

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Maintain, Conserve and Enhance Florida's Natural 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
102	Soil, Plant, Water, Nutrient Relationships	5%	0%	0%	
103	Management of Saline and Sodic Soils and Salinity	5%	0%	0%	
104	Protect Soil from Harmful Effects of Natural Elements	5%	0%	0%	
111	Conservation and Efficient Use of Water	5%	0%	0%	
112	Watershed Protection and Management	5%	0%	0%	
131	Alternative Uses of Land	5%	0%	0%	
132	Weather and Climate	5%	0%	0%	
133	Pollution Prevention and Mitigation	5%	0%	0%	
134	Outdoor Recreation	5%	0%	0%	
135	Aquatic and Terrestrial Wildlife	5%	0%	0%	
136	Conservation of Biological Diversity	5%	0%	0%	
141	Air Resource Protection and Management	5%	0%	0%	
216	Integrated Pest Management Systems	5%	0%	0%	
403	Waste Disposal, Recycling, and Reuse	5%	0%	0%	
605	Natural Resource and Environmental Economics	5%	0%	0%	
608	Community Resource Planning and Development	5%	0%	0%	
610	Domestic Policy Analysis	5%	0%	0%	
723	Hazards to Human Health and Safety	5%	0%	0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%	0%	0%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%	0%	0%	
	Total	100%	0%	0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.0	1.0	0.0	0.0
Actual Paid Professional	40.3	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
387517	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
387517	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

Environmental Education 1. Conduct needs assessment

2. Develop collaborative meetings/working partnerships/advisory committees

3. Write grants

4. Develop inservice/training programs for different audiences using

- face to face field institutes

-distance learning (web-based, podcasts, video conferences, polycom, etc.)

5. Establish Extension EE webpage

6. Develop educational materials for EE

7. Assist in development of educational events in EE for youth, volunteers, public, etc. at state, district, and/or county level.

8. Support and assist in assessing impacts of EE programs (in Extension) at state and county level.

2. Brief description of the target audience

Extension faculty and staff

Formal/non-formal educators

Volunteers and Youth

Residents /visitors

Local governments

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	487376	1108312	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	33	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Change in Knowledge Water Resources
2	Change in Behavior Water Resources
3	Change in Condition Water Resources
4	Change in Knowledge Sustainable Use of Freshwater and Terrestrial Ecosystems
5	Change in Behavior Sustainable Use of Freshwater and Terrestrial Ecosystems
6	Change in Condition Sustainable Use of Freshwater and Terrestrial Ecosystems
7	Change in Knowledge Environmental Education
8	Change in Behavior Environmental Education
9	Change in Condition Environmental Education
10	Change in Knowledge Sustainable Use of Coastal and Marine Ecosystems
11	Change in Behavior Sustainable Use of Coastal and Marine Ecosystems
12	Change in Condition Sustainable Use of Coastal and Marine Ecosystems

Outcome #1

1. Outcome Measures

Change in Knowledge Water Resources

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Irrigation water conservation is important for nurseries because of restrictions on allocations, competition for water resources, and the impact nutrient-laden runoff water has on the environment.

What has been done

At a commercial nursery, the Best Management Practice (BMP) of monitoring the amount of container drainage or leachate was implemented as a means to guide irrigation application amount.

Results

The amount of irrigation leachate expressed as a percentage of the amount of irrigation applied that entered container is the leaching fraction (LF). A LF of 10-15% is necessary for the BMP. This BMP not only provides a guide for irrigation management but results in a concomitant reduction of nutrients in runoff. The nursery operator reported that nutritional levels could be reduced 30% on some crops with implementation of the BMP. This past year, 39 container plant producers signed a notice of intent to implement BMPs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water

112	Watershed Protection and Management
131	Alternative Uses of Land
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Change in Behavior Water Resources

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1025

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Water conservation and protection of water quality from fertilizers and pesticides is important issue throughout Florida. Extension programs designed to promote best management practices (BMP) that conserve and protect water resources were delivered to residential home owners, farmers, and green industry employees.

What has been done

Educational workshops and demonstrations, water conservation technologies, and web-based information and social media platforms were used to educate stakeholders about water conservation and water quality protection BMPs and practices.

Results

Demonstration sites in nurseries were used to illustrate how smarter irrigation technologies save 55-90% of water applied compared to traditional irrigation practices. A 50% reduction in water use among nurseries statewide represents is estimated to save roughly 185 million gallons per day. Field tree nurseries in southeast Florida were shown that using tensiometers or other soil water sensing tools to schedule irrigation could reduce irrigation water use by 75-96% in shallow marl soils and maybe entirely except for new plant establishment, which saves approximately 270 gal

of water per tree per year. One 250 ac nursery estimated an overall water savings of over 10 million gallons per year and 80% of respondents indicated they plan to adopt recommended water saving practices as a result of the information they obtained at the irrigation workshop. Smart irrigation technologies included development of three irrigation apps for citrus (217 users), strawberries (179 users), and urban turf (204 users). Estimated water savings with the turf app (based on field plot study) is 35%, which equals approximately 25 million gallons per year with 204 users. The citrus and strawberry apps are being evaluated for use in 2014. Soil water based technology installed in Home Owner Associations (HOAs) and Single Family Residences saved over 66 million gallons of water annually in Miami-Dade County, which eliminated the expense of acquiring this water through other means.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
131	Alternative Uses of Land
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Change in Condition Water Resources

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	584

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sustainability of ponds and aquaculture is very important for the health of wildlife and the recreational industry.

What has been done

Chuck Cichra, Extension Fisheries Specialist, along with Extension specialists from Georgia and Alabama, organized and conducted a 3-day program on pond management and aquaculture, including 16 presentations. More than 3,000 landowners participated. Approximately 200 landowners were provided with written information addressing specific management problems.

Results

Many of these have been in contact with us, indicating that they were able to solve their pond-specific problems, resulting in fewer fish kills, better fish populations, and better habitat, saving money for the pond owners and providing better recreational opportunities for them, their families, and friends.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
131	Alternative Uses of Land
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Change in Knowledge Sustainable Use of Freshwater and Terrestrial Ecosystems

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6246

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rain Barrel Workshops in St Lucie County, Florida
South Florida Water Management District (SFWMD) has authority over water conservation and consumption in St Lucie County. Replenishment of water reserves from seasonal rain events have fluctuated resulting in either too much water or too little water availability causing the SFWMD and St. Lucie County residents to adapt. Recognizing the need to conserve water and increase protection for South Florida's water resources, the SFWMD Governing Board enacted sweeping year-round water conservation measures that place permanent limits on water usage throughout the region - including St. Lucie County. SFWMD has set a goal to reduce water consumption by up to 10%.

What has been done

The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) Conservation and Management of Water Resources Extension Program participants in St Lucie County increases residents knowledge of water conservation issues. Program participants seeking to conserve water quantity through the use of rain barrels and cisterns successfully demonstrate their ability to construct and utilize rain barrels upon completion of the workshop.

Results

In St. Lucie County in 2013, 44 (55-gal) rain barrels were constructed at a savings of \$2,200 (44 x \$50 the savings difference from supplied barrel and one purchased) and 19,800 gallons of water (average harvest of 450 gal/yr). The total number of rain barrels constructed increased 8% in 2013 to an aggregate 566 rain barrels (2010-2013) and 254,700 gallons of water harvested (2013 only).

Rain Barrel workshop participants were before and after the training to determine knowledge gain. Before the training knowledge of key concepts ranged from 29% to 71%; after training knowledge of these same concepts ranged from 95-100%.

A follow up survey of participants was also conducted. Eight-three percent indicated they were able to reduce their "well-supplied" and/or "municipal-supplied" water use for outside watering of landscape by at least 10% because of the rain barrel they constructed in the workshop. In addition, half indicated that their rain barrel has become their primary source of water for exterior landscaping.

The 2012 Florida Water Rate Survey specifies a \$3.63 average cost per one thousand gallon of water in St. Lucie County (see Resource Links). \$3.63/1000 gal is the estimate of two public suppliers in St. Lucie County and an average of 4000 and 8000 per month consumption rates. This equates to \$1.63/450 gal. The savings resulting from the 44 rain barrels constructed in 2013 is \$71.72 (\$1.63 x 44 barrels). In total, this program has resulted in a 2013 cumulative savings for one year of \$922.58 (\$1.63 x 566). In addition, rainwater harvest is a type of Low Impact Development and is part of a treatment train that helps to minimize runoff and contaminant loading at the source.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife

Outcome #5

1. Outcome Measures

Change in Behavior Sustainable Use of Freshwater and Terrestrial Ecosystems

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5814

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Non-native invasive species pose threats to freshwater and terrestrial ecosystems throughout Florida. Predation and competition with native plants and animals and disruption of ecosystem processes negatively influence native habitats, species, and ecosystem services. Non-native invasive species also impact agricultural landscapes and result in billions of dollars in control and lost revenue costs each year. For example, in 2004-05, the state of Florida spent over \$34 billion to control invasive aquatic and terrestrial plants. Education about and control of non-native invasive species is an important role of extension in Florida.

What has been done

Educational programs, written and web-based information, direct contacts through phone calls and emails, media interviews and articles, and websites and social media platforms were used to educate Florida citizens, natural resource managers, and agricultural stakeholders about control and removal of non-native species.

Results

Tropical soda apple (TSA) is an invasive plant that is found in pasture and conservation areas throughout the state. Pastureland and natural areas invaded by TSA is less productive, wildlife corridors are blocked and native species diversity is reduced. St Lucie County has an estimated 119,534 acres of grazing lands infested by TSA. Extension agents, UF researchers, and the

Florida Division of Plant Industries worked with ranchers to implement TSA management practices (primarily herbicidal) on 89,561 acres of grazing lands at a cost of \$1.7 million prior to the release of the TSA beetle, a biological control agent. TSA beetles were released on 75% of all ranches in St Lucie County. Site visits revealed that the density of TSA was reduced by as much as 90% after releasing the biological control agents and St Lucie County grazing land managers saved a total of \$850,000 in herbicidal control costs as a result of the release of these biological control agents. Educational presentations were conducted to teach additional ranchers about TSA beetles that included a manual titled Biological Control of Tropical Soda Apple. Youtube videos, online courses and the TAME Tropical Soda Apple internet portal were also developed. Because of these efforts, 100% of TSA found on St Lucie County grazing lands have been impacted by TSA beetles. Follow up surveys of cattle producers suggest that statewide annual savings of \$3.25 to \$8 million and a permanent savings of \$108 to \$266 million in total savings will occur due to reduced control costs and increased productivity.

The Six Rivers Cooperative Invasive Species Management Area (CISMA) in northwest Florida and southeast Alabama is led by Florida extension and includes 82 members that manage over 800,000 acres. Through leveraging of our collective resources approximately 4000 acres of invasive species was removed, treated and/or replaced with native plantings.

A Wild Hog Management Workshop combined with newspaper articles, a radio program, blog posts and an educational display at the Sunbelt Ag Expo reached approximately 1,500 through face-to-face contacts, 55 web views, 377 emails and 120,000 newspaper subscribers with information on how to make better management decisions to minimize damage from and capture and remove feral hogs.

Four residential communities in southwest Florida implemented best management practices (BMPs) for water bodies within their communities that included the removal of invasive species and landscaping to improve water quality.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife

Outcome #6

1. Outcome Measures

Change in Condition Sustainable Use of Freshwater and Terrestrial Ecosystems

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4774

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Feral Hog Management in Florida

Early explorers and settlers brought hogs with them to Florida. Many of these animals escaped from captivity and established feral populations. Current estimates indicate that the population of feral hogs may exceed 500,000 in Florida. Unfortunately, feral hogs have proven to be destructive and difficult to manage. The UF/IFAS St. Lucie County Cooperative Extension conducted a feral hog management practices survey to determine what practices are being undertaken by public and private natural areas managers. Results showed that land managers struggle with feral hog damage they deem to be moderate to severe. Hunting and trapping strategies have been used. Current control strategies have resulted in marginal success. One-fourth of the land managers surveyed indicated total failure to manage feral hogs.

What has been done

The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) St. Lucie County Natural Resource Extension Advisory Council has identified feral hog management as the top wildlife issue for Extension to address in St. Lucie County. The Extension office conducted educational programs, researched effectiveness of current management techniques, and provided opportunities for feral hogs to be removed from the Florida landscape.

Results

Three feral hog management educational programs were conducted in 2013 for 205 participants. Tests to measure knowledge gain for 30 program participants attending a Feral Hog Management presentation indicated that all participants significantly increased their understanding of Feral Hog Management practices and key concepts.

In addition, Extension Agents from St. Lucie County collaborated on the 4H Southern Swines Feral Hog Challenge. The goal of this program was to remove feral hogs from the Florida landscape. Fifteen registered teams participated. Eleven teams were permitted to weigh in two feral hogs each for a total of twenty two feral hogs. Their combined weight was 3,463 lbs. Live feral hogs were not permitted at weigh in.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife
723	Hazards to Human Health and Safety

Outcome #7

1. Outcome Measures

Change in Knowledge Environmental Education

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	16234

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Florida has a rich natural heritage, but is also the fourth most populated states in the country and also hosts nearly 90 million visitors each year. Florida is also one of the fastest growing states in the country with estimates of 1,000 new residents arriving each day. The demand for recreational opportunities, residential development and urban sprawl, water use, road construction and so forth put tremendous pressure on Florida's natural resources. Environmental literacy is the basis for making informed decisions and for engaging citizens, communities, and organizations in citizen science and conservation efforts.

What has been done

The Florida Master Naturalist Program (FMNP) is a statewide environmental and conservation education program for adults. The FMNP offers seven different courses ranging between 24 and 40 contact hours each. While Master Naturalists are not required to volunteer, many do volunteer and final project requirements regularly result in interpretive exhibits, teaching tools, and other valuable contributions to environmental education programs.

Results

During 2013 nearly 1,200 persons completed at least one FMNP course. As an example of Master Naturalist contributions, in Broward County graduates of the FMNP developed interpretive exhibits, traveling exhibits, interactive flash cards, interactive computerized games, and completed vegetation and faunal inventories using quantitative plot and transect data, which showed the correlation between active burrows and prickly pear cactus proximity. Master Naturalists discovered non-native nutria in several places, removed thousands of invasive species, assisted in the planting of native species for ecological restoration projects, and assisted in the documentation of butterfly and bird migratory activities. The 9,108 volunteer hours donated by Broward Master Naturalists, was valued at \$177,777. Master Naturalists assisted in ecological

restoration projects at the Sawgrass Nature Center, Fern Forest Nature Center, John U Lloyd Park, Lakeside Pine Reserve in Oak Park, Crystal Lake Sand Pine Scrub Natural Area, Highlands Scrub Natural Area, Sandy Ride Sanctuary in Coral Springs, and Miramar Pineland. Master Naturalists gave guided tours at the Wakodahatchee Wetlands in Delray Beach, and Marine Mammal Rescue Courses through the Marine Mammal Conservancy in Key Largo.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

Outcome #8

1. Outcome Measures

Change in Behavior Environmental Education

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6292

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

FAMU: Youth are very eager in helping protect our environment and in addressing environmental concerns, and are empowered to make a difference in their communities. However, getting youth to participate in environmental stewardship requires hard work.

What has been done

Results

FAMU 4-H/Youth Development Program working through partnerships introduced 25 youth to habitats, ecosystems, and conducted a beach, wetland and stream clean up that enhanced the natural environment along with teaching youth about best practices in maintain and conserving the beauty of Florida's landscape and wildlife habitats.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
605 Natural Resource and Environmental Economics

Outcome #9

1. Outcome Measures

Change in Condition Environmental Education

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	614

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Environmental education is very important in reaching people who can impact the environment.

What has been done

In 2013, 40 adults completed the 40 required contact hours of the Florida Master Naturalist Program in one of the three modules-- coastal, wetlands or uplands

Results

As determined by a pre/post test evaluation, Master Naturalist graduates demonstrated a 19% knowledge gain in principles of interpretation, habitat function, and environmental ethics related to the training modules. One participant who completed two modules in 2013, utilized the knowledge gained by developing a Native Plant Demonstration Garden and Trail at the South Walton campus of Northwest Florida State College which served as an outdoor learning lab for over 400 college, collegiate high school and public learners..Twenty-one Americorps volunteers who completed the Coastal Module utilized the newly acquired interpretative skills into their Grasses in Classes program that is delivered to nearly 2,000 elementary school students monthly.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
605 Natural Resource and Environmental Economics

Outcome #10

1. Outcome Measures

Change in Knowledge Sustainable Use of Coastal and Marine Ecosystems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5621

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Closures and restrictive bag limits for several Gulf reef fish fisheries have focused attention on the importance of successful release (survival) of fish caught in deeper water for maintaining sustainable fisheries. Fish brought up from deep water are susceptible to mortality from barotrauma, the bloat and internal organ damage caused by pressure change. A growing body of research has documented that, in some cases, fish caught from deep water can be released in a manner that will result in significant increases in survival. The goals of the Florida Sea Grant Fish Descending Gear Development Project were to train marine extension agents in the use of a variety of newly developed techniques for returning deep water caught fish to depth quickly and to evaluate the practical effectiveness of these techniques by working collaboratively with recreational anglers.

What has been done

We conducted public presentations, gear trials, contacts with industry and anglers, presence and input at formal technical meetings, visibility via the Gulf Council and Gulf States Commission and linkages with FWC/NOAA. As a result of these activities, Florida Sea Grant assisted in an outreach program that has helped define the effectiveness and appropriateness of alternative barotrauma mitigation methods, and has played a major role in assisting fisheries manager make an informed change in existing regulations.

Results

Ten Florida Sea Grant Extension Agents were trained in fish descending practices and conducted educational training on the use of these practices for recreational anglers throughout the state. Based in part on the results of the fish descending field trials with descending gear, the Gulf of Mexico Fishery Management Council and Florida Fish and Wildlife Commission changed the regulation requiring using a venting tool to pierce the air bladder of fish suffering from barotrauma. Improper use of venting tools can be a significant source of mortality, so this rule change provides

anglers a variety of options that can be used when releasing fish caught in deep water. Florida Sea Grant Extension faculty have transferred information of these new fish descending strategies to a Sea Grant programs in LA, VA, NC, and others.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife

Outcome #11

1. Outcome Measures

Change in Behavior Sustainable Use of Coastal and Marine Ecosystems

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1144

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Sea Turtle Friendly Beaches in St. Lucie County, Florida

St. Lucie County's 21 miles of pristine, sandy beaches on Hutchinson Island are critical nesting areas for endangered and threatened sea turtles. Three species of sea turtles nest on county beaches and all are listed on the Federal Endangered Species List. These protected sea turtles include the endangered green and leatherback sea turtles. Loggerhead sea turtles are listed as threatened on the Federal Endangered Species List.

St. Lucie County enforces sea turtle nesting season lighting codes from March 1-November 15th. Research has shown that sea turtle hatchlings emerge mostly at night and will instinctively crawl toward artificial light sources instead of the moonlit ocean. The glare of these artificial lights can appear so overwhelmingly bright that hatchlings will ignore other visual cues and move toward the lights regardless of their relative position to the ocean. This instinct can place sea turtle hatchlings in jeopardy as they crawl toward improper lighting on high rise structures, parking lots, swimming pools, and highways instead of the ocean.

Hatchlings will suffer from dehydration, exhaustion, predation and possible death from cars

on nearby roads.

St. Lucie County Lighting Evaluations published annually indicate a continuous need to educate the beachfront residents in St. Lucie County about proper beach lighting. Failure to comply with lighting codes can result in fines of up to \$250 per day for county code violations. Should the county be unable to enforce proper beachfront lighting, U.S. Fish and Wildlife can levy fines for violation of the Endangered Species Act of up to \$25,000 in civil penalties and \$50,000 and one year in jail for criminal penalties.

What has been done

University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) Extension conducts site visits and educational programs designed to teach beachfront residents about sea turtle conservation efforts and how to comply with lighting codes. In addition, St. Lucie County Extension collaborates with beachfront residents, Florida Master Naturalists, Code Compliance and St. Lucie County Mosquito Control and Coastal Management to work with beachfront residents to protect threatened and endangered sea turtles on county beaches. Six Sea Turtle Friendly Beaches educational programs were conducted for 448 St. Lucie County residents in 2013. Nearly all participants showed knowledge gains in key concepts related to identifying endangered marine sea turtles, nesting season, window treatments that meet county codes, and lighting restrictions during nesting season.

In addition, 500 sea turtle lighting door hangers and 1000 window clings were distributed to beachfront residents to promote proper sea turtle friendly lighting. Extension Agent Ken Gioeli interacted with St. Lucie County Code Compliance to help sea turtle lighting code violators learn how to comply. Twenty night visits were conducted by Gioeli and Florida Master Naturalists.

Results

Eleven high intensity light violators were identified in the Lighting Evaluation. The educational programs and materials provided to Code Compliance and beachfront residents resulted in abatement of all violations by August 2013. Had this program not been conducted, lighting violators would have been fined \$250 per day by St. Lucie County Code Compliance Board. In worst case scenarios, these eleven violators could have received a total of \$275,000 in civil penalties and up to \$550,000 in criminal penalties and eleven years of jail time from the U.S. Fish and Wildlife for violation of the Endangered Species Act.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
135	Aquatic and Terrestrial Wildlife

Outcome #12

1. Outcome Measures

Change in Condition Sustainable Use of Coastal and Marine Ecosystems

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1219

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Current projects focus on continuing long-term, science-based, GIS/GPS integrated, research, and education programs to support ecological restoration and management efforts in South Florida. International projects aim to apply lessons learned from research in South Florida to analogous ecosystems in the Caribbean.

What has been done

Crocodylians are indicator species in the Everglades landscape, and are being used as indicators of ecosystem response to restoration plans. Results from long-term research and monitoring projects on American crocodiles and American alligators in Florida are being used by the US Department of the Interior and US Army Corps of Engineers to evaluate and assess restoration plans and projects.

Results

Results of a decision support/ landscape modeling program have been used to guide selection of alternatives for the Comprehensive Everglades Restoration Plan (CERP). This effort has allowed decision-makers to choose alternatives most effective at meeting ecological goals of CERP at minimum cost. Once the best restoration alternatives are chosen, the next important task is to determine the success of restoration efforts. Projects encompassing wildlife habitat relations provide baseline information and reliable methods for monitoring ecosystem responses to ecological changes. Information from studies of pythons is already having a profound effect on the evolution of management and control plans in Everglades National Park. Working cooperatively the Florida Fish and Wildlife Conservation Commission, South Florida Water Management District, and Zoo Miami we have established the first early detection and rapid response network for invasive species in Florida.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
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

Brief Explanation

Florida is still heavily impacted by the economic downturn and although the economy appears to be improving it is expected that sequestration will be an issue and this is delaying a stronger economy. Public education in Florida has lost more than 50% of state funding and has been impacted by other losses or increases such as the failure of tuition to be increased to bring the state more into line with other state tuitions. Counties across the state are impacted by devolution from the state level and this also has a direct impact on the land-grant universities.

Natural and national disasters can also affect the number of volunteers available to work with youth and Florida citizens and this is an area that the land-grant universities use to support programs. Natural disasters such as hurricanes, fires, storms and flooding are common within the state leading to many issues that impact the land-grant colleges.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The Florida environment is very important not just as a means to reduce air pollution but it is critical to quality of life for residents and important to those who visit our state. Finding ways to maintain, conserve and enhance Florida's natural environment is a critical need for the people of Florida as shown by a recent grassroots strategic plan. Florida UF/IFAS Extension works hard to find solutions to the problems that impact the natural environment both inland and along the coast. Over 487,000 people attended programs, field consultations, or had phone or email consultations. Over 1.1 million were reached indirectly through web visits. Of those surveyed, 33,820 increased their knowledge, 14,389 changed their behaviors in ways that improved the environment and 7,194 made changes that made changes to the conditions related to the environment.

Key Items of Evaluation

Issues or Situation & Target Audiences:

Federal and Florida law require that applicators of restricted use pesticides be certified and licensed. Restricted use pesticides are those that are classified as such by the EPA because they pose a significant risk to humans or to the environment. Besides the legal requirement, many employers require their employees to become licensed, and their

employment is contingent upon licensing, regardless of type of pesticide used in their lines of work. For a person to become certified to purchase and handle restricted use pesticides, they must meet competency standards as demonstrated by passing (70%) mandated examinations. In Florida, aspiring applicators are required to pass the General Standards exam along with at least one category exam.

What we did:

Pesticide Exams are administered through Cooperative Extension offices throughout the state by extension agents and their staff. Routinely throughout the state seminars and workshops are given by agents to those who desire licenses to prepare them for the exams. Currently in Florida, there are approximately 90,615 applicators who hold some type of license or certificate. In addition, to maintain the validity of restricted use pesticide applicator certification and licensing, recertification is required. The recertification system used in Florida is based upon accumulating CEUs, during a 1- to 4-year period, and varies depending on the type of the license or certificate held. On average, certified applicators will require a total of 2 CEUs per year.

Outcomes/Impacts:

Approximately 1,200 applicators have become certified through exams administered by IFAS during 2013. According to the latest data report from the U.S. Bureau of Labor Statistics (<http://www.bls.gov/>), the 2012 median annual salary of pesticide handlers, sprayers, and applicators was \$32,000. If employment is contingent upon being licensed, then these jobs added \$2,899,680,000 to Florida 2013 annual economy.

12,000 applicators participate annually in some form of a CEU opportunity, earning several CEUs per year. Of those who have participated in UF/IFAS recertification programs, it is estimated that: Approximately 90% planned to adopt at least one new practice. Of these, it is estimated that more than 90% actually did adopt a new practice (perhaps a new application technique, improved safety practice, or reduced pesticide use).