STORM DRAIN MARKING: Storm drains were marked (approx. 16) in the Quail Run neighborhood.	January 22, 2013	1	R
Clemson Carolina Clear	Hill Construction	STORM DRAIN MARKING: Storm drains were marked (approx. 3) around Christ our King Church.	February 25, 2013	1	R
Clemson Carolina Clear	W.A.T.E.R Wildcats	STORM DRAIN MARKING: Storm drains were marked (approx. 200) around Stono Park Elementary, Springfield Elementary, Drayton Hall Elementary, Ashley River Creative Arts Elementary, St. Andrew's School of Math and Science, Oakland Elementary and West Ashley High School.	March 8, 2013 - April 17, 2013	60	YT, R
Clemson Carolina Clear	Eaglewood Retreat Subdivision	STORM DRAIN MARKING: Storm drains were marked (approx. 25) in Eaglewood Retreat subdivision.	May 9, 2013	2	R

During the 2012-2013 reporting year, 380 storm drains were marked utilizing the volunteered time of 112 individuals. Groups involved with storm drain marking efforts included eight schools and three neighborhood associations.

Rain Garden Installations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	Charleston County Parks and Recreation Commission	RAIN GARDEN INSTALLATION: As part of the fall Master Naturalist program, a rain garden was installed at Clemson's CREC's "Ed Shed."	October 30, 2012	12	R
Clemson Carolina Clear	Clemson Extension Service, Tri-County Master Gardeners	RAIN GARDEN INSTALLATION: As part of the Garden Gathering event hosted at Cypress Gardens, a rain garden was installed at the Berkeley County Extension Office.	November 10, 2012	10	R
Clemson Carolina Clear	Clemson Extension Service, Tri-County Master Gardeners	RAIN GARDEN INSTALLATION: As part of the 2012-2013 Master Gardener training, a rain garden was installed at the Berkeley County Extension Office.	December 6, 2012	35	R
Clemson Carolina Clear	Clemson Extension Service, Tri-County Master Gardeners	RAIN GARDEN INSTALLATION: As part of the Carolina Yards Gardening School, a rain garden was installed at the Exchange Park in Ladson.	March 16, 2013	15	R
Clemson Carolina Clear	Charleston County Parks and Recreation Commission	RAIN GARDEN INSTALLATION: As part of the spring Master Naturalist program, a rain garden was installed at the Fort Johnson Marine Center.	April 30, 2013	12	R

During the 2012-2013 reporting year, five rain garden installation workshops were held involving 84 participants. All rain gardens were installed as part of a rain garden workshop which included both a formal presentation and hands-on rain garden construction. All participants received a copy of the Carolina Clear "Rain Garden" Manual.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Involvement

Oyster Reef Construction (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources SC Oyster Reef Enhancement Program (SCORE)	Multiple	OYSTER REEF CONSTRUCTION: SCORE facilitated 19 reef building events and 26 oyster bagging events.	Continuous	1,497	GP, R, YT, HE

The South Carolina Department of Natural Resources (SCDNR) is responsible for managing the state's oyster resources. Appropriate management includes the planting of material to provide substrate for recruitment of juvenile oysters. SCDNR's South Carolina Oyster Restoration and Enhancement (SCORE) program also coordinates oyster shell recycling and community-based restoration. During the 2012-2013 ACSEC reporting year, SCORE utilized 881 individuals volunteering 1,672 hours of time to construct 9,076 oyster bags for shoreline restoration efforts. An additional 616 people donated 1,665 hours of volunteer time to deploy 5,072 of these oyster bags for oyster reef construction in the Berkeley, Charleston, and Dorchester County areas. **The total combined number of volunteers and hours in the Tri-County area for bagging oyster shell and reef building events was 1,497 volunteers donating 3,337 hours.** *A component of the SCORE volunteer events includes presentation or discussion on the impacts of stormwater on the Lowcountry's oyster reefs.*

Water Quality Monitoring (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources SC Oyster Reef Enhancement Program (SCORE)	Multiple	MONITORING: SCORE program initiated volunteers to gather water quality parameters at multiple sites in the Tri-County area.	Weekly-Monthly	49	GP, R

SCDNR's South Carolina Oyster Restoration and Enhancement (SCORE) program includes a water quality monitoring component. Water monitoring is performed at oyster restoration sites throughout the year by trained volunteers who then enter monitoring data into an online database. **During the 2012-2013 ACSEC Reporting Year Five, 49 volunteers donated 224 hours of volunteer time monitoring water quality in Tri-County area sites.**

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Involvement

Rain Barrel Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Rainwater Solutions	Clemson Carolina Clear	RAIN BARREL SALE: Master Gardener winter sale (40 barrels sold).	Winter 2013	40	R
Rainwater Solutions	Clemson Carolina Clear	RAIN BARREL SALE: As part of the Carolina Yard Gardening School, participants were able to purchase a rain barrel upon registration (13 barrels sold).	March 16, 2013	13	R
Rainwater Solutions	Clemson Carolina Clear	RAIN BARREL SALE: As part of the Carolina Yard Online Course, participants were able to purchase a rain barrel upon registration (11 barrels sold).	April-May, 2013	11	R
Rainwater Solutions	Clemson Carolina Clear, Charleston County Government	RAIN BARREL SALE: General public sale held at the Charleston County Public Services Building (150 barrels sold).	June 1, 2013	150	GP, R

Beginning in Winter 2013, the ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a discounted price to the general public. Ivy is a rain barrel manufactured by Rainwater Solutions and is 100% USA made, from 50% recycled plastic. **Over 200 rain barrels were purchased in the Ashley Cooper region during winter/spring 2013** *(see highlight on p.44).*

Native Plant Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plants Society		NATIVE PLANT SALE: The biannual SCNPS native plant sale is open to the public and offers a variety of native plants for home landscaping.	October 6, 2012; March 16, 2013	300	GP, R

The Lowcountry Chapter of the Native Plant Society hosts two native plant sales per year, one in the fall and one in the spring, held at Charles Towne Landing Historic Site. The plant sales are open to the public and entry is free. Use of native plants in landscaping is considered an important BMP for protecting water quality as these plants typically require little to no fertilizer and less irrigation than non-native plant species.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Public Involvement

Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Clemson Carolina Clear	SC Sea Grant, SCDNR, CCPRC	YOUTH INVOLVEMENT: 4-H2O "Exploring Lowcountry Waterways" Summer Camp for youth 10-13. This week long camp emphasizes watershed stewardship and water resource protection.	July 9 to 13, 2012 and June 10-14, 2013	32	YT

The 4-H2O Exploration Program is a statewide effort implemented by Clemson University Cooperative Extension Service. This statewide youth initiative provides hands-on, experiential learning opportunities with emphasis on water quality, conservation, and watershed stewardship. In the ACSEC region, the 4-H2O program is entitled "Exploring Lowcountry Waterways" and is available to children living in Berkeley, Charleston, and Dorchester Counties. During the two sessions, students have the opportunity to learn about and travel through local watersheds from cypress swamps to barrier islands. In the ACSEC region, Consortium partners play a vital role in the camps' success with partnerships including the SC Sea Grant Consortium, SC Department of Natural Resources, Charleston County Parks and Recreation Commission and others. New to the "Exploring Lowcountry Waterways" effort this year was a fleet of sit-on-top kayaks with ample equipment to place 24 campers and counselors on the water.

Clemson Extension 4-H2O Exploring Lowcountry Waterways

Youth Involvement Events (Direct) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC DNR, Clemson Extension Service	YOUTH INVOLVEMENT: From Seeds to Shoreline initiative involves students in germination and planting of *Spartina alterniflora* to emphasize the significance of the salt marsh and actions for clean water.	Fall 2012 to Spring 2013	414	YT

From Seeds to Shoreline is the first of its kind, student driven wetland restoration project in South Carolina. The SC Sea Grant Consortium, SC Department of Natural Resources, and Clemson Extension Service partner to facilitate this school program aimed at engaging students in hands-on education that includes seed collection, germination, cultivation and planting of the dominant plant in a SC salt marsh, Spartina alterniflora. The program creates an opportunity to learn about the importance of salt marsh ecosystems and water quality while participating in a community service learning project with emphasis on environmental stewardship. Charleston Tri-County schools participating during the 2012-2013 school year included Murray LaSaine Elementary, Mitchell Elementary, Ashley Hall, James Island Middle, James Island High, Sullivan's Island Elementary, St. Johns High and Moultrie Middle.

Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston Soil and Water Conservation District		YOUTH INVOLVEMENT: SC Conservation Districts Youth Workshop: Held at Lander, University, the Charleston Soil & Water Conservation District sponsored 32 students in summer 2013 for the week long event. The event gave high school students the opportunity to study the environment and water quality management.	June 2013	32	YT
Charleston Soil and Water Conservation District	Multiple	YOUTH INVOLVEMENT: SC Envirothon: Educational outreach week-long program at Sandhills Research Center in Columbia. Students study soils, water quality resources, forestry, wildlife, and other conservation topics. This is a competition in which the Charleston Soil and Water Conservation district sponsors students each year to attend.	Winter-Spring 2012	88	YT

Charleston Conservation District

Year Five Highlights

ACSEC Rain Barrel Sales

Harvesting rainwater is not only a stormwater best management practice, it is also an avenue to educate audiences about stormwater runoff. Rainwater harvesting provides a platform to increase awareness of impervious surfaces, volume of stormwater runoff, and potential pollutants that may be picked up with runoff when water is unable to infiltrate. Furthermore, harvested rainwater can be utilized for a number of household needs, primarily irrigation, to help conserve water.

In Reporting Year Five, the ACSEC partnered with Rainwater Solutions to offer rain barrels for sale at a discounted price. The rain barrel mold selected is a 50 gallon barrel named Ivy. This particular barrel is 100% USA made out of 50% recycled plastic and comes with an assembly kit including all parts needed to start harvesting rainwater. Ivy typically retails for $119; however, through this special partnership, the ACSEC was able to make the barrels available for $63 a piece. The "Ivy" mold is nest-able, allowing the barrels to fit inside of one another making transportation of multiple rain barrels possible in the trunk of a car or backseat of a sedan.

The Ivy rain barrels were available at four separate ACSEC events during Year Five. In winter 2013, a Master Gardener rain barrel sale was held as a pilot to test the product and services before holding a general public sale. Then, as part of the Carolina Yard Gardening School and the Carolina Yards Online Guide to Environmentally Friendly Gardening Class, participants had the opportunity to purchase an Ivy rain barrel. Finally, in May 2013, a general public rain barrel sale was held in which interested individuals could pre-purchase an Ivy rain barrel through a website created for the ACSEC effort. A one day pickup event was held at the Charleston County Public Services Building on June 1, in which pre-purchase orders were claimed and day-of sales were made. Participants in this event had the opportunity to ask rainwater harvesting questions to representatives from Rainwater Solutions, Clemson Extension and Tri-County Master Gardeners. In total, over 200 rain barrels were sold and distributed in the Ashley Cooper region during the winter and spring of 2013.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

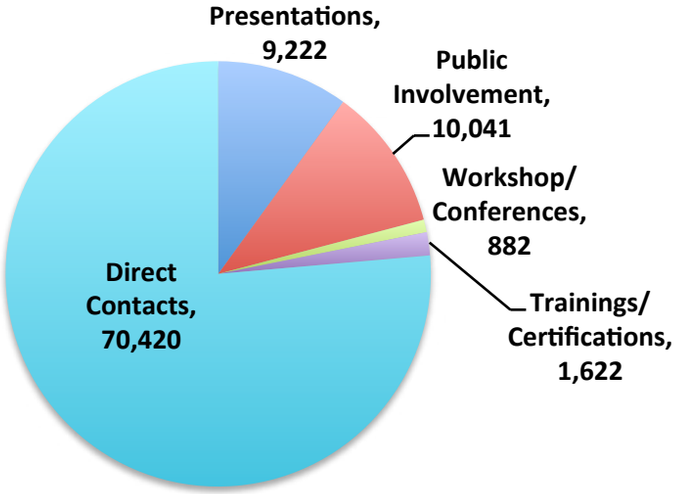
Outreach Summary

The ACSEC impacts from both direct and indirect outreach methods reached approximately 2,733,651 people in the Tri-County area from July 1, 2012 to June 30, 2013.

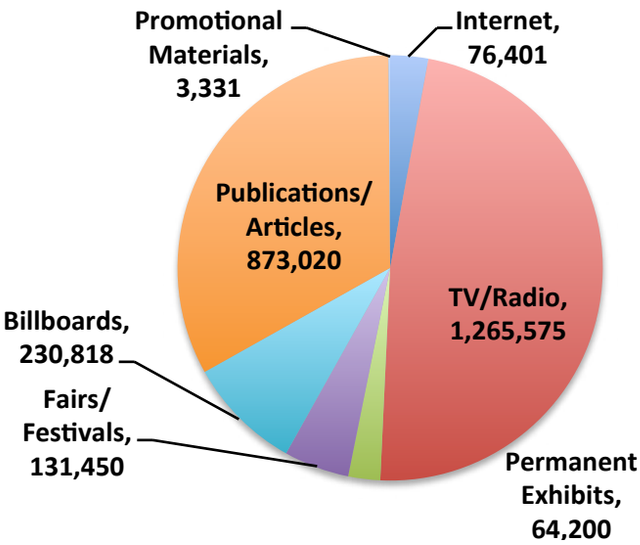
Indirect methods reached 2,641,464 through mass media efforts, print, public events and permanent exhibits. This is up by over 500,000 impacts from the Year Four reporting cycle in which 2,136,217 impacts were measured from indirect methods. The increase in Year Five is largely due to television, billboard and radio efforts combined with increased internet resources.

Direct methods reached 92,187 individuals through direct contacts, presentations, trainings, workshops and public involvement opportunities. Public Involvement impacts increased in Year Five by over 900 people, largely attributed to additional opportunities including rain garden installation workshops, the ACSEC rain barrel sale, and multiple litter cleanup events.

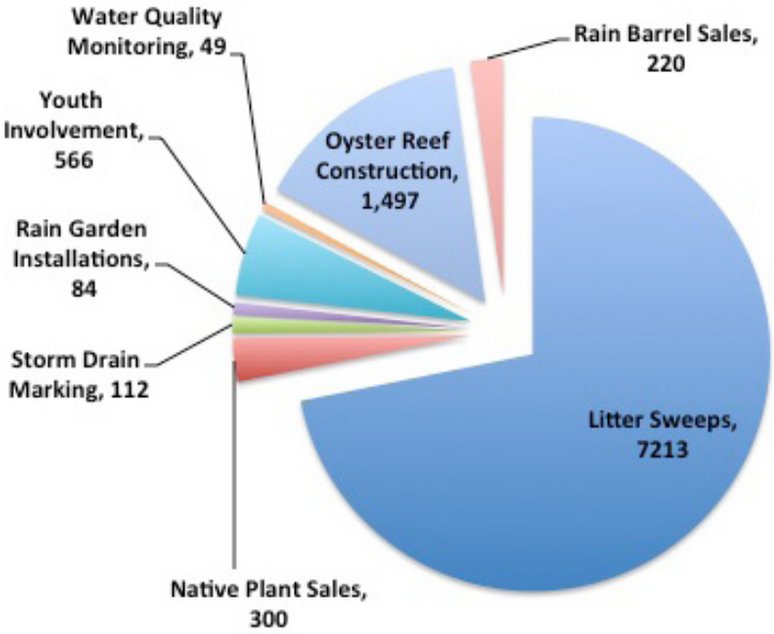
DIRECT METHODS SUMMARY, TOTAL IMPACTS 92,187



INDIRECT METHODS SUMMARY, TOTAL IMPACTS 2,641,464



PUBLIC INVOLVEMENT SUMMARY, TOTAL IMPACTS 10,041

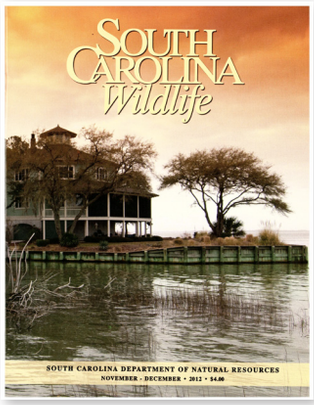


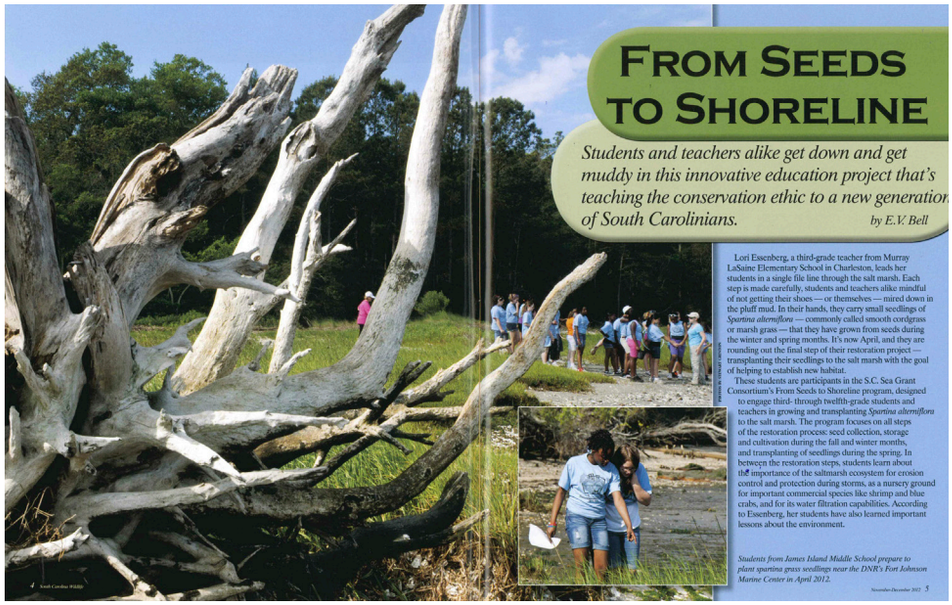
ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Appendix

Articles

SOUTH CAROLINA WILDLIFE MAGAZINE *The* South Carolina Wildlife *magazine is a publication of the South Carolina Department of Natural Resources (SC DNR) and highlights South Carolina's unique natural resources, heritage, and outdoor opportunities. In the November/December 2012 edition, a four page spread was included highlighting an ACSEC partner project, the youth wetland restoration initiative entitled "From Seeds to Shoreline."*





FROM SEEDS TO SHORELINE

Students and teachers alike get down and get muddy in this innovative education project that's teaching the conservation ethic to a new generation of South Carolinians.

by E.V. Bell

Lori Essenberg, a third-grade teacher from Murray LaSaine Elementary School in Charleston, leads her students in a single file line through the salt marsh. Each step is made carefully, students and teachers alike mindful of not getting their shoes — or themselves — mired down in the pluff mud. In their hands, they carry small seedlings of *Spartina alterniflora* — commonly called smooth cordgrass or marsh grass — that they have grown from seeds during the winter and spring months. It's now April, and they are rounding out the final step of their restoration project — transplanting their seedlings to the salt marsh with the goal of helping to establish new habitat.

These students are participants in the S.C. Sea Grant Consortium's From Seeds to Shoreline program, designed to engage third- through twelfth-grade students and teachers in growing and transplanting *Spartina alterniflora* to the salt marsh. The program focuses on all steps of the restoration process: seed collection, storage and cultivation during the fall and winter months, and transplanting of seedlings during the spring. In between the restoration steps, students learn about the importance of the saltmarsh ecosystem for erosion control and protection during storms, as a nursery ground for important commercial species like shrimp and blue crabs, and for its water filtration capabilities. According to Essenberg, her students have also learned important lessons about the environment.

Students from James Island Middle School prepare to plant spartina grass seedlings near the DNR's Fort Johnson Marine Center in April 2012.

Susan Doe from McCracken Middle School and Jenica Steele from Cottageville Elementary prepare to plant spartina grass seedlings during a 2012 teacher training workshop.

Third-grade students from Murray LaSaine Elementary were the first Seeds to Shoreline group to plant seedlings in 2011.

"This program gives my students the opportunity to learn about the environment that surrounds where they live and allows them to help in its restoration," she says. Nothing beats the smiles on their faces the first time they are out in the pluff mud, planting their seedlings and being told it's okay to get muddy!"

It's because of the importance of the saltmarsh ecosystem that From Seeds to Shoreline was launched and funded in 2010. The Sea Grant Consortium formed partnerships with the S.C. Department of Natural Resources' South Carolina Oyster Restoration and Enhancement (SCORE) program, Clemson University Public Service's Carolina Clear program and the Ashley Cooper Stormwater Education Consortium(ACSEC). Each organization brought a unique aspect of the salt marsh's importance to light. The SCORE program promotes reycling of oyster shell, which volunteers bag and place in the intertidal zone for the purpose of creating new oyster reefs. Oysters and *Spartina alterniflora* work together to provide critical habitat, stabilize shorelines and filter the water. DNR marine biologist and SCORE Coordinator Nancy Hadley says that the From Seeds to Shoreline program "is a wonderful complement to our community-based oyster restoration program and provides a way for younger students to be involved."

Carolina Clear and ACSEC promote clean water and stewardship of our waterways. Clean water is critical for our coastal communities and ecosystems, such as the salt marsh. This partnership also supported use of a greenhouse at the Clemson Research Station, allowing the cultivation of seedlings of *Spartina alterniflora*.

During 2010, the Sea Grant Consortium, SCORE, Carolina Clear and ACSEC worked with eight Charleston and Dorchester County schools that cultivated and transplanted approximately two thousand seedlings to designated areas along the coastline. In 2011, the program expanded into Colleton and Beaufort counties. Often, at the beginning of the project, students would describe the salt marsh as "buggy," "muddy" or "smelly," but as they learned more about the importance of the salt marsh to animals, plants and humans, the educators involved in the project found that their attitude shifted to one of stewardship. Students learned that *Spartina alterniflora* plays a critical role in the foundation of the saltmarsh ecosystem by providing habitat for species such as fiddler crabs, juvenile finfish, crabs, shrimp and diamondback terrapins. Because it is a perennial plant, *Spartina alterniflora* dies back every year, and as the plant stems decay, large amounts of nutrients are cycled back into the system, making the salt marsh one of the most productive ecosystems in the world. South Carolina is home to more than 340,000 acres of salt marsh, and the pressures of development and other stresses, as well as natural processes, can threaten the health of this ecosystem.

Students use plastic toy hoops as guides for spacing out the spartina seedlings. Eventually, the transplanted seedlings will form a solid mat, providing shoreline protection and improving marine habitat at the transplant locations.

Projects like From Seeds to Shoreline promote stewardship of coastal resources and help inculcate a conservation ethos in the next generation of South Carolinians.

"The program provides a unique, hands-on educational experience where South Carolina's youth learn about the importance of the saltmarsh ecosystem by engaging in all phases of saltmarsh restoration," says Dave Joyner, a natural resources agent for Clemson Extension who is involved with the program.

In June of 2012, the From Seeds to Shoreline partners hosted a teacher workshop for educators interested in adopting the project during the 2012-2013 school year. Eleven teachers from four coastal counties participated in a workshop at the DNR's McKenzie Field Station in the ACE Basin. The teachers learned strategies for conducting the fundamental steps in saltmarsh restoration: seed collection, storage, germination and transplanting. Field experiences were organized for teachers to learn about saltmarsh ecology and for them to participate in building an oyster reef and transplanting *Spartina alterniflora* seedlings — first-hand knowledge they will share with their students.

"It was great for the teachers to get out in the field and see the whole picture, how the two habitats are interdependent. We can tell teachers that 'oyster reefs help prevent erosion and encourage the growth of marsh grass' a million times, and they understand the concepts," says Allie Kreutzer with the SCORE program. "But, when they go out and see a restored oyster reef with a full grown marsh behind it that is immediately adjacent to an area with no reef, no marsh and a huge eroded bank, that's much more stimulating and even motivating. That motivation is what we hope they'll take back to the classroom."

During the workshop, teachers worked with the From Seeds to Shoreline program partners to outline an individualized plan for the project at their schools.

"As no two schools are the same, this workshop created an opportunity for the individual teacher to tailor a year-long program to meet their school's unique interests, needs and resources," said Kim Counts, a natural resources extension agent who works with the Carolina Clear program.

The goal is for teachers to customize a plan that meets the needs of their individual classes, and enthusiasm for accomplishing that goal is not in short supply.

"After attending the From Seeds to Shoreline workshop, not only am I excited about my school's saltwater marsh restoration, I am also feeling very confident in my instructional content," says Cindy Lilly, a teacher from Ocean Bay Middle School in Horry County. "This is an amazing service learning project and opportunity to share it with young people who will be tomorrow's caretakers of our earth!"

E.V. Bell is a marine education specialist with the S.C. Sea Grant Consortium.

Get Involved, Get Educated and Get Muddy!
For more information about the From Seeds to Shoreline program, visit www.scseagrant.org and click on the "education" link, or e-mail E.V. Bell at *elizabeth.vernon@scseagrant.org*.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Appendix

Articles

POST AND COURIER *As part of the Home and Garden section in the Sunday edition of the* Post and Courier, *an article highlighting the use of native plants as an alternative to invasive species was featured. The article was written by Clemson Extension's Amy Dabbs and ran on September 23, 2012.*

'Plant this, not that'

Swap invasive botanical bullies for native, well-adapted species

PROVIDED

Purple passionflower offers gardeners beautiful blooms with the added benefit of being a noninvasive native plant.

AMY L. DABBS
On Gardening

I love when author David Zinczenko appears on the morning talk shows promoting his "Eat This, Not That" book series. He compares foods with a zillion calories with their healthier, leaner counterparts.

His goal is to help consumers make better food choices. Each time I see him uncover a chafing dish revealing the low-cal option, I think, "Why don't we have the same sort of comparisons for the gardening world?" In essence, plant this, not that!

There is a lot to consider when purchasing plants. Like food, not all landscape plants are created equal. Some commonly used species of ornamental plants simply do not behave well in the landscape. These introduced plant species have escaped cultivation by adapting, multiplying and spreading into natural areas, earning themselves the title of "exotic invasive plants."

Not all non-native plants are invasive — think camellias, azaleas and gardenias. However, according to the South Carolina Exotic Plant Pest Council, a large number of invasive plants are actually landscape staples such as climbing vincas (*V. major* and *V. minor*), Leatherleaf Mahonia (*Mahonia bealei*) or Nandina (*Nandina domestica*), all of which are non-native or exotic in origin. These silent invaders find their way out of the garden and into natural areas, roadsides and even waterways, posing a severe threat to the native plants that make up our distinctive Lowcountry landscapes.

ONLINE
For a guide to invasive plant pest species in South Carolina, go to **postandcourier.com/homeandgarden.**

By expanding our plant palette and swapping out these botanical bullies for native or well-adapted plants, we can help reduce the amount of taxpayer dollars going to remove invasive plants from state and national parks and other public areas. Over the next few weeks, I will offer up a series of "plant this, not that" suggestions for Lowcountry gardeners.

Ornamental Grasses

Chinese silver grass (*Miscanthus sinensis*) once was considered the height of low-maintenance beauty. This Asian introduction still is available for sale in the trade.

Please see **DABBS**, Page D2

Swap invasive, botanical bullies for native, well-adapted species

DABBS from Page D1

Initially bred to produce sterile seeds, it has since adapted in the landscape and now sends viable seeds blowing in the wind.

Found growing abundantly on disturbed sites and roadways, this aggressive grass is taking over native plant communities.

Swap this miscreant for a native grass such as Sweetgrass (*Muhlenbergia filipes*), River Oats (*Chasmanthium latifolia*) or Sand Cordgrass (*Spartina bakerii*).

Evergreen Shrubs

Both Chinese and Japanese privet (*Ligustrum spp.*) have become simultaneously invasive and overused in the landscape. There are many readily available native and well-adapted plants that can be easily swapped for these misbehaving evergreens.

Sporting bright green foliage and a snappy upright form, Carolina cherry laurel (*Prunus caroliniana*) makes an excellent backdrop in the landscape. Several native hollies are good substitutions as well. Yaupon holly (*Ilex vomitoria*) and Inkberry holly (*Ilex glabra*) are reliable, easy to grow and add interest with berries and evergreen foliage. Prostrate plum yew (*Cephalotaxus harringtonia*) is a well-adapted, slow-growing evergreen with a fine texture that would make a good swap for Chinese privet.

Vines

Several vines top the invasive plant list, including English Ivy, Chinese and Japanese Wisteria and multiflora rose.

Consider swapping Asian wisterias for the American variety (*Wisteria frutescens*), which is just as beautiful without becoming a nuisance. Plant evergreen Crossvine (*Bignonia capreolata*) instead of ivy or vinca (also found on the "most wanted" list).

Purple passionflower (*Passiflora incarnata L.*) is a great swap for any invasive vine as it rewards gardeners with its beautiful flowers and attracts hordes of gulf fritillary butterflies. Don't panic when the caterpillars eat the vine, it will bounce back!

Native coral honeysuckle (*Lonicera sempervirens L.*) boasts red tubular flowers on scrambling semi-evergreen vines, easily outshining any invasive interloper. Send Carolina Jessamine (*Gelsemium sempervirens*) climbing up arbors and trellises to add a pop of early yellow color and evergreen foliage instead of planting more ivy or wisterias. Both will attract hummingbirds and other pollinators.

Amy L. Dabbs is the urban horticulture extension agent and tri-county Master Gardener coordinator for the Clemson University Cooperative Extension. Send questions to gardening@postandcourier.com.

ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM

Appendix

Articles

POST AND COURIER *As part of the Home and Garden section in the Sunday edition of the* Post and Courier, *an article highlighting rainwater harvesting as good water stewardship was featured. The article was written by Clemson Extension's Kimberly Counts and ran on December 16, 2012.*

Barrels can save rainwater — and money

BY KIMBERLY COUNTS
Special to The Post and Courier

Amy Dabbs' column will return in two weeks.

Rain barrels make great holiday gifts for that hard-to-buy-for-person on your list. Rainwater harvesting is an ancient practice that is still widely used throughout the globe and is regaining popularity in the United States.

Counts

They are used to gather and store rainwater. For the purpose of this article, we are discussing small-scale rainwater harvesting for outdoor, nonpotable uses such as irrigation, washing the car, filling the birdbath, soaking compost, etc.

Potable use for human consumption is possible but requires a more complex system allowing for treatment of rainwater.

Why harvest rainwater? My initial response to this question is "potential." I like to call it the "ah-ha" moment, when a person contemplates (maybe for the first time) the sheer quantity of water flowing off their rooftops during a rainfall and its potential uses.

Some of the rainwater that hits our roofs runs off to irrigate foundation plants. Some is captured by gutters and diverted by the downspout onto the lawn.

Often, much of the water is left to run off the

Please see **COUNTS**, Page D4

KIMBERLY COUN

These rain barrels at the College of Charleston Green Teaching Garden at the Grice Marine Laboratory were painted by students from Harbor View Elementary School.

Barrels can save rainwater, and money

COUNTS from Page D4

roof, down the driveway, into the street to a ditch or storm drain and deposited into a nearby waterway untreated.

As a general rule of thumb, for every one inch of rain and every one square foot of roof surface area, the potential exists to capture more than six-tenths of a gallon of water.

To put this in perspective, in the Lowcountry, our average yearly rainfall is about 50 inches.

A 1,000-square-foot roof could potentially harvest more than 30,000 gallons of water annually. It is highly unlikely that most of us will build a system capable of such proportions, but with our rain patterns, we should have no problem filling a 55-gallon rain barrel or two.

Other reasons for collecting rainwater include the potential to save money on utility bills over the long term, the ability to control moisture levels around the foundation of our homes, and the fact that many plants thrive on this source of pH neutral water.

Harvesting rainwater is a good stewardship practice for conserving and protecting clean water.

An obstacle to harvesting rainwater often is the absence of gutters or downspouts. Considering the numbers just mentioned, a few feet of gutter goes a long way. For example, at my house I keep a 55-gallon barrel full with just over 5 feet of gutter over a small porch.

Another simple option is to attach rain chains to the corners of your home where water collects. The rain chain will divert this water directly into a rain barrel.

Most rain barrels are gravity fed; using the force of gravity to push the water out of the barrel. Electric- and solar-powered water pumps for rain barrels do exist, but for the sake of simplicity, we will stick to gravity fed for this article.

To have enough pressure to push the water through a hose, barrels should be elevated. Since a 55-gallon rain barrel weighs more than 450 pounds when full, make sure the barrel is stable to avoid injury.

Some of the best techniques for elevating rain barrels include creating a cinder-block base or building a platform that elevates the barrel a few feet off the ground. Head pressure will push enough water through a hose or drip irrigation to irrigate garden plants; however, there will not be enough pressure to use a soaker hose.

Many rain barrels are available for sale these days. It is important to pick one that is designed appropriately to avoid complications. Look for a barrel with the following features:

- Outlets that can be turned on and off.
- Emergency overflows that allow water to escape when barrel is full. (Be sure the flow is directed away from the house.)
- Dark color to prevent sunlight penetration and algae growth.
- Recycled barrels should be food grade and never been used to transport chemicals.
- Point of water entry should be secure to exclude small animals, and screening must be present to prevent mosquitoes.

To learn more about rainwater harvesting, barrel maintenance, and building your own, visit **www.clemson.edu/carolinaclear** and download a free copy of the Rainwater Harvesting for Homeowners Guide, produced by the Clemson University Carolina Clear Program.

Kimberly Counts is a Clemson Extension, Water Resources Agent and Carolina Clear coordinator.

Appendix

Articles

POST AND COURIER *As part of the Home and Garden section in the Sunday edition of the* Post and Courier*, an article highlighting stormwater runoff pollution and stormwater ponds was featured. The article was written by Clemson Extension's Guinn Garrett and ran on April 21, 2013,*

Minimize pollution from runoff

EDITOR'S NOTE: Amy Dabbs' column will return soon. Meanwhile, her colleagues will write about Clemson Extension programs in the Lowcountry. Today, C. Guinn Garrett writes about floating wetlands/pond management for homeowners.

BY C. GUINN GARRETT

According to recent work funded through the Ashley Cooper Stormwater Education Consortium, more than 6,000 stormwater ponds exist in Berkeley, Charleston and Dorchester counties.

These types of ponds are designed to receive runoff from our streets and yards, protecting our homes from flooding, trapping sediment and pollutants and preventing them from making their way downstream.

However, without proper maintenance, stormwater ponds can release pollutants to the waterways that we use for our drinking water, fishing, swimming and boating. Clemson Extension and Carolina Clear have developed a website that provides owners with the knowledge needed to inspect and manage their stormwater ponds, which may be found by searching online for "Clemson stormwater ponds." Communities and pond owners also can be proactive in keeping stormwater ponds healthy. This spring, be the example for your community by following these simple steps in your yard to help minimize your impact on stormwater pollution. Remember, each change you make is a step toward keeping our waterways clean!

Garrett

- Be wise when you fertilize. There's a reason Ashley Phosphate Road has that name. Did you know that many of our coastal soils contain high amounts of phosphorous, a nutrient also commonly found in fertilizers? Overapplication of fertilizers on land can contribute to polluted runoff and problems in our ponds and waterways, including algal blooms and fish kills.

Before you fertilize, make sure you have a soil test performed to determine your lawn or garden needs. When applying fertilizer, always follow label directions and avoid application before heavy storms. Be sure any unused fertilizer is properly sealed. Visit **www.clemson.edu/agsrvlb/interest.htm** for information

Please see **GARRETT,** Page D6

Minimize runoff pollution

GARDEN from Page D1

on Clemson Extension's inexpensive soil test service.

- If you live on a pond or waterway, establish a vegetated buffer. Turf grass roots are shallow and offer little support against erosion from wave action and changing water levels. Instead, establish a buffer around your shoreline that uses native plants to stabilize soil and prevent property loss, while also deterring nuisance wildlife and minimizing the need for pesticide or fertilizer application. If buffer planting is not an option, consider establishing a 10-20 foot "no spray" zone along your shoreline to help prevent the likelihood of fertilizer or pesticides from entering the water. Visit Carolina Clear's website at **www.clemson.edu/public/carolinaclear** and check our "H2Ownership" factsheets for information on buffer design, native plant selection, and more.
- When "doody" calls, pick it up. Yikes! According to the S.C. Department of Health and Environmental Control, more than 10,000 pounds of pet waste are produced in the Charleston area per day. Pet waste is not only a stinky nuisance, but can be a significant contributor of bacteria and pathogens to waterways. Keep your yard and sidewalk tidy by picking up and properly disposing of pet waste. Your pond (and shoes) will thank you.
- Reuse or compost your grass clippings. Grass clippings blown into streets or storm drains result in clogged pipes, flooding and poor water quality. Remember, only rain should go down the storm drain. Compost your clippings or leave them in place as a low-cost way to return beneficial nutrients to the soil.
- Install a rain garden or rain barrel. Don't let water from your roof's downspouts go to waste. Instead of sending it to the storm drain, use that water in your home landscape. Save money on your water bill by installing a rain barrel to capture and store runoff for watering your flower garden. Or divert water from your downspout to a rain garden to allow water to soak into the soil while adding an attractive and self-sustaining feature to your yard.
- Keep the good guys in your yard. Regularly check your garden and lawn for the first signs of pest infestations. If you find a problem, properly identify the culprit before treating and keep in mind that some bugs are beneficial in the garden. Try good old-fashioned elbow grease to pull weeds or remove problem insects. If needed, use low-toxic chemical alternatives, such as insecticidal soaps, to spot treat. Call your local Extension office for help identifying and treating questionable weed or insect problems. In Charleston, call 722-5940; Dorchester County, 832-0135 in the Summerville area or 563-0135 in the St. George area; or Berkeley County, 719-4140.

For information on some of the practices mentioned here, visit the Ashley Cooper Stormwater Education Consortium at **www.ashleycooper.org** or email cggarre@clemson.edu.

C. Guinn Garrett is a water resources agent for Carolina Clear and Clemson University Cooperative Extension.

Articles

POST AND COURIER On August 11, 2012, *a Saturday edition of the* Post and Courier *featured an article on cigarette butt pollution prevention and highlighted Keep Charleston Beautiful's efforts to keep golf courses free of this form of debris.*

Keeping greens green

Cart, pocket ashtrays part of effort to rid butts from local course

MELANIE BALOG

People golf for relaxation, for exercise, to enjoy nature.

So it really stinks to find cigarette butts on the golf course.

And now, thanks to a Keep America Beautiful grant, Keep Charleston Beautiful is going to do something about it, at least at the Charleston Municipal Golf Course.

The arrangement had a serendipitous beginning, according to local program manager Jennifer Scales. Turns out Keep Charleston Beautiful shares offices with the city's parks and recreation department, so when they heard about litter issues, they started working with golf course manager Herb Whetsell on a plan for a grant.

Which works out well, because part of the requirements for receiving the money included ways to target specific audiences and something where data can be recorded.

A group of volunteers gathered 761 butts at seven specific locations along the course — and that was after Whetsell's crew had been through the course to clean it.

So the problem is unfortunately persistent and pervasive. The butts can take five years to decompose, at least. That's because, contrary to what some believe, they're not made of cotton — they're made of plastic.

As part of the Keep Charleston Beautiful effort, Municipal Golf Course offers this coin-purse-sized pocket ashtray to smokers to reduce cigarette butt litter.

A little help

One of the grant's advantages is that it comes with tangible materials for action, Scales said. The "My city is not your ashtray" bumper stickers are still available, of course.

But there also will be 200 ashtrays for cupholders on the golf carts, (Don't worry, there are still plenty of open cupholders for the beverage of your choice) and 400 pocket ashtrays.

Please see **BALOG,** Page B2

Grant helps keep our local greens green

BALOG, from B1

Yes, pocket ashtrays. They're made of hard plastic and lined with metal, and hold several butts, Scales said. That does a couple of things — it keeps the butts off the ground and gives those walking the golf course a safe place to hold them until they can be properly discarded.

Not a ban

Scales and Whetsell both said that a smoking ban on the course is not the answer.

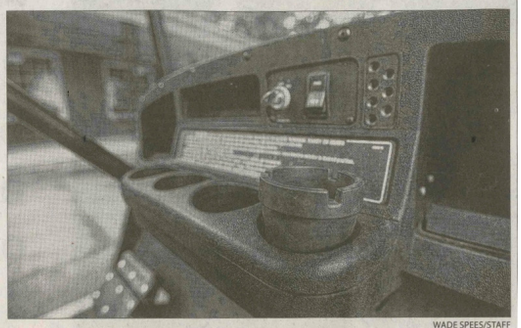
Whetsell said it would be way too difficult to enforce, for one thing. And he's not unsympathetic to the smoking golfers. He understands it's part of some folks' routines to have a few puffs before getting ready to tee off.

But more importantly, it'd be awfully difficult to tell people that they can't smoke in the open air. (Though it would be great if that were the rule at our beaches, but that's another column.)

The golf course is one of the few places left where people can congregate and smoke without being made to feel like pariahs.

"Our stance has always been if you choose to smoke, just choose not to litter," Scales said.

In other words, they're not the health police. They just want to keep things clean, which is reasonable.



WADE SPEES/STAFF

In addition to the coin-purse-sized pocket ashtray that the Municipal Golf Course offers smokers, a limited number of golf carts have ashtrays in a cup holder to reduce cigarette butt litter.

Making it work

Education is a big component of the grant. So announcing the program during the PGA Championship while golf is on everybody's mind certainly can't hurt.

"We could not have timed this better," Scales said.

It'll take some extra effort on the part of the golf course staff at all points, Whetsell said.

"For a while, we'll have to ask them if they're a smoker," when they come to the course, then make sure to offer them the pocket ashtrays. Once people get used to it, he thinks they'll take them.

If the effort is successful — the volunteers will go back to collect butts at least three times through the year to see if they've decreased — they'll ask for the grant to be renewed so they can move on to other public areas around Charleston.

Of course, it would be great if people would dispose of their trash properly in the first place, but this should certainly make it easier to do exactly what Scales' group is supposed to do: Keep Charleston beautiful.

Reach Digital Editor **Melanie Balog** at mbalog@post andcourier.com or 937-5565.

Appendix

Articles

WEST OF *The* West Of *newspaper published an article on March 20, 2013 highligthing storm drain marking efforts at West Ashley High School.*

WEDNESDAY MARCH 20, 2013

Where Does Your Water Shed?

WAHS MARINE BIOLOGY STUDENTS PARTNER WITH KALEIDOSCOPE PROGRAM

By Hannah Dockery Contributing Writer

The marine biology class from West Ashley High School has enlivened their after school routine. Instead of going home to relax on the couch or take a post-learning nap, these students are spending two additional hours at the end of their school day helping elementary-aged children learn about the environment.

Kaleidoscope is the afterschool care program for elementary school children in the Charleston County School District, responsible for nearly 3,000 children every day. Counselors and teachers provide kids with all kinds of educational fun, ranging from field trips to arts and crafts, to entertain kids after the final bell rings until parents come to pick up their student.

But for a young kid, it's a lot cooler when a teenager comes around.

The WAHS students noticed an opportunity to help instruct the younger generation through Kaleidoscope, and they were ready and willing to get involved. Through a partnership that launched last week, the select group of Margaret Spigner's WAHS science students travels to area elementary schools and teaches the kindergartners through fifth graders about rainwater run-off and the local watershed. "We love doing outreach," says Spigner. "And my students have done so much in preparation for this. It's something they enjoy doing, and are really excited about."

From 3:30 – 5 p.m., the high school students are responsible for separate "stations" explaining basic scientific and environmental principals ranging from groundwater to storm drainage. The younger students are divided up into groups based on age, receive a colored necklace as identification, and rotate to the different stations. The WAHS students cater the curriculum to the specific age groups, teaching more in-depth principals to the older kids, and easier concepts for the youngsters. The goal of the collaboration is to demonstrate how storm water runoff leads to pollution in local lakes, estuaries, and rivers. Hopefully, the lessons will be remembered long after 5 p.m. and this group of young scholars will make a positive impact on our coastal ecosystem.

The local community jumped on board to help the partnership happen. Lowcountry STEM Collaborative donated a groundwater flow model, and the Clemson Cooperative Extension donated decals that can be attached to storm drains, encouraging the population to prevent pollution. If that wasn't enough, Spigner's class received a work-based learning grant on behalf of the school district to purchase supplies necessary to enhance and illustrate their curriculum. "We're hoping to help connect these young kids with their environment. We want them to see that everything is interconnected," Spigner says.

The partnership began at Stono Park on March 8. On March 14, the marine biology students traveled to Springfield, and on the next day, Drayton Hall. In the next two weeks, they will make stops at Oakland, St. Andrews, and Ashley River. "The kids have really seemed to enjoy it...the elementary ones and the high school kids. It's a great thing to do to get everyone involved and help make a difference," says Karl Gueldner, community education director at West Ashley High.

And perhaps what is most exciting for these young scientists... they get to wear goggles, rubber gloves, and orange vests.

"Aren't these students great?" Spigner says, looking onto the cafeteria full of working students and young minds. "They really have been doing such a great job with this. I'm so proud of them."

West Ashley High School student Kat Baumgardner teaches Drayton Hall Elementary student about storm drain runoff.

A West Ashley High School student teaches some Drayton Hall Elementary School students about stormwater runnoff during the Kaleidoscope after school program.

Articles

MARKET BULLETIN The SC Department of Agriculture's "Market Bulletin" newsletter included an article on *Rain Barrels on March 21, 2013. The Market Bulletin is distributed to approximately 20,000 readers statewide.*

Carolina CLEAR
A Public Service of Clemson University

Rain Barrels

With the recent rains South Carolina has received, now is the time to capture that water for use around your home and garden throughout the spring and summer months. The idea of collecting rain for later use has picked up interest in the last few years. With 50 percent of household water used outdoors, using collected rainwater can reduce costs while keeping polluted runoff from hitting our state's waterways, said Terasa Young with Clemson Extension in Florence County.

With captured rainwater, homeowners can provide nitrogen-rich, chlorine-free water to plants and potentially cut down on costs. Surprisingly, it takes relatively little rainfall to fill an average 55 gallon rain barrel. Just a quarter of an inch of rain falling on a 1200 square foot roof would result in nearly 200 gallons of water.

If you would like to start saving up your rainy days, instructions on how to build your own rain barrel can be found in Clemson's Rainwater Harvesting for Homeowners Manual. The manual can be purchased for $8 from Clemson's PSA shopping mall. A free downloadable version is also available in the NPS Toolbox of the Carolina Clear website at www.clemson.edu/carolinaclear.

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