2013 University of Rhode Island Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

In this report we describe the activities and impacts of programs associated with the Rhode Island Agricultural Experiment Station (RIAES or Station) and Rhode Island Cooperative Extension (RICE or Extension); collectively referred to as the Land Grant Programs at the University of Rhode Island (Land Grant Programs @ URI). RIAES and RICE are collaborative elements within the College of the Environment and Life Sciences (CELS) at the University of Rhode Island (URI). Administrative oversight of RIAES and RICE is provided by the Dean of CELS. Day to day management of the Land Grant programs is provided by the Associate Dean.

The programs and projects supported within the Land Grant @ URI portfolio span a wide range of disciplines, from the natural sciences to the social sciences. Equally important, the solutions that we share with stakeholders are based upon solid university research; research that depends on appropriate, modern infrastructure; the cutting edge tools of science; and multidisciplinary, multistate, problem-based approaches. The Land Grant programs @ URI are focused around a portfolio of 6 programs that currently include: 1) Food Safety and Nutrition; 2) Sustainable Energy, Climate Change and the Environment; 3) Food Production and Sustainability; 4) Youth, Families and Communities; 5) International Programs; and 6) CELS CARES (College of the Environment and Life Sciences-Community Access to Research and Extension Services).

The Station and Extension are integral components of the missions of the College and University. The collaborative relationship with our federal partner, NIFA, has enabled our scientists, staff and students to leverage additional resources that provide contemporary knowledge, essential services and innovative programming for all Rhode Islanders.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	30.1	0.0	28.6	0.0
Actual	20.1	0.0	43.1	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- External Non-University Panel

- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

RIAES and RICE use a Request for Proposals (RFP) strategy for the initiation of new projects/programs and the continuation of ongoing projects/programs. In short, a RFP solicits proposals in a specific target area (e.g., Equipment; Multistate Projects; Integrated Projects) that complements current areas of agricultural research and outreach or provides opportunities for expanding scope and mission of the Land Grant Programs @ URI. (Stakeholders assist in determining what needs are to be met by the RFP. See Stakeholder Input.) Proposals are reviewed by an internal panel of experts (Program Area Leaders [PALS]; rotating appointments), ad hoc University experts, and by a panel of 3 to 4 experts from outside the institution (external university panel). Proposals are ranked according to an evaluation rubric. Highest ranking proposals are then selected for funding.

RIAES and RICE also utilize Land Grant and state funding to support new faculty outside of the RFP process. Selection of new faculty for support by Land Grant funding is done by the Director in consultation with a panel of internal university experts. This allows both the Station and Extension to attract the best and brightest to complement ongoing research and outreach endeavors.

New faculty members supported by Land Grant funds are obligated to write Hatch, Hatch regional or Cooperative Extension proposals. The proposals are reviewed by external experts and input is sought from those experts. The input is utilized by the new faculty member/proposal writer to improve the quality of the proposed project. After which, the proposal is entered into REEPORT.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public

Brief explanation.

Diverse stakeholder input is solicited through robust, multi-level processes which provide opportunities for multiple channels of communication. These levels include: the project (typically sought by a principal investigator[s]), the program (sought by principal investigators or program

leaders) and at an administrative level (sought by the Dean/Director). Additionally, at the administrative level, the Dean employs a variety of collaborative external groups including the Agriculture Industry Advisory Group. Hence, input from stakeholders is robust.

Although programs within the Rhode Island Plan of Work utilize different strategies for seeking stakeholder participation and input, the following were all used to encourage stakeholder participation: use of media to announce public meetings and listening sessions; targeted invitation to traditional stakeholder groups; targeted invitation to non-traditional stakeholder groups; targeted invitation to traditional stakeholder individuals; targeted invitation to non-traditional stakeholder individuals; targeted invitation to selected individuals from general public; survey of traditional stakeholder groups; survey of traditional stakeholder individuals; survey of the general public; survey of non-traditional groups; and survey of selected individuals from the general public.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Identification of individuals and groups was facilitated using advisory groups, internal focus groups, external focus groups, open listening sessions, needs assessments and use surveys. User groups also assisted in the identification of individuals. Examples of user groups that were solicited to identify stakeholders included the Rhode Island Agricultural Partnership (architect for Rhode Island's Five-Year Strategic Plan [http://www.farmland.org/documents/RI_agriculture_5yr_strategicplan.pdf]), the Rhode Island Department of Environmental Management Division of Agriculture, Rhode Island Nurserymen and Landscaper Association, the Rhode Island Natural History Survey, and municipal officials. One of the benefits of working in the smallest state is access to stakeholders. We're a state that's 1,000 square miles with a little over a million people.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups

- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public

Brief explanation.

Each of the following methods was used to collect stakeholder input: meeting with traditional stakeholder groups; survey of traditional stakeholder groups; meeting with traditional stakeholder individuals; survey of traditional stakeholder individuals; meeting with the general public; survey of the general public; meeting specifically with non-traditional groups; survey specifically with non-traditional groups; meeting specifically with non-traditional individuals; survey specifically with non-traditional individuals; meeting with invited selected individuals from the general public; and survey of selected individuals from the general public. Additionally, the Dean/Director employed an advisory group, the Agricultural Industry Advisory group, to provide input and reflections on the mission of the Land Grant programs and the direction of the programs including state needs. Importantly, each of the programs described in this report did not use all the methods listed above.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Input was collected from external audiences and assessed. Emerging issues as well as continuing needs drove priority setting, action plans, budgeting and resource allocation.

Brief Explanation of what you learned from your Stakeholders

The critical element on stakeholder input is sifting wants from needs. Stakeholders are very eager to share reflections; the key strategic feat is separating the reflections into actionable steps.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1004245	0	1407684	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	941940	0	1866820	0
Actual Matching	1029509	0	1653560	0
Actual All Other	0	0	0	0
Total Actual Expended	1971449	0	3520380	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	438230	0	1372007	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Food Safety and Nutrition

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	10%		35%	
703	Nutrition Education and Behavior	10%		35%	
704	Nutrition and Hunger in the Population	30%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	25%		15%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.6	0.0	2.5	0.0
Actual Paid Professional	1.4	0.0	5.3	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
69588	0	294075	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
120621	0	144677	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Food Safety:

- Continue to implement HACCP training for RI school food service operations
- Provide HACCP and sanitation education programs to a variety of food processors
- Host an annual Food Safety Conference for public and private stakeholders
- Maintain a Good Agricultural Practices (GAP) Program for commercial growers of fruit and vegetables
- Maintain RI Food Safety Manager courses
- Develop Food Safety Curriculum materials for Special Needs students (ages 16-21)
- Further development of time-temperature barcodes to continuously monitor the temperature of food products.
- Outreach on non-thermal technology to shellfish and produce producers
- Update and maintain website and listserv
- Develop and implement food preservation classes for consumers
- Outreach education to farmer market managers

Nutrition:

- Data collection
- Fitness testing and body composition analysis
- Survey and questionnaire completion
- Blood analysis and dietary intake calculations
- Facilitate partnership with diverse communities
- Refine curriculum and teacher training programs
- Test interventional modalities for health maintenance and obesity prevention
- Analyze data and evaluate outcomes

Food Security:

- Assess the diet quality of targeted low-income, vulnerable populations.

- Assess the food security status of targeted low-income, vulnerable populations.
- Assess the food resource management and food safety practices of the target audience.
- Develop and implement assessment tools, curriculum, print materials and social marketing campaigns.

- Evaluate the effectiveness of interventions and materials related to behavior change.
- Facilitate and strengthen community partnerships.

2. Brief description of the target audience

Food Safety:
Food industry and food service workers and managers, food processors, consumers, agricultural producers, home gardeners, school administrators, school-aged children and their caregivers, special needs students, teachers, community volunteers, Master Gardener volunteers.

Nutrition:
Lean and obese adults; ethnic men and women; low-income, school-age children and families

Food Security:
Low-income, Food Stamp-eligible and participating families, children and older adults.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual

2013	5

Output #2

Output Measure

- Abstracts

Year	Actual
2013	2

Output #3

Output Measure

- Professional training sessions

Year	Actual
2013	95

Output #4

Output Measure

- Volunteer training

Year	Actual
2013	4

Output #5

Output Measure

- Conferences hosted

Year	Actual
2013	1

Output #6

Output Measure

- School based training sessions

Year	Actual
2013	129

Output #7

Output Measure

- Website development and refinement

Year	Actual
2013	2

Output #8

Output Measure

- Student training

Year	Actual
2013	31

Output #9

Output Measure

- Intervention studies

Year	Actual
2013	0

Output #10

Output Measure

- Workshops

Year	Actual
2013	1451

Output #11

Output Measure

- Scientific/professional presentations

Year	Actual
2013	4

Output #12

Output Measure

- Thesis/dissertation

Year	Actual
2013	3

Output #13

Output Measure

- Public service announcements

Year	Actual
2013	0

Output #14

Output Measure

- Social marketing

Year	Actual
2013	1

Output #15

Output Measure

- Fact sheets, bulletins and newsletters

Year	Actual
2013	35

Output #16

Output Measure

- Video productions

Year	Actual
2013	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Develop, implement and evaluate new health and food safety training and resource materials for targeted audiences such as consumers, educators, food industry personnel and health care providers (# of new programs).
2	Commercial growers of fruit and vegetables, food industry producers, processors, and school personnel foodservice will participate in appropriately directed food safety (# people trained).
3	Increase understanding of motivators and barriers of making healthy food choices and the impact these food choices have on lipoprotein metabolism and metabolic syndrome in young adults.
4	Increase understanding and behavior change with regard to decreasing dietary intakes and increasing physical activity level, and the impact of these changes on body fat mass, physical function, and coronary heart disease risk factors in obese older women.
5	To develop and test laboratory techniques, free-living methodologies, and interventions to assess and improve within-meal eating behaviors, in the interest of healthy, effective body weight management and obesity prevention.
6	EFNEP and FSNE Families and Older Adults will improve dietary practices from baseline in one or more domains (diet quality, food security, food resource management, or food safety) thus reducing future risk of disease and improving health and quality of life.
7	Revise, as necessary, and implement food safety education for consumers, school educators, students and volunteers in Rhode Island and within the US.
8	Assess and address individual and environmental factors that influence eating behavior of young adults

Outcome #1

1. Outcome Measures

Develop, implement and evaluate new health and food safety training and resource materials for targeted audiences such as consumers, educators, food industry personnel and health care providers (# of new programs).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Health and food safety issues concerning a variety of foods keep evolving and information to target audiences require continuous revision and updating. Therefore new training and resource materials need development/revision evaluation and implementation. In addition, new types of communication efforts are important to reach audiences.

What has been done
A new farmer listserve was also developed and launched to establish better communication with this target audience. The URI food safety websites (http://web.uri.edu/foodsafety/)has been revised and is updated 1-2 times/year.

Results
The listserve reaches over 300 participants. This will be used to announce classes and ask for farmer input regarding outreach education. The website has updates that reflect updates for current programming and additional information. Collaboration with RI Department of Education continued to provide Residential Child Care Institutional facilities with HACCP-based training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #2

1. Outcome Measures

Commercial growers of fruit and vegetables, food industry producers, processors, and school personnel foodservice will participate in appropriately directed food safety (# people trained).

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	415

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is need for food safety information throughout the diverse RI community of educators, consumers, foodservice workers, food industry personnel and processors and commercial fruit and vegetable growers. Federal and state regulations mandate specific training that allows the RI food industry to be in compliance. In addition, new federal regulations require outreach efforts to prepare processors for implementation. Participation in voluntary food safety programs is either becoming mandatory or an expectation for business and non-profits.

What has been done
The URI Food safety Education Program has offered a variety of food safety training programs to numerous professional target audiences to address state and federal mandates and other food safety concerns. All trainings are revised to reflect current regulatory and research information. Good Agricultural Practices curriculum in support of the RI program has been extensively updated and rewritten to reflect new information and regulatory mandates. Seafood and Meat and Poultry HACCP curriculums as part of an University of CT and URI partnership, are also updated as least yearly.

Results
The URI Food Safety Education Program has, in collaboration with regional academic partners and RI state agencies, successfully offered or participated in 12 professional training sessions (e.g. workshops, webinars, conferences) that have been highly evaluated. HACCP and GAP classes have been consistently rated highly. Approximately 190 processors, in RI and across the region, have attended workshops related to seafood, meat/poultry and produce. In addition, over 1000 seafood processors are reached by a yearly newsletter, a collaboration with the University of Connecticut.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

Increase understanding of motivators and barriers of making healthy food choices and the impact these food choices have on lipoprotein metabolism and metabolic syndrome in young adults.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	96

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Young adults (those 18-24 years of age) are a population of interest, as identified by the National Institutes of Health and the American Heart Association in regards to risk for coronary heart disease. These organizations feel that there should be more of an emphasis on primordial intervention. Young adults are presenting with abnormal lipoprotein metabolism more frequently - this results in increased risk of metabolic syndrome and coronary heart disease. Because lifestyle choices, especially dietary intake, can impact this increased risk, using various types of messaging to improve dietary intake to reduce coronary heart disease risk.

What has been done
In the fall of 2012, we initiated a nutrition intervention in conjunction with other stakeholders in the project - URI's Dining Services and Student Health Services. Using information from previous focus groups, messages for email/text and for point-of-selection were developed. The messages targeted increasing whole grains and low-fat dairy products. Prior to starting the messaging, we did baseline testing - anthropometrics, biochemical, clinical and dietary measures. These same measures were repeated at post-intervention and at follow-up (6 months post-baseline).

Results

The most common biochemical risk factor was low HDL-cholesterol which is an independent risk factor for coronary heart disease. Based on dietary records from the participants and from purchasing records from URI's Dining Services - students increased their intake of whole grains. Participants reported that they noticed the point-of-selection signs the most and therefore those signs had the most impact. The next step will be to identify funding for a study that combines the messaging with environmental changes to enhance ability of students to make healthy choices in all-you-can-eat dining halls in college/university settings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures

Increase understanding and behavior change with regard to decreasing dietary intakes and increasing physical activity level, and the impact of these changes on body fat mass, physical function, and coronary heart disease risk factors in obese older women.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity-related disability and coronary heart disease (CHD) are urgent public health problems in Rhode Island as our residents age. Many of those who experience obesity-related disability will not regain their physical function capacity and will permanently lose their independence. Older women are at a particularly high risk of obesity-related disability and socioeconomic status is an important predictor of physical activity behavior. However, obesity-related disability and CHD are at least partially treatable and preventable through exercise and diet.

What has been done
Using a non-randomized design, 26 obese women (65.2 ± 8.1 yr) completed a 12-week intervention; participants were assigned to an intervention group (EXD, BMI = 38.8 ± 5.1 kg/m2)

or a control group (CON, BMI = 36.6 ± 3.4 kg/m2). The EXD group (n = 17) participated in Tai Chi three times per week, a resistance training session twice a week, as well as a dietary session once weekly. The CON group (n = 9) was asked to continue their normal lifestyle. Outcomes measured were diet quality, the short physical performance battery (SPPB), the timed up and go (TUG), chair-sit and reach to measure flexibility, body composition, and leg and grip strength.

Results
The sample was 85% non-white and the average attendance for all aspects of the intervention sessions was 67.5% in the EXD group. The EXD group had significantly higher dietary quality (66.5±10.2) compared to the control group (54.4±12.8,) at post intervention, but there was no difference in nutrition risk category. TUG time was significantly reduced by 0.64 ± 2.1 sec in the EXD group while the CON group saw a significant increase of 0.71 sec. Flexibility measurements improved by 2.31 ± 5.4 cm in the EXD group, however, the CON group saw no significant changes from baseline (1.69 cm ± 6.97). There were no changes in body composition variables.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

To develop and test laboratory techniques, free-living methodologies, and interventions to assess and improve within-meal eating behaviors, in the interest of healthy, effective body weight management and obesity prevention.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

EFNEP and FSNE Families and Older Adults will improve dietary practices from baseline in one or more domains (diet quality, food security, food resource management, or food safety) thus reducing future risk of disease and improving health and quality of life.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Diet Quality is directly linked to health outcomes. The EFNEP/SNAP-Ed programs have focused on diet quality and food resource management especially during the continued economic slowdown. With poverty levels as high as they are, food choices have been negatively impacted. Decreased nutrition in all ages will result in increased disease.

What has been done
A focus has been placed on increasing fruit and vegetable consumption among all age groups and decreasing the consumption of sugar-sweetened beverages and energy dense snacks. Workshop series are implemented to expand contact hours, increase dosage and increase greater opportunity for behavior change. A total of 802, 6 week workshops were conducted. Approximately 13,500 direct contacts and 100,000 indirect contacts were recorded. We distributed over 60,000 program-related materials including recipes, fact sheets, posters, calendars and handouts. Social media continues to attract interest through a more extensive website, twitter and pinterest accounts.

Results
78% of EFNEP participants showed improvement in one or more food resource management practice (plan meals, compare prices, does not run out of food or uses grocery lists).

46% of EFNEP participants showed improvement in two or more food resource management practices (plan meals, compare prices, does not run out of food or uses grocery lists).

Youth participating in a series of programs taught by SNAP-Ed educators (n=305) showed a 11.5% increase in fruit intake and an increase in vegetable intake of 21% from pre to post testing.

Adult participants of SNAP-Ed (n=441) programming increased their total fruit intake by 13% and their vegetable intake by 5% after a series of 4 workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

Outcome #7

1. Outcome Measures

Revise, as necessary, and implement food safety education for consumers, school educators, students and volunteers in Rhode Island and within the US.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	347

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The local food movement has fostered a revival of interest in home food preservation. Issues related to quality and safety related local production and preservation should be addressed. School educators and volunteer foodservice workers continue to require professional development and food safety training.

What has been done
Preservation presentations have been developed and offered to consumers interested in home preservation. Interviews have also been given to the state newspaper regarding food safety concerns. General food safety presentations were developed. The annual conference continues. Educational displays about gardener and GAP food safety has been used with the help of Master Gardener volunteers. Food Safety Manager Certification review and exam was offered to dietetics students at URI. A variety of consumer and foodservice worker trainings were completed.

Results
Workshops have been delivered and have been well received and attended. Static displays have been used at fairs/festivals. The specialists expanded the food preservation offerings to include hands-on classes which were well received. Food safety display regarding emergency food handling was created. 8045 participants received or participated in a variety of training sessions and workshops.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #8

1. Outcome Measures

Assess and address individual and environmental factors that influence eating behavior of young adults

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This project is part of the multi-state project NC1193. The proposed study uses CBPR to expand and refine the developed tailored intervention strategies to promote healthful eating behavior patterns and refine and validate assessment tools that can be used assess health-related behaviors and perceptions as well as measure environmental factors that influence eating behavior patterns and health outcomes.

What has been done
We have developed steering committees to work collaboratively with researchers to determine specific elements for behavioral and perceptual assessments. Principal investigators have implemented and refined the newly developed College Environments Perception Survey to further explore the college campus obesity prevention index. Correlations between the environmental perceptions scale and student health indicators (i.e. BMI, percentage meeting minimum minutes of physical activity per week and recommended intakes of fruits and vegetables) were evaluated among the campuses to validate the scale. We have improved the behavioral assessment scale and environmental perception scale adapted from instruments developed during previous multistate project NC1028 and adding items developed by the NC 1193 Environmental Audit to the perception scale. In this objective we will take the perception and behavioral scales and link them to health outcomes. Rhode Island activities completed during the timeframe noted above that contributed to the long-term goals of this project include the following.
?PI participated in multistate teleconferences.
?PI participated in behavioral committee, data committee and administrative/executive committee teleconferences.
?Participated with multistate partners in preparation and submission of national grants to support one or more of multistate goals.

Results
1.Participated in data analysis from Project Yeah (USDA/NRI Integrated grant). Manuscript preparation is continuing. The websites for both the program for Job Corp and college campuses has been transitioned from research to consumer sites.
2.Continued work with Melanson (PI) developing and testing methods to assess within-meal eating behaviors and to reduce eating rate in free-living individuals. We have taken our measures from lab setting into community. Additionally, we have analyzed the YEAH data for relationships among perceived stress, BMI, and health-related behaviors, with a new specific focus on stress

management.
3.Continued work with Lofgren (PI) on an intervention aimed at increasing intakes of whole grains and low-fat dairy in college students. The quasi-experimental study that started last year is now complete.
4.Completed a Green Eating (GE) curriculum and instrument, along with an exploratory GE intervention study, and a study assessing dietary quality before and after this intervention.
5.Developed a new approach for assessing eating rate in community settings, and developed a protocol for testing it in Providence area women suffering from food insecurity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The economic situation during 2013 continued to be a dire one for Rhode Island, as the state recorded the second highest level of unemployment in the country. SNAP participation continues to increase as the federal and state budgets decreased.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Workshops and training programs use validated pre- and post-assessment tools; eveidence based curriculum have been adopted. Behavior change is assessed through longer tracking of participant behaviors identified prior to participating in programming.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Sustainable Energy, Climate Change and the Environment

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%		5%	
112	Watershed Protection and Management	15%		15%	
123	Management and Sustainability of Forest Resources	5%		5%	
131	Alternative Uses of Land	5%		5%	
132	Weather and Climate	10%		10%	
133	Pollution Prevention and Mitigation	10%		10%	
135	Aquatic and Terrestrial Wildlife	9%		9%	
136	Conservation of Biological Diversity	8%		8%	
605	Natural Resource and Environmental Economics	10%		10%	
608	Community Resource Planning and Development	8%		8%	
721	Insects and Other Pests Affecting Humans	5%		5%	
722	Zoonotic Diseases and Parasites Affecting Humans	5%		5%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.5	0.0	11.0	0.0
Actual Paid Professional	3.5	0.0	17.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
253812	0	541222	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
106794	0	610443	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Vector Borne Diseases

· Use surveillance data accumulated over a dozen years to develop new tools to pinpoint risk, both spatially and seasonally.

· Use computer models to view disease patterns in Rhode Island and to develop models for disease risk.

· Determine landscape patterns that present the greatest risk for encountering a tick bite.

· Formulate landscape plans to reduce the chances of encounters between ticks and people.

· Create a web-based decision support system. Using this system, people will be able to compile a customized risk index and then follow links that will help them devise short- and long-term disease prevention action plans.

· Reduce tick abundance community-wide by using USDA-designed 4-posters, which are devices that attract deer with corn dispensed in small amounts.

· Study the salivary glands of ticks to find compounds from ticks with potential pharmacological value, formulate novel vaccination strategies to prevent tick-transmitted infections, develop biomolecular assays for tick-borne pathogens, elucidate transmission dynamics of pathogens among tick vectors and vertebrate hosts, and discover and evaluate natural enemies of ticks.

Climate Change

· Research investigations focus on watershed patterns and processes that affect the fate of nitrogen and environmental flows. Research methods include lab and field studies as well as geospatial analyses.

· Extension programs create locally relevant programs focused on land and community management. In cooperation with stakeholders and partner agencies, we will identify needs and build upon successful local programs to create and disseminate new materials, tools and curricula in RI and New England. Our water quality programs will continue development, delivery, training and application of proven water quality management tools and techniques such as:

o Develop of curricula and training on best management practices (BMPs) for conventional and alternative and innovative onsite waste water treatment

o Public outreach and training on stormwater management

o Development of curricula and training regarding private wells

o Volunteer Water Quality Monitoring

The Environment and Adaptive Agro-ecosystems

· Sustaining wildlife through habitat management is a critical issue for RI. Migrating song birds

require suitable food sources to complete their migration and coastal lands have undergone extreme changes in vegetation, potentially imperiling migration success and fecundity for many native species. Ruffed Grouse are of particular concern in southern New England because they are a native gamebird species that is currently too rare to sustain a hunting season and they serve as a "sentinel species" for the response of many species to the success or failure of management of early successional forests.

- Although vernal ponds in forested watersheds provide essential habitat for a host of organisms, the fecundity of these organisms is highly linked to forest disturbance and management, requiring a careful understanding of the underlying ecology.
- Invasive plants threaten the integrity of New England habitats and could affect biodiversity within the state. Research and extension programs are planned to assess invasives and develop strategies for mitigation.

Sustainable Energy

- Energy audit and GHG inventory in selected municipalities/businesses
- Feasibility and implementation of energy efficiency and renewable energy technologies
- Municipal energy training:

o Training for municipal officials and employees
o Climate Showcase Community conferences

- Residential Energy Education:

o Participants pledge 10% energy savings
o Trained volunteers conduct locally-based education and outreach

- Outreach Activities:

o Sustainable energy page on local websites
o Community workshops

- Traditional and web media

2. Brief description of the target audience

Target Audience
Vector Borne Diseases

The target audience will be diverse and will represent all Rhode Islanders, especially those at greatest risk of contracting vector borne diseases. This audience will include: community members, grassroots agencies, municipal and state policy makers, home owners and educational institutions.

Climate Change

Public decision makers; policy makers; NRCS; local, state and federal agencies; municipal planners; private sector firms engaged in watershed management, landscaping, onsite waste water treatment and private wells; NGOs (land trusts, environmental organizations, etc), agricultural producers, the public

The Environment and Adaptive Agro-ecosystems

A mixture of public policy personnel (federal and state agencies as well as town conservation, planning and management officials), local nonprofit groups involved in land management, such as conservancies, interested and involved citizens, and private landowners and high school students through training and participation in the Rhode Island Environthon.

Sustainable Energy

Municipal officials, building and utility managers, financial administrators, mayors/town managers, municipal employees, residential energy consumers, school systems

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	21	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2013	21

Output #2

Output Measure

- Books and monographs

Year	Actual
2013	0

Output #3

Output Measure

- Abstracts

Year	Actual
2013	57

Output #4

Output Measure

- Conference proceedings

Year	Actual
2013	26

Output #5

Output Measure

- Fact sheets, bulletins and newsletters

Year	Actual
2013	71

Output #6

Output Measure

- Training manuals (includes instructional CD?s)

Year	Actual
2013	0

Output #7

Output Measure

- Scientific/professional presentations

Year	Actual
2013	0

Output #8

Output Measure

- Workshops (including short courses)

Year	Actual
2013	17

Output #9

Output Measure

- Conferences hosted

Year	Actual
2013	28

Output #10

Output Measure

- Website development and refinement

Year	Actual
2013	221

Output #11

Output Measure

- Public presentations

Year	Actual
2013	161

Output #12

Output Measure

- Public service announcements

Year	Actual
2013	0

Output #13

Output Measure

- Student training

Year	Actual
2013	190

Output #14

Output Measure

- Thesis/dissertation

Year	Actual
2013	10

Output #15

Output Measure

- Postdoctoral training

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Identify areas of high risk for vector borne diseases in Rhode Island
2	Create tick surveillance database
3	Create web-based decision support system to reduce risk to vector borne diseases.
4	Reduce tick abundance community-wide
5	Increased (%) of in the proportion of professionals and the public knowledgeable about maintenance, improvement and challenges of climate variability and climate change related to onsite wastewater treatment.
6	Increased (%) development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.
7	Increase in targeted households and professionals gaining knowledge of testing, treatment and protection of private well water and management options related to land use, climate variability and climate change. Increase in targeted households and professionals gaining research-based knowledge of testing, treatment and protection of private well water.
8	Increase in the proportion of the public and professionals knowledgeable about management of storm water and options for addressing risks related to watershed changes, climate variability and climate.
9	Development of a rapid-response to public concerns about local HAB's. Increased development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.
10	Increased understanding by wildlife biologists, NGOs, local and state officials through publications and talks on people's willingness to support ecosystems and conservation.
11	Increased understanding by wildlife biologists and managers through publications and talks of how habitat quality and management practices affect populations of migrating song birds.
12	Our proposed research would increase understanding of three critical issues: inadequate GIS-based information about the spatial extent of early successional habitat, inadequate use of the Adaptive Management Paradigm to evaluate past and present efforts to expand early successional habitat, and inadequate understanding of how certain forest management activities affect populations of key wildlife species. Our proposed research will directly strengthen outreach programs to promote better targeted and more effective forest management interventions in southern New England.
13	Increased development of new subaqueous soils interpretive approaches and dissemination of these approaches to other scientists and natural resource managers through publications, workshops or talks.
14	Increased (%) forest and conservation geospatial information resources, and increased usage of these resources by government organizations, NGOs and the public.

15	Increased awareness of the effects of human-induced land-cover change and provided insights into the extent and rate of land-cover changes in Rhode Island and the impacts of human activity on characteristics of forest landscape over the last four decades through generated data and maps.
16	Increased US state and federal regulators understanding of avian-wind turbine interactions. This information is also useful to conservation NGOs interested in protecting avian resources in the region.
17	Increased understanding and acceptance by the nursery industry, the general public, professional groups, and research scientists through patents, publications and talks of the occurrence and value of adelgid-resistant eastern hemlocks.
18	Master Energy Training will be conducted to educate RI residents, small businesses and municipalities so that they can make informed decisions that will reduce their consumption of fossil fuels and their carbon footprint through energy conservation, efficiency and use of clean energy resources.
19	Through the Energy Fellows Program, we will provide URI undergraduate and graduate students with the opportunity to gain invaluable experience addressing real-world energy issues.
20	NIFA energy programs at URI are coordinated with the DOE-funded Ocean State Clean Cities Coalition to provide a broader array of program and services for RI stakeholders concerned about energy issues.
21	Through the Renewable Energy Siting Partnership, a URI team of skilled professionals in the fields of energy, research and planning will develop tools, guidelines and data analysis that can be used by Rhode Island's cities and towns to site and manage this new activity. Additionally, the RESP project will make state and municipal energy information accessible to the public through the creation of a comprehensive online energy database.
22	Through a partnership with Rhode Island Department of Transportation we will capitalize on the wealth of both experience and funding available at the state and federal levels to accelerate and facilitate reduction of diesel pollution from work performed on projects managed by RIDOT.
23	Through the development of a RI State Energy Plan, conduct research regarding topics of greatest concern to stakeholders and understand ways in which stakeholders want and need to access renewable energy information.
24	Models will be developed for coastal managers that will enable them to assess potential for coastal marsh restoration to enhance C sequestration in those ecosystems.
25	Increased understanding by scientists and decision makers through publications and presentations of the management implications related to how populations may respond to ongoing climate change.
26	Increased understanding by scientists and decision makers through publications and presentations of the management implications related to plant genome size influences competitive ability and susceptibility to herbivory.
27	Advance understanding by scientists and decision makers of demand and supply of ecosystem services (ES) from watersheds in the rural-urban fringe at a policy-relevant scale by integrating information from hydrology, spatial science, and economics
28	Increased understanding of the private and public sector and scientists of economic valuation of air quality and greenhouse gas emissions through publications and presentations
29	Increased understanding by scientists and decision makers through publications and presentations of the management and risks of watershed nitrogen delivery.
30	Increased understanding by scientists and decision-makers through publications and presentations of the management implications of how amphibian and reptile populations respond to the impacts of forest loss and pollution.

31	Increased understanding by scientists, conservationists, and land managers through publications and presentations of the management implications of forest fragmentation and creation of early-successional habitat on turtle populations.

Outcome #1

1. Outcome Measures

Identify areas of high risk for vector borne diseases in Rhode Island

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island possesses one of the most concentrated blacklegged tick populations in the United States. Risk maps are useful in communicating relative levels of risk and changing risk patterns.

What has been done
A Rhode Island statewide TickEncounter Risk Survey has been conducted for 20 consecutive years to assess relative abundance of nymphal blacklegged ticks. Ticks have been sampled following a standardized protocol at the same 60 sites and the data are used to generate interpolated risk maps in a GIS.

Results
In FY13, nymphal blacklegged tick abundance was the highest recorded in the 20 year period, increasing 13% statewide when compared with FY12. In FY13, overall nymphal tick abundance was 105% higher than the previous 5 yr average, with significant increases noted in North Smithfield, Smithfield, Jamestown, Johnston and Glocester.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans

722 Zoonotic Diseases and Parasites Affecting Humans

Outcome #2

1. Outcome Measures

Create tick surveillance database

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The results of this work are being used to develop models predicting risk for vector tick encounters and tick-borne disease.

What has been done
The 20 year Rhode Island statwide TickEncounter Risk Survey database is stored on a local network share drive for ease of use for investigators, but is backed-up monthly in ESRI FileGeodatabase format. After new additions to the database are made, it is copied to a large raid array, and that is moved to a cloned raid array every 6 months. The data are also available in text file format for analysis in SAS. Field data are stored with UTM coordinates Zone 19 North American Datum1983.

Results
TickEncounter Risk Survey data collected between May - July 2013 were added to the database (see above).

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #3

1. Outcome Measures

Create web-based decision support system to reduce risk to vector borne diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Across America, 300,000 new cases of Lyme disease are diagnosed each year, and there are other dangerous tickborne diseases, too; but there are scant few expert resources for translating tick sciences to benefit the public. URI?s TickEncounter Resource Center (TERC) is a national leader in linking the best of tick science to peoples? lived experiences. TERC's web site (www.TickEncounter.org) and its tools and content engage, educate and empower TickSmart actions to help people be TickSafe.

What has been done
Launched in 2006, TickEncounter is a unique web-based outreach and decision-support platform aimed at linking the best of tick science to people's lived experiences. TickEncounter distinguishes itself from most other tick resources by providing an engaging graphic interface with seasonally and geographically relevant messages empowering tick bite protection. Various tools are included but all attempt to conform to the 4 tenants of the Health Belief Model for behavior change.

Results
TickEncounter analytics revealed that the site was visited by 361,089 visitors in FY13 and that there were 785,219 page views. In addition to this, we placed 15 guest blogs with 13 different web-based blog sites which generated a significant but unknown number of additional views of TickEncounter related decision support materials. We distributed ~20,000 tick identification magnets and ~1,000 TickSmart Daily Tickcheck Reminder cards to individuals and organizations across the eastern United States, and responded to >400 email inquiries generated through the website channel. A social media pilot program created a pintrest channel and increased followers

on twitter and facebook channels. Youtube views for the period totaled 1,737,367 with an estimated 1,182,185 minutes watched. Our popular "How to remove a tick" video was watched 1,629,902 times.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
722	Zoonotic Diseases and Parasites Affecting Humans

Outcome #4

1. Outcome Measures

Reduce tick abundance community-wide

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Increased (%) of in the proportion of professionals and the public knowledgeable about maintenance, improvement and challenges of climate variability and climate change related to onsite wastewater treatment.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Onsite wastewater treatment systems serve approximately 30 percent of the Rhode Island population. Old, failed, or improperly functioning onsite wastewater treatment systems cause nitrogen and bacterial contamination which poses a direct public and environmental health risk. Educating practitioners, regulators, decision makers, and system owners about advanced

treatment technologies for onsite wastewater and about management approaches is needed to help raise the awareness level, and enable a shift to modern state-of-the-science approaches.

What has been done

Nine intact soil mesocolumns (15 x 150cm) were collected in the field, transported to the laboratory, instrumented with three different soil treatment area (drainfield) options, and in February 2013 began receiving doses of septic tank effluent and advanced treated wastewater collected from the same residence. Water table elevation and temperature will be held constant at current climatic conditions for the first 16 months of the study, and then altered to represent climate change scenarios (raise water table by 1 foot and increase temperature by 7 degrees F). Effluent from the columns, soil gases, and grass biomass is being collected from the treatment replicates. Descriptive and predictive modeling of these systems is also occurring as well as transfer of research results to practitioners through existing education and outreach programs at the New England Onsite Wastewater Training Center at URI. In addition, 56 outreach and training classes were conducted, reaching nearly 1,800 practitioners and decision makers during the report period.

Results

Results indicate complete removal of fecal coliform bacteria, phosphorus and BOD by all three drainfield systems. Average dissolved oxygen readings for soil pore water were 2.9mg/L for conventional drainfield and 4.6mg/L for both advanced systems. Effluent pH values ranged 3.2 ? 3.7 units for all drainfield technologies. Removal of total nitrogen was 13.7 (+/- 2.0)% from the P&S system, and only 6.1 (+/- 1.3)% for PSND and 7.6 (+/- 2.4)% for GEO drainfields. The current hypothesis is that low oxygen nitrification is responsible for nitrogen removal as N2O in the PSND and GEO technologies, while denitrification is occurring in the P&S technology with nitrogen loss as N2O and N2 gas. The conventional OWTS drainfield is outperforming the advanced drainfields with respect to nitrogen removal, but is renovating wastewater equivalently for all other contaminants of concern. The HYDRUS 2D/3D software was used to model pathogen and nutrient transport under different OWTS operating conditions, groundwater table separation distances, and soil temperatures, resulting in a very good fit between observed and computed data (R2 = 0.99).

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation

Outcome #6

1. Outcome Measures

Increased (%) development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
URI Watershed Watch. Seasonal droughts, rising nutrient levels, nuisance algae blooms and the spread of invasive aquatic plants have increased awareness that water quantity and quality is a concern for the public local, state and national decision makers. Agency resources, both staff and financial, to monitor water resources in New England have always been insufficient, while the need increases yearly. Monitoring is long-term, with best decisions based on at least 10 years of data. Detecting trends and threats to local waters is increasingly becoming the responsibility of local communities and watershed organizations.

What has been done
Held multiple trainings for URI Watershed Watch volunteers. 350 citizen scientists performed ecological monitoring on 270 locations in RI, CT and MA, for 40 local organizations, measuring water clarity, temperature, oxygen content, pH and alkalinity, processing samples for chlorophyll and collecting samples for lab analyses of nutrients and bacteria. Sites are 1/3 lakes or ponds, 1/3 rivers and streams, 1/3 estuaries, bays, salt ponds. Co-hosted NE Lakes conference to educate lake and watershed organizations about lake and watershed ecology. Invited speaker at Land Trust and Citizen Science conferences. Provided 25 years of data to WI and FL limnologists researching long-term WQ changes.

Results
Because of Extension-led volunteer monitoring an unparalleled, long term record of water clarity, temperature, oxygen content, nutrients and bacteria levels now exists in all NE states. Over 20,000 data points aggregated into site specific monitoring results were posted on the URIWW

website and distributed to sponsoring organizations as well as RI DEM & US EPA in this fiscal year alone. Regulatory agencies have used the data to create regulations to protect excellent water quality as well as to document poor water quality, and to help best direct their resources. Extension has used monitoring results to target programs to specific geographic areas. Local groups have used the data to take action to enact local ordinances to promote farm and home owner awareness and action to deal with runoff and erosion. These data are also now being used to document surface water temperature changes and also track cyanobacteria blooms as well as deep water hypoxia and anoxia.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
131	Alternative Uses of Land
133	Pollution Prevention and Mitigation

Outcome #7

1. Outcome Measures

Increase in targeted households and professionals gaining knowledge of testing, treatment and protection of private well water and management options related to land use, climate variability and climate change. Increase in targeted households and professionals gaining research-based knowledge of testing, treatment and protection of private well water.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
URI Home-A-Syst. Ten percent of Rhode Islanders depend on private wells for drinking water. In New England private wells serve 40 percent of the population. These residents are responsible for the quality of their own drinking water and need to be aware of contaminant risks to their drinking water sources and how to protect against such risks. Changing property laws and regulations in the region have increased demand for well water testing and educational materials. Education about protecting private sources of drinking water is critical to the health and safety of

families relying on private wells. Audiences include private well owners, scientists and researchers, educators, federal, state, and local policymakers, and non-profit organizations.

What has been done

With RI Dept. of Health and state certified testing labs, developed promotional well testing discound postcard that was mailed to more than 60,000 RI households. Will continue to work with state certified labs to revise and offer promotional testing package.
Held 8 private well water workshops for 115 people in communities throughout Rhode Island. Workshops are held in partnership with local communities, NGOs and others. Participated in 2013 Annual Rhode Island Home Show at the Conventention Center. Booth at Show provided information to private well owners about testing and protection.
Annually the webpage receives over 40,000 visits, including private well protection, landscaping for water quality protection, and small acreage livestock management on residential properties.
Quarterly e-newsletter reaches over 300 people with information on private well protection and testing.

Results

Post workshop evaluations show that workshop participants are taking action to protect their private well, most notably, 51% of workshop participants had their well water tested. Paper published in the Journal of Extension summarizing outcomes of private well education and training program 2004 - 2009. Began revision of 27 tip sheets for RI private well owners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #8

1. Outcome Measures

Increase in the proportion of the public and professionals knowledgeable about management of storm water and options for addressing risks related to watershed changes, climate variability and climate.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

URI NEMO. Stormwater pollution is a major cause of impaired water quality in Rhode Island, leading to swimming beach closures, shellfishing bans, loss of recreational value, and degraded habitat. Most Rhode Island municipalities operate small Municipal Separate Storm Sewer Systems (MS4s), and are required to comply with the EPA Phase II Storm Water Rule under the RIPDES permit program. These MS4s must enact storm water management programs to reduce pollutants that can enter drainage
systems during storm events. This represents a significant burden for most municipalities already struggling with few
staff, shrinking budgets, and in most cases, limited expertise in education and outreach.

What has been done

Provided education and outreach to municipal officials, the public and educators on managing stormwater runoff. We developed a new workshop in using online community resource maps and created a series of web-based maps that are easily accessible to non-GIS users. With URI faculty we developed technical standards for post-construction soil restoration. In cooperation with stormwater managers and teachers, we conducted a series of stormwater classes for elementary students using hands-on exercises. We continued to make stormwater educational materials and resources easily available to all audiences through the RIStormwaterSolutions. org website, and in this reporting period completed a major redesign of this site.

Results

Municipalities throughout the state used or customized URI educational materials to educate residents and businesses about actions they can take to prevent stormwater pollution, enabling them to develop effective stormwater management programs and comply with Phase II permit requirements. Several RI towns adopted or updated construction site stormwater control ordinances based on a model development by RI NEMO. Using results of NEMO watershed assessment, one town adopted two overlay ordinances that limit impervous cover to meet watershed-level goals while accounting for future growth, establish wetland buffers, and phase out cesspools. A coastal community received a state planning award for demonstrating effectiveness of a LID standards to reduce stormwater runoff volume which was developed with URI technical support. Soil depth and quality standards developed by RI NEMO were incorporated into the revised draft RI Soil Erosion and Sediment Control Handbook, which will set the standard for all development regulated by State agencies and municipalities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation

Outcome #9

1. **Outcome Measures**

Development of a rapid-response to public concerns about local HAB's. Increased development of locally based water resource data for use by communities and the public that can assist in risk assessment and management related to watershed changes, climate variability and climate change.

Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

Increased understanding by wildlife biologists, NGOs, local and state officials through publications and talks on people's willingness to support ecosystems and conservation.

Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

Increased understanding by wildlife biologists and managers through publications and talks of how habitat quality and management practices affect populations of migrating song birds.

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Managing coastal environments for migrating songbirds. Migrating song birds require suitable food sources to complete their migration and coastal lands have undergone extreme changes in vegetation, potentially imperiling migration success and fecundity for many native species.

What has been done
Graduate and undergraduate students and research technicians conducted field experiments that determined (a) how variation in refueling rates of migratory birds at different coastal New England sites is related to fruit resource abundance, (b) the fruit preference of birds during migration, and (c) how body condition of migratory birds affected their movements at stopover sites that differed in the abundance of fruits.

Results
All proposed field experiments were completed. One PhD student completed and successfully defended his dissertation in Dec 2013, and one PhD student completed her second and final field season on this project. McWilliams and colleagues presented results from this research at three scientific conferences and published seven peer-reviewed publications based on this research.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #12

1. Outcome Measures

Our proposed research would increase understanding of three critical issues: inadequate GIS-based information about the spatial extent of early successional habitat, inadequate use of the Adaptive Management Paradigm to evaluate past and present efforts to expand early successional habitat, and inadequate understanding of how certain forest management activities affect populations of key wildlife species. Our proposed research will directly strengthen outreach programs to promote better targeted and more effective forest management interventions in southern New England.

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Increased development of new subaqueous soils interpretive approaches and dissemination of these approaches to other scientists and natural resource managers through publications, workshops or talks.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Developing subaqueous soil use and management interpretations is critical to providing coastal managers with tools to make decisions. Of particular interest water quality, aquaculture and restoration of commercially important shellfish populations, effects of dredging, the role of subaqueous soils in the regional and global carbon cycle, and submerged aquatic vegetation health and restoration.

What has been done
In this project, we are testing various subaqueous soil types to determine the most productive areas for shellfish aquaculture, evaluating which aquaculture method (on-bottom or suspended) may be the best approach depending on the soil type, and examining the how soils type is related to coastal acidity. In our associated outreach efforts we are coordinating with coastal managers, regulators, and aquaculture specialists to insure that the results from our studies are delivered directly to the stakeholders and the general public via our website. We also presented our findings at several regional and national meetings.

Results
In every year of our studies we found significant differences in growth and survival of oysters relative to the soil type. Differences in growth between on-bottom and bag-and rack (suspended) aquaculture approaches are still being assessed. Our preliminary analyses suggest that oyster quality (absence of mudworms) may be higher using the on-bottom approach. The size of the seed oyster that is placed on the bottom is also important, the larger the better. Our preliminary studies of water column/soil pH and shell dissolution suggest that coastal acidification differs significantly among soils and in some soils it may be impacting recruitment of oysters in the wild. Effects of dredging on soil ecology are still being assessed. Our preliminary studies suggest that dredging areas with eelgrass significantly impacts the soil biology and ecology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources

135 Aquatic and Terrestrial Wildlife

Outcome #14

1. Outcome Measures

Increased (%) forest and conservation geospatial information resources, and increased usage of these resources by government organizations, NGOs and the public.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Geospatial research and technology can play an enormously important role in providing decision support for land use decision making. In particular, new GIS, GPS and remote sensing tools are continually being made available which are poised to assist local decision makers to both visualize existing and future land use patterns, and model the various impacts of these patterns. Local governments also play an important role in forest and wildlife management within Rhode Island. Policy makers and professionals need information on which to base their land use decisions, including options for land preservation, identification of sensitive areas, and the management and protection of open space areas.

What has been done
Conducted 6 instructor-lead short courses on the use of both desktop- and internet-based geospatial technologies. In addition to these classes, several public presentations were conducted and online primers were written by URI RREA affiliated staff throughout FY2013. We continue to coordinate and share training materials with regional partners and on a national basis via eXtension. 4.4 terabytes of data were downloaded from RREA-supported geospatial data and information clearinghouses. The 94 map services affiliated with the Rhode Island Digital Atlas responded to over 16 million requests.

Results
Partnerships continue to be key to increasing the impact of the URI RREA Program. Our participation in the RI Conservation Stewardship Collaborative has resulted several important

forest management accomplishments including: monitoring invasive species; development of an online digital image atlas of the state's ecological communities; development of model baseline resource inventories for protected lands; creation of the RI Heritage Database Consortium which oversees the state's database on rare and endangered species. We also continued our partnership with the RI Dep't of Environmental Management and The Nature Conservancy for mapping Ecological Land Units, which are predictive of biodiversity. We have worked with land trusts, conservation organization and state planning initiatives to integrate these ELUs into landscape-scale planning and conservation in Rhode Island.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #15

1. Outcome Measures

Increased awareness of the effects of human-induced land-cover change and provided insights into the extent and rate of land-cover changes in Rhode Island and the impacts of human activity on characteristics of forest landscape over the last four decades through generated data and maps.

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

Increased US state and federal regulators understanding of avian-wind turbine interactions. This information is also useful to conservation NGOs interested in protecting avian resources in the region.

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

Increased understanding and acceptance by the nursery industry, the general public, professional groups, and research scientists through patents, publications and talks of the occurrence and value of adelgid-resistant eastern hemlocks.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The hemlock woolly adelgid is an invasive pest that kills eastern hemlocks. Some rare naturally-occurring eastern hemlock trees may possess some degree of resistance to the adelgid. If borne out, these trees could play an important role in combatting the threat posed by this pest.

What has been done
We have worked with the URI Office of Intellectual Property to prepare for the filing of a preliminary patent. We have greatly increased the number of grafted and propagated cuttings we have in our common garden. We have spoken at three symposiums about the potential for adelgid-resistant hemlocks and their role in an integrated pest management program. Finally, we are on the verge of completing the final large-scale test of our adelgid-reisitant hemlocks in preparation for publication of an article documenting their resistance.

Results
We have learned that adelgid resistance does persist in propagated cuttings from putatively-resistant parent trees, and developed improved grafting techniques suitable for large-scale plant production. Working with researchers from the Alliance to Save Threatened Forests, and RI-based nursery professionals, has enabled us to communicate our results to a wide range of constituencies. Most recently, we have developed partnerships with a group of researchers at North Carolina State University interested in starting their own version of our program in order to identify and preserve adelgid-resistant Carolina hemlocks

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
136	Conservation of Biological Diversity

Outcome #18

1. Outcome Measures

Master Energy Training will be conducted to educate RI residents, small businesses and municipalities so that they can make informed decisions that will reduce their consumption of fossil fuels and their carbon footprint through energy conservation, efficiency and use of clean energy resources.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
RI residents pay an average of 30% more than the rest of the US for energy. Some residents aren't aware of the habitual conservation behavior changes and efficiency projects they can implement in their homes, nor are they aware of programs that the public utility and state energy office have developed to assist in implementation.

What has been done
A paired-down version of the Master Energy Training was offered to Rhode Island residents, which included information on energy conservation and efficiency and alternative fuel technologies and vehicles available to consumers.

Results
Attendees of the Home Energy School took an "Energy Reduction Pledge", learned how to: a) use an carbon footprint calculator, b) track energy consumption and verify savings through EPA's Portfolio Manager tool, c) use FuelEconomy.gov to compare vehicle models for their efficiency rating prior to purchasing, d) prioritize conservation measures in the home using a checklist and e) schedule a free home energy assessment with the public utility company.

4. Associated Knowledge Areas

KA Code	Knowledge Area

132	Weather and Climate
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #19

1. Outcome Measures

Through the Energy Fellows Program, we will provide URI undergraduate and graduate students with the opportunity to gain invaluable experience addressing real-world energy issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island has a growing green economy, and the energy sector represents one of the most rapidly growing industries. Businesses in the private sector are seeking individuals with experience and training in the energy field; and URI students are showing a growing interest in energy studies and experiential learning opportunities. Recognizing the need for training per employers and experiential learning and networking opportunities per students, the URI Energy Fellow Program was created in 2008 and continues to provide links to experiential learning networking opportunities for undergraduate and graduate students.

What has been done
The URI Energy Fellows Program accepted (16) undergraduate and graduate students in 2013 to work on a variety of energy research and outreach projects led by URI Outreach Center staff, URI research faculty, and external partner organizations and businesses in RI. In addition to project work, students received general energy education, participated in team-building exercises and professional development workshops to improve communication and networking skills, and have attended field trips to expand their knowledge of the energy field and the different sectors within it.

Results
Of the URI Energy Fellows who completed the 2013 program, (5), or 31% were rehired as second year Energy Fellows at the URI Outreach Center, and (1), or 6% received a job offer for an energy-related positions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation

Outcome #20

1. Outcome Measures

NIFA energy programs at URI are coordinated with the DOE-funded Ocean State Clean Cities Coalition to provide a broader array of program and services for RI stakeholders concerned about energy issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Ocean State Clean Cities (OSCC) Program provides resources and programs to reduce U.S. dependence on fossil fuels in the transportation arena. The wealth of information and services available through OSCC provides a valuable addition to energy services and information available to RI citizens.

What has been done
The OSCC assisted in the launch of RI's Electric Vehicle Network in cooperation with the RI Office of Energy Resources, made possible through ARRA funding. The OSCC hosted (4) outreach events focused on various alternative fuel programs for stakeholders, revamped

webpage content on the URI Outreach Center website, and wrote and distributed a newsletter that reached over (2,000) stakeholders quarterly.

Results
An active and strengthening coalition of stakeholders are working collaboratively to explore all opportunities to reduce reliance on petroleum for transportation. Metrics are being gathered to allow quantitative assessment of progress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #21

1. Outcome Measures

Through the Renewable Energy Siting Partnership, a URI team of skilled professionals in the fields of energy, research and planning will develop tools, guidelines and data analysis that can be used by Rhode Island's cities and towns to site and manage this new activity. Additionally, the RESP project will make state and municipal energy information accessible to the public through the creation of a comprehensive online energy database.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

Through a partnership with Rhode Island Department of Transportation we will capitalize on the wealth of both experience and funding available at the state and federal levels to accelerate and facilitate reduction of diesel pollution from work performed on projects managed by RIDOT.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Cleaning up diesel pollution to improve air quality is an important goal throughout New England states where respiratory disease has reached historic levels. Diesel engines produce significant air pollution including fine particular matter (PM), nitrogen oxides (NOx) and more than 40 different types of Hazardous Air Pollutants (HAPs). Diesel emissions have been linked to a myriad of health problems, ranging from shortness of breath to cancer and cardiac arrest. Construction equipment engines typically produce more diesel emissions than other diesel engines because their engines are larger and are not regulated as strictly.

What has been done

As part of the URI/RIDOT Diesel Emissions project, the following were completed: a) review and analysis of available technologies and best practices in use, b) immediate implementation of a carefully monitored pilot project to reduce diesel emissions from a RIDOT-funded construction project in a highly populated urban area, c) extrapolation of the costs and benefits of the pilot project to the RIDOT program in RI, along with development of RI-specific contract specifications, and 4) preparation of a final report summarizing lessons learned and providing a road map for diesel emissions reduction from DOT construction projects in RI.

Results

The list of the (14) vehicles assigned to the RIDOT Waterfront Drive Project were provided by the RIDOT Contractor, Cardi Construction. All (14) vehicles: a) had their vehicle identification numbers and engine family numbers verified, b) were each pre-data logged for a four-week period to determine duty cycle, and c) was pre-opacity tested. Further, appropriate retrofit technology for each vehicle was identified and selected; and a retrofit plan was submitted to RIDOT outlining the retrofit allocations. A bid process was undertaken to purchase and install the appropriate technology that RIDOT deemed appropriate, with Cardi Corporation selecting the contractor to order and install the retrofits. Once installed, post-opacity testing was performed on each vehicle in order to gauge the level of pollution reduction achieved. A final report was submitted to the RI Department of Transportation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #23

1. Outcome Measures

Through the development of a RI State Energy Plan, conduct research regarding topics of greatest concern to stakeholders and understand ways in which stakeholders want and need to access renewable energy information.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As a result of Renewable Energy Siting Partnership, stakeholders had concerns about the implementation of renewable energy projects in RI. RI policymakers want to support renewable energy planning and infrastructure projects, but need public support. In addition, the public need direct access to science-based, juried information about renewable energy, efficiency and conservation.

What has been done
Facilitate research and engage the stakeholder community in topics related to wind energy development, including wind turbines affect on property values and the acoustic impacts of wind turbines on residential areas. We also worked with a web design consulting firm to conduct focus groups and surveys with stakeholders to determine the optimal way to share information with the public through a use-friendly, comprehensive rienergy.org website.

Results
Research and stakeholder engagement ongoing.

4. Associated Knowledge Areas

KA Code	Knowledge Area

132	Weather and Climate
133	Pollution Prevention and Mitigation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #24

1. Outcome Measures

Models will be developed for coastal managers that will enable them to assess potential for coastal marsh restoration to enhance C sequestration in those ecosystems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nutrient loading to coastal ecosystems alters primary production, promotes hypoxia, and can alter the sustainability of many resources that depend on coastal wetlands. This work will specifically help to predict impacts of nutrient loading on greenhouse gas emissions from coastal salt marshes in Narrangasett Bay, RI.

What has been done
Greenhouse gas fluxes, marsh plant productivity, and plant decomposition rates were measured by 5 undergraduates, 1 M.S. and 2 Ph.D. graduate students in 4 New England marshes with different nitrogen loads. Custom chambers were applied for ponds and invasive Phragmites australis stands, and connected to a cavity-ring down spectrometer (Picarro G2508).

Results
Highest greenhouse gas emissions (nitrous oxide, methane, and carbon dioxide) have been observed over 2 field seasons from a marsh with greatest anthropogenic impacts (nitrogen loading and invasive species). However, these fluxes vary substantially over time and space. Plant productivity (biomass) and decomposition rates were also highest at marshes with high N

loadings.Data are being provided to a collaborator (Abdul-Aziz at Florida International University) to construct a predictive model for greenhouse gases. Results have been presented in poster format by 5 undergraduates at a state-wide conference, and by 2 PhD students at the regional science meetings (New England Estuarine Research Society). Additional presentations were given for stakeholders at Waquoit Bay NERRS and for K12 teachers in a field trip (RITES) in Narragansett Bay.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

Outcome #25

1. Outcome Measures

Increased understanding by scientists and decision makers through publications and presentations of the management implications related to how populations may respond to ongoing climate change.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Global climate change is well documented and predicted to increase in severity and variability in the future. The impact of climate change on wildlife populations and agricultural systems is uncertain. Understanding the mechanisms by which populations may respond to climate change is critical for predicting future impacts. Whether populations have the capacity to respond through evolutionary adaptation or environmentally induced plasticity has important implications for population persistence over the long term.

What has been done
Experiments were conducted by undergraduate and graduate students testing for short-term acclimation responses (that is, phenotypic plasticity) to temperature and humidity continue for Anolis lizards. These lizards encounters colder and drier conditions as they expand northward in Florida, and increase in thermal tolerance and resistance to water loss may be favored under these novel climatic conditions. Students are conducting population-genetic analyses of invasive populations to determine genetic differentiation and potential modes of population expansion.

Results
Our findings of phenotypic plasticity for thermal tolerance and water loss, and adaptive differences between populations for thermal tolerance suggest complex responses to novel climatic conditions during invasion. Ongoing population-genetic analyses will help to interpret whether the rapid evolutionary responses to climatic change observed for some populations are widespread across the invasion. These results were presented by the PI at invited seminars.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate

Outcome #26

1. Outcome Measures

Increased understanding by scientists and decision makers through publications and presentations of the management implications related to plant genome size influences competitive ability and susceptibility to herbivory.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The use of plant genome size as a tool to screen for plants likely become invasive and to help prevent the introduction of invasive and agriculture weed species into the U.S. is a major focus of

this project. Understanding of the role of genome size and ploidy level in plant invasiveness and resistance to herbivory will provide invaluable and unprecedented data on traits that confer invasiveness that can be used to develop a screening protocol for plant imports. These data can also be used to prioritize management and control efforts by identifying which introduced plant populations have a higher probability of spreading. This information can contribute to risk assessments and inform policy decisions.

What has been done
Plants in the genus Phragmites from North America, Europe and Asia have been screened for genome size using flow cytometry and chromosome counts. Currently, these populations are being grown in four common gardens - two in Europe (Czech Republic and Denmark) and two in the USA (Rhode Island and Louisiana). Growth traits and plant chemistry (phenolics and CN) are being quantified for all populations.

Results
Thus far, findings indicate significant differences in genome size between the invasive genotypes and the non-invasive genotypes. Interestingly, we have also found that hybridization between individual plants with different genome sizes produces a hybrid genome size. We are currently analyzing data associated with this experiment. A collection of galling insects and how plant damage by insects relates to genome size will be underway late March/early April 2014.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
136	Conservation of Biological Diversity

Outcome #27

1. Outcome Measures

Advance understanding by scientists and decision makers of demand and supply of ecosystem services (ES) from watersheds in the rural-urban fringe at a policy-relevant scale by integrating information from hydrology, spatial science, and economics

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the Northeastern US, a major trend in land use/land cover change over the past 50 years is the decline in both forest and agricultural lands, primarily due to residential development. The land use/ land cover changes have an effect on provided ecosystem services (ES). Stakeholders and government will be able to make more informed land use decision if decision-supporting maps and interactive scenario based analysis.is conducted that spatially quantify both the supply and demand for ES related to hydrological processes, carbon sequestration, recreation, and open space.

What has been done

A survey instrument that includes a choice experiment and a protocol for a field experiment was developed to elicit information on values of ecosystem services. For water quality, we calibrated a hydrological model for a drinking water reservoir. We compiled data from multiple sources to run the carbon model in the InVEST model to simulate changes in carbon sequestration. Wildlife ecologists were consulted to determine how to capture changes in biodiversity. A literature review was conducted to analyze willingness-to-pay using a spatially-disaggregated approach.

Results

We designed a series of maps indicating nutrient loading potential and carbon storage across the Scituate Reservoir Watershed (RI?s principal water supply reservoir that serves more than 600,000 people). Maps are supplemented with biophysical and economic information that compares the amount and value, respectively, of carbon storage across different land-use scenarios We generated a series of maps showing changes in carbon sequestration and habitat for key species in RI from 1985, 2010, and 2025 land use scenarios. We presented the possibilities and limitations of the decision support models to RI NRCS and the Northern RI Conservation District.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
605	Natural Resource and Environmental Economics

Outcome #28

1. Outcome Measures

Increased understanding of the private and public sector and scientists of economic valuation of air quality and greenhouse gas emissions through publications and presentations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Effective balancing of economic forces and unwanted byproducts of economic activity is critical for sustaining human health and wellbeing. Insights into the valuation of air pollution and greenhouse gas emissions will generate new understanding of how our economy should evolve and will evolve if left unchecked.

What has been done
Completed general Monte Carlo analysis to demonstrate how various spatial interpolation strategies affect secondary coefficient estimates. Used a regression discontinuity research design to estimate causal effects of energy efficiency investments. Gathered smart meter data from over 300 sample AC units in central California that participated in a Direct Load Control program. Gathered data on internet search volume for queries related to climate change from Google Trends. Gathered data on climate, geography and socioeconomic factors at the media market level to explain internet search activity.

Results
"Standard spatial interpolation methodologies of Inverse Distance Weighting and Nearest Neighbor produce biased estimates of the valuation of clean air when the interpolated variable is used in a subsequent regression. Econometric estimates of energy savings corroborated ex ante engineering estimates, which argues that, contrary to many findings in the economics literature, energy efficiency projects can have measurable impacts on total energy consumption. Socioeconomic factors correlate much stronger with climate change-related internet search activity than climate and geographic factors.
"

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
605	Natural Resource and Environmental Economics

Outcome #29

1. Outcome Measures

Increased understanding by scientists and decision makers through publications and presentations of the management and risks of watershed nitrogen delivery.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Modeling for TMDL Development, and Watershed Based Planning, Management and Assessment. The export of nitrogen (N) from coastal watersheds can exert profound effects on the function and value of coastal estuaries. The goal of our research is to characterize the extent of in-stream nitrate removal in low gradient streams
and identify stream attributes that relate to elevated nitrate removal rates. As we gain more insight into in-stream nitrate removal, we will be able to contribute to the scientific dialog that seeks to target site-specific nitrate control strategies to locales with high potential for export to coastal waters.

What has been done
Our project developed a new tool, N-Sink, to help manage watershed nitrogen (N). This tool will be used by NEMO programs and USDA NRCS. It creates alternative scenarios in a watershed to help land use managers identify the best strategies to minimize watershed N export, be it source control or protection of areas on the landscape that retain or remove N. We also conducted process-level studies in intermittent streams and beaver ponds and found them to be substantial watershed N sinks. These findings will be incorporated into N-Sink and transmitted to other models and tools through our regional network. We also elucidated watershed characteristics that impact the management of sustainable river flows.

Results
N-Sink tool was transitioned to a geospatial web tool in ArcGIS Viewer for Flex. It shows nitrogen (N) sources and sinks and allows non-technical users to estimate N removal from any watershed location http://www.edc.uri.edu/nsinkv2/. The N processing function of intermittent streams is

comparable to higher order streams. Forested intermittent streams have unique structures - pools, debris dams, and hyporheic flow - that enhance hydrologic retention and N removal potential. As they are susceptible to disturbance, we argue to include them in watershed N assessment tools. Mass balance mesocosm study of N cycling in beaver ponds demonstrates that these locations are important N sinks capable of removing 5-45% of watershed nitrate loading from rural watersheds with high N loading.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management

Outcome #30

1. Outcome Measures

Increased understanding by scientists and decision-makers through publications and presentations of the management implications of how amphibian and reptile populations respond to the impacts of forest loss and pollution.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Globally, nearly 30% of amphibians and 40% of reptiles are threatened due to a number of factors, but forest loss and degradation are considered to be the greatest contributor. We have litte understanding of the amount of forest needed to protect stream-breeding amphibians, how partial development of forest habitats affects snake populations, and how pollutants from roads impact amphibians in adjacent forests.

What has been done
Stream amphibians: We have collected two seasons of field data. A final, third season of data will need to be collected before forest thresholds can be developed. Snakes: The second and final season of field data has just been collected, finishing in December 2013. Analysis of these data

will begin shortly. Road salt: We are currently beginning to collect our first soil samples for this project.

Results
Stream amphibians: We have learned that stream amphibians spend extensive amounts of time in forests, moving as far as 500 m from breeding streams. Snakes: We have found that snakes make long-distance, erratic movements after being translocated, as compared with resident snakes that maintain relatively small home ranges. Road salt: We have identified areas in the state where road salt application is highest and our research is targeting those areas.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity

Outcome #31

1. Outcome Measures

Increased understanding by scientists, conservationists, and land managers through publications and presentations of the management implications of forest fragmentation and creation of early-successional habitat on turtle populations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a need to create more early-successional habitat in southern New England for species dependent upon this habitat type, yet increased forest management activities may negatively impact wildlife species that require large contiguous patches of mature forest, such as some turtles. We currently have little baseline data on the impacts of forest fragmentation, caused by residential development and creation of early-successional habitat, on turtle populations.

What has been done
We trapped 30 wetlands in different forest fragmentation classes for turtles. We radio-tracked 11 spotted turtles at one site, in which 12 acres of forest was harvested this winter to create early-successional habitat. We made contact with many landowners, land trusts, other conservation organizations, and interested members of the public to inform them about our research and ask for their participation.

Results
We found low turtle diversity in wetlands with less forest cover, but abundances of two turtle species as these wetlands is high. Spotted turtles, the species most sensitive to disturbance, was detected in only one wetland. We learned that radio-tracked spotted turtles use terrestrial habitats extensively and make regular movements between wetlands.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
135	Aquatic and Terrestrial Wildlife

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (human behavior)

Brief Explanation

We exist in turbulent times nationally, regionally, locally, and institutionally. Appropriations budgets are being cut dramatically on many fronts, resulting in fewer resources for increasing need areas. As finances and personnel change, it is likely our programs and outcomes will have to shift to accommodate them.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

· Workshops and training programs use pre and post assessment vehicles to evaluate change in stakeholder knowledge.
· Google analytics tracking software is used to generate detailed information about

website use. Information includes the number of views and downloads per webpage and the numbers and types of visitors (.gov, .edu, .org, .com) to each portion of the websites.

- Extension and research outputs are subject to peer evaluations before publication.
- Citations of published works are quantified through services such as the ISA Web of Science and Google Scholar.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Food Production and Sustainability

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
112	Watershed Protection and Management	9%		0%	
135	Aquatic and Terrestrial Wildlife	0%		3%	
205	Plant Management Systems	24%		39%	
211	Insects, Mites, and Other Arthropods Affecting Plants	3%		0%	
212	Pathogens and Nematodes Affecting Plants	6%		19%	
215	Biological Control of Pests Affecting Plants	6%		3%	
216	Integrated Pest Management Systems	13%		10%	
301	Reproductive Performance of Animals	0%		3%	
302	Nutrient Utilization in Animals	3%		3%	
304	Animal Genome	6%		0%	
305	Animal Physiological Processes	3%		0%	
307	Animal Management Systems	6%		10%	
311	Animal Diseases	9%		10%	
605	Natural Resource and Environmental Economics	3%		0%	
606	International Trade and Development	3%		0%	
609	Economic Theory and Methods	3%		0%	
610	Domestic Policy Analysis	3%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	10.0	0.0

Actual Paid Professional	8.3	0.0	10.3	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
279147	0	493553	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
393055	0	395009	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The activities are described for the areas in the Food Production and Sustainability program.

Aquaculture and Fisheries

· Investigate causes of diseases of shellfish and the mechanisms of innate immunity, particularly matrix metalloproteinases in hemocytes.
· Research genetic factors controlling muscle growth in rainbow trout, a model species for aquaculture
· Develop and share strategies to create sustainable fisheries and enhance aquaculture in the state and region.
· Conduct training programs for key stakeholder groups.
· Perform applied aquaculture research.

Health and Well-being of Livestock

· Examine the role of nutritional factors on the immune system function in livestock.

Community Gardening

· Outreach efforts to community decision makers, agricultural, residential and engineering/regulatory community will be conducted.
· Outreach to school children and to the urban population center in the state.
· Demonstration sites will be established for use in such research and Extension programs.
· Development and dissemination of publications, fact sheets, and web sites.

Horticulture

· Identify, select or breed species and cultivars of plants which are better adapted for use in the landscapes and environment of Rhode Island and the Northeastern US.
· Develop and deliver training for green industry professionals and gardeners emphasizing the use of plants that require less water, labor, nutrients, and pesticides.
· Expand markets for resource-conserving products.
· Reduce pest-induced damage to horticultural and forest plants, while maintaining

environmental quality by minimizing the use of agrochemicals.

· Develop novel non-chemical methods of controlling invasive plant species.

Economics, Markets and Policy

· Develop new risk-aware aproaches to on-farm risk management via best practices for oysters and land based agriculture..

· Improve the development of seafood markets by focusing on analyses of new marketing themes, market niches, and alternative seafood products

Enhance fishery and aquaculture production by developing decision support tools to integrate management and marketing

2. Brief description of the target audience

The target audiences are described for the areas in the Food Production and Sustainability program.

Aquaculture and Fisheries

The RI and New England aquaculture industry, RI State Aquaculture Coordinator, the fishing industry, producers and distributors, scientists and researchers, the RI Department of Environmental Management and Coastal Resource Management Council, and policy makers

Health and Well-being of Livestock

Livestock farmers in the Northeast, the livestock artificial insemination industry and 4-H youth

Community Gardening

Community and public decision makers (local, state and federal agencies); general public; agricultural producers; residential and engineering/regulatory community members; school aged children; urban populations; municipal planners; private sector firms engaged in watershed management, landscaping, onsite wastewater treatment and private wells; various NGOs (land trusts, environmental organizations)

Horticulture

Agricultural producers of turf grass and ornamental plants (administered by a joint advisory committee of the Plant Sciences and Entomology department, the RI Nursery and Landscape Association (RINLA) and the New England Sod Producers Association; local nurseries; the RI Golf Course Superintendents Association; nurserymen, landscapers, tree farms and arborists; the Rhode Island Greenhouse Growers Association; the RI Farm Bureau; the New England Nursery Association and New England Floriculture, Inc; the New England Sod Producers Association (NESPA), and the New England Regional Turfgrass Foundation (NERTF); and individual golf course superintendents and sod producers throughout Rhode Island.

Economics, Markets and Policy

Fishers, environmental economists, and policy makers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	3	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Peer reviewed publications

Year	Actual
2013	3

Output #2

Output Measure

- Books and monographs

Year	Actual
2013	1

Output #3

Output Measure

- Abstracts

Year	Actual
2013	5

Output #4

Output Measure

- Conference proceedings

Year	Actual
2013	2

Output #5

Output Measure

- Technical documents, fact sheets, bulletins and newsletters

Year	Actual
2013	22

Output #6

Output Measure

- Training manuals (includes instructional CD's)

Year	Actual
2013	6

Output #7

Output Measure

- Scientific/professional presentations

Year	Actual
2013	7

Output #8

Output Measure

- Workshops (including short courses)

Year	Actual
2013	29

Output #9

Output Measure

- Conferences hosted

Year	Actual
2013	4

Output #10

Output Measure

- Website development and refinement

Year	Actual
2013	11

Output #11

Output Measure

- Public presentations

Year	Actual
2013	104

Output #12

Output Measure

- Public service announcements

Year	Actual
2013	0

Output #13

Output Measure

- Student training

Year	Actual
2013	10

Output #14

Output Measure

- Thesis/dissertation

Year	Actual
2013	2

Output #15

Output Measure

- Biological control agent released

Year	Actual
2013	0

Output #16

Output Measure

- Germplasm developed

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased aquaculture production in Rhode Island (both of current species and new species. An increase in technology and understanding of basic mechanisms of immunity and muscle growth that will ultimately enhance production.
2	Growth of Rhode Island's shellfish aquaculture industry (includes number of farms, number of farmers employed and farmgate value of the aquaculture crops)
3	Development of fertility assays for use in AI industry
4	Develop research-based strategies to modify animal feeds that which will improve the immune status and disease resistance of domestic livestock
5	The successful Master Gardener Volunteer Program will be maintained and enhanced to expand the impact of URI Extension and free up Extension staff time by recruiting, training, supporting, managing, recognizing and retaining volunteers
6	Master Gardener volunteers work with URI staff and students to establish and maintain demonstration gardens that serve as teaching centers for Rhode Islanders interested in growing their own food. Produce from the demonstration gardens is donated to local food banks.
7	Through participating in the Learning Landscape and other hands on youth environmental education programs, students in grades K-5 will demonstrate increased knowledge and skills about the environment, horticulture and science. Teachers' trainings offer supplemental environmental science tools for formal and informal educators.
8	URI will continue to enhance the Master Composter training program to extend the educational reach of the University by recruiting, training and managing volunteers to education and encourage Rhode Island citizens to compost. In addition to the core training compost workshops will be added throughout the year for the general public.
9	Through ongoing curricula development, workshop offerings to the general public and provision of certification opportunities for green industry professionals, the integration of native plants, landscape restoration principles, invasive plant management and low impact development practices will be promoted to increase business and consumer demand for ecological sustainable landscape services and general practice.
10	Growers in RI propagate and market native plants. Consumers (state agencies, municipalities and residential landscape managers) seek out native plants for use in landscape
11	Increase the understanding of private and public sector and scientists of economic and market factors in fisheries and aquaculture management through publications and presentations.
12	Increase the understanding of scientists and decision makers through publications and presentations of the outcomes of game theoretical models to identify fisheries where political intervention is likely based on the degree of heterogeneity among harvesters.
13	Identify and improve sustainable trees, shrubs and grasses with an emphasis on native species.

Outcome #1

1. Outcome Measures

Increased aquaculture production in Rhode Island (both of current species and new species. An increase in technology and understanding of basic mechanisms of immunity and muscle growth that will ultimately enhance production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Two factors impacting the viability of commercial aquaculture operations are diseases and growth rates. Measures that can be taken to reduce disease incidence and the impact on the animals, and increasing growth and ultimately production are important to attaining profitability.

What has been done
Selective breeding of oysters for resistance to specific pathogens that impact oyster aquaculture in the northeast US has been initiated. This is essential to provide for healthy animals and attaining the target harvest size. Studies were also conducted to breed trout containing constructs for inhibitors of transforming growth factor-Betas and related proteins to understand the mechanisms involved in muscle growth in commercially produced fish.

Results
Families of oysters have been developed that have varying degrees of resistance to specific pathogens that are impacting production. Continued testing of these strains in commercial settings is required to obtain sufficient data. The specific mechanisms involved in this improved immunity are being examined at the gene/transcript level. F3 generation trout expressing selected inhibitors were found to have an increase in muscle mass. Administration of supplemental growth hormone to these fish was examined to determine if it resulted in a synergistic effect and additional accretion of muscle.

4. Associated Knowledge Areas

KA Code	Knowledge Area

302	Nutrient Utilization in Animals
304	Animal Genome
305	Animal Physiological Processes
307	Animal Management Systems
311	Animal Diseases

Outcome #2

1. Outcome Measures

Growth of Rhode Island's shellfish aquaculture industry (includes number of farms, number of farmers employed and farmgate value of the aquaculture crops)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Oysters and mussels are the primary aquaculture species in Rhode Island. Oysters in particular are susceptible to a variety of pathogens that are now prevalent in certain areas. Information on the incidence and impact of these pathogens is of importance to growers to assess the risk of specific practices and farm areas.

What has been done
Surveys have been conducted of the major oyster pathogens in the state and region. Both wild and cultured oysters from most of the producers in the state have been examined and provided a preliminary map of the pathogens and their impacts.

Results
The results of this work have made oyster and mussel farmers aware of the need for basic biosecurity. One of the issues that has come to light is the need for regulating the movement of shellfish and the collection of spat to avoid spreading or increasing the incidence of specific pathogens. This is the first step in developing and implementing a program to reduce the impact of diseases on culture and profitability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
311	Animal Diseases

Outcome #3

1. Outcome Measures

Development of fertility assays for use in AI industry

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Develop research-based strategies to modify animal feeds that which will improve the immune status and disease resistance of domestic livestock

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This goal of this research is to evaluate tannin-containing forages and assess their efficacy for suppressing gastrointestinal parasites in small ruminants, the single most important limiting factor in organic sheep and goat production.

What has been done
The ability of different varieties of the condensed tannin containing forage, birdsfoot trefoil (BFT), has been tested as a dewormer for sheep infected with the barber pole worm. Benchtop tests investigating the effect of different varieties of BFT on the ability of barber pole worm eggs to hatch, develop and become infective suggest the compound has promise. During the second stage sheep will be fed the most promising varieties of BFT from stage one to test efficacy of these varieties of BFT in vivo.

Results
Initial in vitro work suggests that BFT has potential for use as an organic dewormer. Subsequent in vivo tests will determine whether the compound is efficacious in the living animal. If successful this project could ultimately enhance productivity and profitability of organic livestock production in the Northeast US.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
307	Animal Management Systems
311	Animal Diseases

Outcome #5

1. Outcome Measures

The successful Master Gardener Volunteer Program will be maintained and enhanced to expand the impact of URI Extension and free up Extension staff time by recruiting, training, supporting, managing, recognizing and retaining volunteers

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	775

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Master Gardner Volunteer Program provides an important service by providing science-based information to address community environmental, economic, social and aesthetic challenges to the general public. The ability of URI Extension staff to directly work with the public is limited by funding and time constraint due to other projects and programs. The Volunteer Program trains qualified individuals to extend the reach of the program to the public.

What has been done
The 2013 Master Gardener Core Training Program was conducted from January-May 2013 to train volunteer interns in sustainable horticulture basics and practice to 110 recruits. Extension

educators supported the volunteer association in the development and implementation of a year-long continuing education program for veteran volunteers, volunteer recognition activities, community outreach programs and projects to retain volunteers and engage them in delivery of science-based information on behalf of Extension staff.

Results
The active URI Master Gardener base grew to 600 individuals donating over 50,000 volunteer hours through outreach with 50 projects and programs and 17 committees.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
205	Plant Management Systems
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #6

1. Outcome Measures

Master Gardener volunteers work with URI staff and students to establish and maintain demonstration gardens that serve as teaching centers for Rhode Islanders interested in growing their own food. Produce from the demonstration gardens is donated to local food banks.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food security and lack of access to healthy food continues to plague individuals and families in Rhode Island, especially in urban areas.

What has been done
URI Master Gardener volunteers have developed and continue to maintain 7 demonstration vegetable and 1 demonstration edible forest garden in 5 different Rhode Island communities to showcase sustainable vegetable gardening techniques and practices through actual garden

management throughout the season and via free educational workshop hosted at each of the gardens.

Results
In 2013, over 13,000 pounds of produce was grown and donated to local food pantries and the RI Community Food Bank. The demonstration gardens and educational workshops hosted at the gardens have helped to improve the lives of Rhode Island citizens through promotion of healthy eating habits and environmental and economic sustainability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #7

1. Outcome Measures

Through participating in the Learning Landscape and other hands on youth environmental education programs, students in grades K-5 will demonstrate increased knowledge and skills about the environment, horticulture and science. Teachers' trainings offer supplemental environmental science tools for formal and informal educators.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5550

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Much of Rhode Island's youth, especially in low income urban settings, lack access to nature and hands-on science education to supplement classroom learning. This is evidenced by the low science scores on NECAP testing and few students entered into the STEM career fields compared to other fields.

What has been done

The URI Learning Landscape Field Trips, Eco-Exploration Camp weeks and family outreach and education events, the latter held exclusively at the Roger Williams Park Botanical Center in Providence, provided experiential science-learning opportunities to students in grades K-12. Half-day field trips offered in Providence in winter and on campus in Kingston in spring with reduced admission and bus scholarships available for students from low income backgrounds, allowed us to reach a broad, diverse group of K-12 students. The Learning Landscape Field Trip program covered topics including, but not limited to, seed starting, composting and vermiculture, hydrology, native mammals and birds, beneficial and pest insects, pollination, ecosystems and adaptations. The Eco-Exploration Summer Camp weeks were held in the Roger Williams Park community garden and edible forest garden in Providence, whereby elementary and middle school students from urban communities were connected to the biodiversity found in the city's 400+ acre greenspace, in addition to the origins of their produce, the importance of native species and other issue-based topics. These programs are aligned with RI Grade Span Expectations for life and earth sciences, as well as for written and oral communication and environmental stewardship.

Results

Children from suburban and urban areas without access to gardens and experiences in the natural world had the opportunity to learn about environmental science while reinforcing skill development in their classroom curriculum. Students were exposed to science content and STEM career paths by visiting University-run programs and staff. Many attendees of the programs are repeat, either as a result of teacher or parent appreciation of the offerings, allowing our educators to layer concepts on top of those taught the previous year when appropriate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
135	Aquatic and Terrestrial Wildlife
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems

Outcome #8

1. Outcome Measures

URI will continue to enhance the Master Composter training program to extend the educational reach of the University by recruiting, training and managing volunteers to education and encourage Rhode Island citizens to compost. In addition to the core training compost workshops will be added throughout the year for the general public.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Organic materials compostable in backyards make up almost 30% of the waste stream in Rhode Island. Transporting and landfilling these materials is economically expensive and environmentally wasteful.

What has been done
URI Master Composter volunteers who have been trained through core training classroom and field trip sessions volunteer year-round by staffing information booths, managing community composting sites and delivering public presentations through the URI Speakers Bureau.

Results
Approximately 100 active URI Master Composter volunteers donated over 3,000 hours of volunteer time in 2013l advanced and practical composting workshops and lecture were attended by an additional 250 participants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
205	Plant Management Systems

Outcome #9

1. Outcome Measures

Through ongoing curricula development, workshop offerings to the general public and provision of certification opportunities for green industry professionals, the integration of native plants, landscape restoration principles, invasive plant management and low impact development practices will be promoted to increase business and consumer demand for ecological sustainable landscape services and general practice.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rhode Island is the second most densely populated state in the United States, and the negative impact land development and poor landscape management practices have on habitat quality and quantity and water quality are profound.

What has been done
In partnership with state and local regulatory agencies and nonprofit organizations, Extension staff have designed and delivered training programs that target homeowners, early adopters, volunteers and college students interested and/ or engaged in landscape design and/ or management. Practical tips regarding landscape design and management techniques that protect habitat and surface and groundwater are shared, and through more rigorous training modules, professionals are able to expand their portfolio of services to include stormwater management techniques for water quality protection and invasive plant management for habitat protection.

Results
A new crop of members of the general public and the professional community are not aware of the link between backyard landscape management and environmental degradation related to water and habitat quality degradation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
216	Integrated Pest Management Systems

Outcome #10

1. Outcome Measures

Growers in RI propagate and market native plants. Consumers (state agencies, municipalities and residential landscape managers) seek out native plants for use in landscape

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Biodiversity on the landscape is constantly threatened by the proliferation of non-native plant species.

What has been done
The Rhody Native Propagation Training taught participating Rhode Island growers and designers how to clean seed, propagate cuttings, and market locally-sourced, genetically-diverse native plant material for sale to consumers in the retail and restoration market. The Rhody Native Spring Garden School taught participating members of the general public about the importance of genetically-diverse native plants to protect biodiversity in our native ecosystem and the relationship between those plants and our native insects and wildlife.

Results
The Rhody Native plant brand and 'Locally sources, locally grown' tagline was developed to assist participating nurseries in the sale of their plant stock, and to help consumers find the genetically-diverse native plants in the market.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #11

1. Outcome Measures

Increase the understanding of private and public sector and scientists of economic and market factors in fisheries and aquaculture management through publications and presentations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Aquaculture and capture fisheries provide a significant source of protein and economic activity for people in the U.S. For maximum efficacy of both, the multifaceted economic relationship between aquaculture and capture fisheries needs to be better defined. This project is aimed at increasing the profitability of the U.S. capture fishery and aquaculture industries, either through improvement of management schemes for natural fishery resources or the optimization of production and marketing practices for all seafood products (wild and farm raised).

What has been done
Research has been conducted to better understand the market demand for wild-harvested clam species in Rhode Island and to enhance the integration of fishery management and marketing. An Almost Ideal Demand System Model is being developed to obtain own-price and cross-price elasticities among different shellfish species and/or market categories.

Results
The regression model developed provides insights about the clam (quahog) market in Rhode Island. The elasticity value suggests that demand for cooked quahog is less vulnerable to price change than raw quahog products. Furthermore, scallops and clams are not a substitute product for cooked quahog where as the raw quahog is a substitute.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
606	International Trade and Development
609	Economic Theory and Methods
610	Domestic Policy Analysis

Outcome #12

1. Outcome Measures

Increase the understanding of scientists and decision makers through publications and presentations of the outcomes of game theoretical models to identify fisheries where political intervention is likely based on the degree of heterogeneity among harvesters.

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Identify and improve sustainable trees, shrubs and grasses with an emphasis on native species.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Turfgrass is of major economic importance to RI from both the production side and as the core of golf courses. One of the problems that needs to be addressed is turfgrass nematodes. The management of these nematodes has relied solely on the use of organophosphate nematicides and fumigants. These chemicals are no longer available and alternative methods of nematode control need to be identified.

What has been done
A variety of approaches have been taken to address this problem including:1)determining which species of plant-parasitic nematodes are present and which are responsible for damage to golf course putting greens in New England, 2) assessment of whether differences in nematode susceptibility exist between bentgrass cultivars and 3) testing alternative nematicides and developing management techniques.

Results

During the 2013 field season, trials were conducted to determine the efficacy of multiple materials in combating plant pathogenic
nematodes on creeping bentgrass golf greens. Of the fourteen different products tested, including multiple formulations of abermectin (Avid), abermectin combined with wetting agents and fungicides, furfual (Multiguard) and other confidential materials. Although results were not statistically significant (as a result of high variability in nematode populations across the trial area) Avid reduced stunt nematode populations by the highest amount. Other materials also reduced nematode populations (including Multigard) but by a less significant amount. Other unlabelled proprietary materials were found to be phytotoxic. Turf management techniques may be a critical component and more efficacious means of battling nematodes.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

Specific programs were impacted by weather (particularly for sampling and collection) and by available funding and staff. The ability to deliver programs and services was impacted by funding as fee programs and grants are used to supplement federal dollars received.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

For presentations, programs, classes and workshops offered written or digital evaluations were distributed and collected to assess changes in knowledge and attitude, behavior and condition, when appropriate, as a result of each project/program implemented. Google analytics tracking software is used to generate detailed information about website use. Information includes the number of views and downloads per webpage and the numbers and types of visitors (.gov, .edu, .org, .com) to each portion of the websites.

Extension and research outputs are subject to peer evaluations before publication.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Youth, Family and Communities

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	20%		0%	
602	Business Management, Finance, and Taxation	5%		0%	
802	Human Development and Family Well-Being	10%		0%	
806	Youth Development	65%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	8.0	0.0	0.0	0.0
Actual Paid Professional	3.8	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
205707	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
147528	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

4-H and CYFAR

· Forge academic connections to strengthen 4-H and CYFAR curriculums, provide undergraduate experiential learning opportunities, increase program research base and utilizes evaluation expertise to measure impacts and improve programs

· Connect target audience to 4-H and CYFAR educational programs though workshops, web-based training and newsletters, 4-H volunteer training and curriculum guides (train the trainer), community-based agency trainings (train the trainer)

· Develop resources and information to connect youth and families to community and land-grant resources (4-H and CYFAR to serve as portals)

· Expansion of the 4-H club system into currently underrepresented, urbanized areas of the state and creation of a state-wide network of 4-H science enrichment after school programs that serve as a catalyst for improve the science based knowledge, skills and academic motivation among urban elementary and middle school students. Expansion of 4-H programming to children of military personnel during pre-deployment, deployment and post-deployment.

Sustainable Communities

· Study and promote commercial farm viability

· Promote responsible stewardship of agricultural lands

· Work with municipalities and community members to manage natural and economic resources wisely

· Teach and promote sustainable development techniques and management to communities

· Promote, enhance and expand sustainable tourism in the state of Rhode Island

2. Brief description of the target audience

4-H and CYFAR

Youth 5-18 years of age, parents of targeted youth, community-based family-serving agencies and organizations, volunteers

Sustainable Communities

Farmers/ farm organizations, RI Department of Environmental Management (RI DEM) Division of Agriculture, RI Center for Agricultural Promotion and Education, Rhode Island Agricultural Partnership, other agricultural service providers, tourism councils and tourism businesses, land trusts, policy makers and municipal leaders, grassroots and community organizations

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Workshops (including short courses)

Year	Actual
2013	162

Output #2

Output Measure

- Volunteers trained

Year	Actual
2013	236

Output #3

Output Measure

- 4-H record books

Year	Actual
2013	175

Output #4

Output Measure

- Youth reached through programs

Year	Actual
2013	1417

Output #5

Output Measure

- Community/family serving groups reached

Year	Actual
2013	40

Output #6

Output Measure

- Community service projects

Year	Actual
2013	116

Output #7

Output Measure

- Activities and programs

Year	Actual
2013	88

Output #8

Output Measure

- Students trained

Year	Actual
2013	55

Output #9

Output Measure

- Website development and refinement

Year	Actual
2013	4

Output #10

Output Measure

- Curriculum development and delivery

Year	Actual
2013	28

Output #11

Output Measure

- Professional training
  Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Public presentations

Year	Actual
2013	47

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Through project work and science and health enrichment programs, (%) 4-H club members and after school group members will demonstrate increased knowledge and skills that can be incorporated into their academic and personal lives.
2	% of enrolled 4-H youth who will demonstrate a commitment and understanding of their community and a sense of connectivity through increased delivery of community service programs to those in need.
3	Though training programs, club leadership activities and adult mentors, % of 4-H members who will develop leadership skills (e.g., public speaking, project leadership), gain confidence in their ability to lead and make a difference in their schools and communities and to incorporate these life skills into their daily lives.
4	# of parents, volunteers and adults serving youth and their families who will gain knowledge and skills that will foster positive youth development and family health and well-being.
5	# of parents who will learn and adopt more effective methods for parental discipline of children and better use of family time.
6	Pre-post measurement of educational activities, workshops to measure increases in knowledge and skills, focus groups and surveys to assess practice change and adoption, analysis of contact information and demographics to measure expansion of programs to currently underrepresented groups (urban, cultural-diverse communities, minorities, etc.) (Number of assessments per year)
7	Provide information and training to farmers and rural landowners on estate planning strategies and economic development opportunities.
8	Improve viability of agriculture in the state of Rhode Island and southern New England through farmer education/information and consulting concerning sustainable agricultural practices, value-added products and agri-tourism.
9	Provide information and training to municipal leaders and organizations on management of natural resources and community assets.

Outcome #1

1. Outcome Measures

Through project work and science and health enrichment programs, (%) 4-H club members and after school group members will demonstrate increased knowledge and skills that can be incorporated into their academic and personal lives.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Out-of-school educational programs provide youth with a safe, supportive environment for developing academic and life skills. Research demonstrates a significant relationship between poverty and academic achievement in school. "There is a great concern over the fact that children of underrepresented audiences do not excel in math and science classes." URI/HDF CE/4-H program targets these youth in urban areas with the delivery of science enrichment programming. Science and healthy Lifestyles programming is a major focus of the 4-H club system, after school programming and Operation: Military Kids.

What has been done
The Pathway for Success in Science & Technology Project ended on a very positive note. URI Cooperative Extension has developed a great partnershi pwith the Rhode Island College (Children) Crusade organization who has continued this program in three urban schools during 2013. URI no longer collects data on the program. 4-H programming focused on animal science, ecology, horticulture, technology, robotics and healthy lifestyles workshops, programs and events. New for FY13 was the 4-H GIS Day and an expansion of the animal science educational series that now includes horse, rabbits and poultry where biology and the scientific method are taught.

Results
Evaluation studies documented increased knowledge and skills and positively increased youth attitude toward science and learning through 4-H and URI/HDF after-school science enrichment programs. In FY13 RI 4-H trained 14 volunteers and reached 198 4-H youth through the 4-H National Youth Science Day program and exposed 143 military youth and 31 adult volunteers to the program at OMK Family Camp and RING Summer Day Camp. The 4-H Tech Wizards mentoring program entered it second year and reached 76 at-risk urban youth weekly in after-

school SET programming. 50% of 4-Hers and after-school club enrollments participated in science and health projects/programs, competitions, education series and workshops and demonstrated an increase in knowledge and skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

% of enrolled 4-H youth who will demonstrate a commitment and understanding of their community and a sense of connectivity through increased delivery of community service programs to those in need.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	61

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many of today's youth lack opportunities to engage in positive out-of-school educational programs under the mentoring of caring adults who guide them in developing valuable life skills while aiding them in creating positive connections to the larger community and assisting them in successfully making the transition to productive, contributing young adults

What has been done
RI 4-H Clubs and after-school programs are expected to plan and conduct at least one community service project during the 4-H year as part of the Citizenship mission mandate. 4-H volunteers are provided with community service opportunities through the 4-H volunteer listserv and connected to requests from citizens and community groups requiring assistance. 4-H groups may apply for financial support through the RI 4-H Club Foundation Grant program for their projects. Beyond serving their communities, 4-H clubs also volunteer with Operation: Military Kids. 4-H members document their community service hours through their 4-H record books.

Results
Leaders of two-thirds of the active 4-H clubs in FY13 (average of 25 members per club) reported that their clubs completed an average of six or more community service projects in the FY13 4-H

year resulting in 475 documented 4-H youth participating in community service projects or 61% of the FY13 4-H club enrollment. This percentage only includes clubs who reported their end of year results. 175 4-Hers who submitted record books in FY13 reported 5932 community service hours or an average of 33.9 hours per 4-H member. Eight 4-H Clubs received State 4-H Excellence Awards with community service requirements a significant portion of the selection process. They reported demonstrations at Tractor Supply, food drives, parades, therapeutic animal programs, Christmas caroling, volunteering at nursing homes, hosted spring fair for children, shoveling snow for those in need, adopted families, helped plant community gardens and supported local charities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Though training programs, club leadership activities and adult mentors, % of 4-H members who will develop leadership skills (e.g., public speaking, project leadership), gain confidence in their ability to lead and make a difference in their schools and communities and to incorporate these life skills into their daily lives.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	53

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many youth are lacking in school and family-centered opportunities and support to increase their communications and leadership skills. Youth need a safe and nurturing environment to test their abilities and receive constructive and supportive feedback. Encouragement by caring adults and positive peer support enable youth to develop confidence and incorporate these life skills into their school and community.

What has been done
All 4-H members are strongly encouraged to participate in the RI 4-H Public Presentations programs at club, district and state level. 4-H volunteers and staff provide training and competitive and non-competitive speaking opportunities are provided to all 4-H ages. Besides district and

state competitions, 4-Hers are encouraged to participate in local events to educate the public including 4-H Foundation events, Washington County Fair Farm School and Tractor Supply Paper Clover Events to name a few. 4-H youth demonstrated leadership skills in their 4-H clubs and at 4-H events and programs on the state and regional level. In FY13, 4-H teens participated in a special leadership workshop featuring presenters from the RI Parent Information Network and the Providence Improv Guild. Teens learned about leadership styles, working as a team, problem solving and decision making.

Results

256 4-H youth or 33% of RI 4-H club members participated in district and state public presentation programs, 4-H Farm School, Eastern States Exposition and other public events promoting 4-H. 4-H teens demonstrated their leadership ability by assuming major roles at 4-H Fairs, animal science workshops and events and Rhode Island and New England 4-H Animal Committees and events. 4-H members actively participated in communication workshops, public presentations training and record book workshops. 4-H club volunteers (63% of clubs documented) reported that in FY13 53% of their youth exhibited increased leadership skills and of this group 93% reported having active 4-H club youth officers. 4-H members (175) who submitted recordbooks reported a total of 5655 4-H leadership hours. In FY13 4-H Horse Teen advisory Council, representing their clubs, continued to take a an active role in planning and evaluating the RI 4-H Horse education program. Fifty-four youth and teen leaders assumed leadership and communication roles at the the Eastern States Exposition.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

# of parents, volunteers and adults serving youth and their families who will gain knowledge and skills that will foster positive youth development and family health and well-being.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1332

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment for child rearing. There is limited access to parent education programs for families and links between service providers and families have either been eliminated or weakened as a result of budget cuts.

What has been done
Cooperative Extension Specialist from the URI Department of Human Development and Family Studies worked with two graduate students and developed/adapted, implemented and evaluated 42 parenting workshop for the 2013 programmatic year.

Results
Direct programs reached 1332 families. Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshop participants rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent. Outcome evaluation yielded the following: research states that parents who attend Parent/Family educational workshops, engage in significantly more nurturing parenting and less harsh parenting compared to parents who have not attended any educational training

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

# of parents who will learn and adopt more effective methods for parental discipline of children and better use of family time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1332

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment

for child rearing. There is limited access to parent education programs for families and links between service providers and families have either been eliminated or weakened as a result of budget cuts.

What has been done
Rhode Island agencies' personnel who worked directly with families were asked to identify program needs for parents and families in their respective geographic areas. Cooperative Extension Specialist from the URI Department of Human Development and Family Studies along with two graduate students developed/adapted, implemented and evaluated 42 workshops for the 2013 programmatic year. Summative evaluations were conducted at workshops to assess quality as well as outcomes.

Results
Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshop participants rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent. Outcome evaluation yielded the following Research states that parents who attend parent/Family educational workshops engage in significantly more nurturing parenting and less harsh parenting.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #6

1. Outcome Measures

Pre-post measurement of educational activities, workshops to measure increases in knowledge and skills, focus groups and surveys to assess practice change and adoption, analysis of contact information and demographics to measure expansion of programs to currently underrepresented groups (urban, cultural-diverse communities, minorities, etc.) (Number of assessments per year)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	42

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of RI children and families living in poverty continues to increase. Family structures are stressed by poverty and decreasing community connection creating a weakened environment for child rearing. There is limited access to parent education programs for families and links between service providers and families have either been eliminated or weakened as a result of budget cuts.

What has been done
Pre measurements of educational activities included parents sharing their prior knowledge through surveys and discussions. Post measurements of educational activities included summative evaluations that were conducted to assess outcomes. during each workshop parents were given the opportunity to summarize key understandings, thus communicating increases in knowledge and skills. Throughout workshops participants gave feedback on clarity of information delivered and reflection aided assessment of practice change. In Providence the agencies worked with have diverse underrepresented clientele. All workshops were conducted in Spanish and English to address the cultural needs of parents.

Results
Summative evaluations collected at the conclusion of each 2 hour workshop yielded the following results: 98% of workshop participants rated the workshop as great or perfect; 97% rated the presenter as great or perfect; 92% indicated the information was practical; 86% reported learning 3 new concepts; 98% rated delivery methods as excellent.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
806	Youth Development

Outcome #7

1. Outcome Measures

Provide information and training to farmers and rural landowners on estate planning strategies and economic development opportunities.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With ever increasing scarcity of land due to high real estate values from development pressure, farmers and rural landowners need to develop an understanding of estate planning strategies and explore economic development opportunities that would allow them to preserve the rural qualities of their land.

What has been done
In FY13 Cooperative Extension co-sponsored a training program with RI Department of Environmental Management on "Transferring the Farm" Workshops for farmers and rural landowners included Getting the farm transfer process started; Succession vs. Estate Planning; Transferring the Farm Tools and Techniques; Legal Structures and Agreements; RI Estate and Capitol Gains Taxes;and Land Linking.

Results
Thirty participants received in-depth training at the "Transferring the Farm" program and increased their knowledge as it relates to estate planning strategies. Attendees were provided with information toolkits and professional contacts to assist them in developing plans of action for managing the eventual transfer of their farms.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #8

1. Outcome Measures

Improve viability of agriculture in the state of Rhode Island and southern New England through farmer education/information and consulting concerning sustainable agricultural practices, value-added products and agri-tourism.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With ever increasing scarcity of land due to high real estate values from development pressure, growers in the region need to get the highest possible return on their agricultural investments in time, energy and money.

What has been done
The sustainable agriculture Cooperative Extension team provided a wide variety of meetings and educational presentations for the RI agricultural community. Workshop topics included: production methods, pest and disease management, soil management, marketing strategy, pollination, weed management, and high tunnel and greenhouse production.

Results
During FY13 producers increased their knowledge and skills through attending a total of 14 meetings and workshops sponsored by the Sustainable Ag team and were introduced to numerous production practices and marketing ideas in a wide variety of crops and markets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #9

1. Outcome Measures

Provide information and training to municipal leaders and organizations on management of natural resources and community assets.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The tumultuous economy had a negative effect on hiring new faculty and staff. Uncertain state budgets and federal budget cuts continue to have a negative effect on service delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

2013 Parenting Education: Direct programs reached 1332 families. Summative evaluations collected at the conclusion of each 2 hour workshop yielded the follwing results: 92% of workshops rated the workshop as great or perfect; 94% rated the presenter as great or perfect; 90% indicated the information was practical; 83% reported learning 3 new concepts; 97% rated delivery methods as excellent.Outcome evaluation yielded the following: Compared to parents who have not attended Cooperative Extension parent/Family workshops, parents who attended parenting workshops engage in significantly more nurturing parenting and less harsh parenting.

4-H: Direct observation and reporting of change in knowledge/skills and behavior change by 4-H Club leaders and 4-H staff. Review of 4-H record books to documentleadership and community serviceand participation. Post assessment of 4-H events for program/event evaluation, redirection and revisions. Summative evaluation used to evaluate learning materials and learning process. High level of satisfaction reported by stakeholders.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

International Programs

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
606	International Trade and Development	50%		50%	
611	Foreign Policy and Programs	50%		50%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid Professional	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
2215	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
46298	0	46298	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

· Develop a demonstration nursery and associated practices for production and maintenance of

saline tolerant landscape and food crop plants in Tianjin China and associated ecotone regions.

· Collaborate with Chinese colleagues in the water and wastewater management responsibilities in Tianjin on the potential development of agricultural grade compost from collected biosolids.

· Plan and implement programs for expanded phytoremediation applications to other disturbed soils and regions where foundry or manufacturing have added complex heavy metal and salinity environmental compromises.

· Develop and promulgate a shellfish sanitation program in African countries.

· Develop and promulgate a sustainable fisheries programs in the Gambia and Senegal.

· Assist international fishers; increase value of fishing products in domestic foreign markets.

· Create scientist and student exchange programs with foreign institutions, countries, agencies and companies.

· Assist partners in international projects.

2. Brief description of the target audience

Foreign universities, governments, government officials, policy makers; international business collaborators and producers; international students; RIAES scientists; RICE extension agents; URI students

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Technical documents, fact sheets, bulletins and newsletters

Year	Actual
2013	40

Output #2

Output Measure

- Training manuals (includes instructional CD?s)

Year	Actual
2013	0

Output #3

Output Measure

- Scientific/professional presentations

Year	Actual
2013	3

Output #4

Output Measure

- Workshops (including short courses)

Year	Actual
2013	100

Output #5

Output Measure

- Conferences hosted

Year	Actual
2013	0

Output #6

Output Measure

- Website development and refinement

Year	Actual
2013	0

Output #7

Output Measure

- Public presentations

Year	Actual
2013	8

Output #8

Output Measure

- Student training

Year	Actual
2013	7

Output #9

Output Measure

- Thesis/dissertation

Year	Actual
2013	6

Output #10

Output Measure

- Postdoctoral training

Year	Actual
2013	0

Output #11

Output Measure

- Volunteer training

Year	Actual
2013	0

Output #12

Output Measure

- Intervention studies

Year	Actual
2013	2

Output #13

Output Measure

- Social marketing

Year	Actual
2013	0

Output #14

Output Measure

- Video productions

Year	Actual
2013	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Provide onsite knowledge and technology to an international collaborator to improve local food production, agricultural sustainability and environmental conditions.
2	Artisanal fisheries ecosystems in the Gambia and selected stocks shared with Senegal are being managed more sustainably.

Outcome #1

1. Outcome Measures

Provide onsite knowledge and technology to an international collaborator to improve local food production, agricultural sustainability and environmental conditions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In China, saline soil has decreased local food production, increased enhanced soil erosion and decreased quality of life over millions of acres. Historic placement and operation of coal mines, lead, zinc, copper smelters, steel plants and electricity generation have caused an additional and dramatic decline in plant cover, food production and food safety concurrent with significant increase in desert expanse and substantive decline in air quality.

What has been done
URI personnel have inventoried concerns, opportunities and capacities. We have offered to assist the PRC in a Land Grant fashion to develop meaningful solutions to environmental and agricultural challenges. We have successfully established a demonstration nursery and farm on saline soil.

Results
We have developed and transferred the knowledge and capability to maintain production in these challenged environments. We have also developed a joint proposal to continue to derive PRC support funding for an additional two years of efforts. Last, we will continue to respond to requests for site visits and site-specific assessments and explore how technology can be transferred.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
611	Foreign Policy and Programs

Outcome #2

1. Outcome Measures

Artisanal fisheries ecosystems in the Gambia and selected stocks shared with Senegal are being managed more sustainably.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Development of a sustainable fishery in African countries will provide economic opportunities for fishing communities while protecting marine resources and biodiversity.

What has been done
A combination of education, extension and research has been used for the following major projects: development of sole co-management plans that include 1 nm spawning area closure in management plan, change in fishing gear and designing training for safety at sea. We have also developed an oyster co-management plan that provides for improved hygiene, water quality testing and conservation of wood.

Results
Our program has resulted in increased social and economic benefits to artisanal fishing communities, institutional capacity strengthening at all levels of governance, protection of nursery areas and spawning areas for commercially important species and for associated turtles and marine mammals and a reduction in the unsustainable and destructive marine resource use practices that threaten biodiversity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development

611 Foreign Policy and Programs

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (International travel)

Brief Explanation

The tumultuous economy, decreasing state budgets and federal budget cuts have had a negative impact on international travel and international program delivery. International efforts require support from the host country whihc are not always forthcoming. Cultural differences provide challenges to effective program implementation.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Pre- and post-program evaluations were performed and indicated high satisifaction among stakeholders. Efforts to implement recommendations have been noted and assessed. Anecdotally, the number of requests for field site visits and site assessments confirm the value that stakeholders have for the expertise that the Univerrsity of Rhode Island has provided.

Key Items of Evaluation

No items to report.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

CELS CARES

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
902	Administration of Projects and Programs	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	2.0	0.0
Actual Paid Professional	3.8	0.0	10.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
131471	0	537970	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
215213	0	457133	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- RIAES and RICE developed a request for application (RFA) process that encourages innovative,

integrated proposals that meet the needs of state stakeholders.
- RIAES and RICE also request proposals from new faculty that encourages innovative, integrated proposals that meet the needs of state stakeholders.
- Proposals are evaluated by internal university teams and external peers.
- Resources are distributed using a merit based system.
- Infrastructure needs are also addressed by this program.

2. Brief description of the target audience

Academic faculty, university staff, graduate students, undergraduate students, university administrators, RIAES scientists, RICE personnel

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	100	2100	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Proposal submissions

Year	Actual
2013	112

Output #2

Output Measure

- Proposals funded

Year	Actual
2013	71

Output #3

Output Measure

- Extramural funds supporting research and extension
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	New knowledge generated
2	Research and extension infrastructure built and adequately supported
3	Number of integrated research and extension projects increase
4	Cultures of research and extension merge

Outcome #1

1. Outcome Measures

New knowledge generated

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
CELS CARES is a peer-reviewed mechanism to identify meritorious proposals to support RI research and outreach activities.

What has been done
We solicited proposals that integrated research and outreach as well as proposals that supported the purchase scientific equipment and instrumentation.

Results
Proposals were funded. New knowledge generated was reported in the planned program areas of this Annual Report of Results and Accomplishments.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #2

1. Outcome Measures

Research and extension infrastructure built and adequately supported

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Infrastructure is essential to provide the platform from which to provide research and extension services.

What has been done
Funding for students, personnel, supplies, travel, equipment and instrumentation were competitively provided to research and extension faculty.

Results
Research and extension infrastructure was supported through CELS CARES. The infrastructure was also used as leverage to secure additional competitive external funding (5:1).

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #3

1. Outcome Measures

Number of integrated research and extension projects increase

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Moving scientific results from the bench to the end user requires a thoughtful and defined process.

What has been done
We have developed a process that combines research and extension to best meet the needs of stakeholders.

Results
The number of projects that clearly integrate research and extension have increased. Moreover, this has lead to significant leveraging of the Land Grant investment. This past year as a result of Land grant funding, URI faculty supported by Land Grant funds submitted 112 proposals and won funding for 71 different projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
902	Administration of Projects and Programs

Outcome #4

1. Outcome Measures

Cultures of research and extension merge

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

The tumultuous economy has had a negative effect on hiring new faculty and staff. Uncertain state budgets and federal budget cuts continue to have a negative effect on service and program delivery.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Pre-program and post-program testing indicated high stakeholder satisfaction with programming. Several training sessions on CELS CARES initiatives provided stakeholders with on-going education on administrative processes.

Key Items of Evaluation

There were no key items for NIFA's attention is this program area.