Florida Extension Initiative 3
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

Existing Extension Programs 2013
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FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

OBJECTIVE 1: INFORMED COMMUNITY DECISION MAKING

Overview
These programs primarily target community groups or decision-makers that influence communities, such as elected officials, city planners, builders, and urban resource managers; also included are programs designed to promote more sustainable and environmentally friendly lifestyles among urban audiences.
SITUATION

- Development and implement a facilitated, collaborative processes that engages and informs stakeholder representatives in Sarasota County, Florida to develop a final draft of a Post-Disaster Recovery Plan.
- South West Florida is a low lying area that is highly prone to significant damage due storm surge and sea level rise. The development of a clear redevelopment plan can quicken the recovery of the community benefitting the environment, social aspects of the community and the regions economy.
- Target audiences include: policy makers, elected officials, city and county staff and local citizens
- The development of a public collaborative process requires political will and agents skilled in facilitation methods and techniques. Additionally, the capacity of local governments to engage citizens, identify SLR as a topic of concern and GIS related resources are essential

PROGRAM OBJECTIVES

What do you intend the participants will know, think or do as a result of completing the program?

What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- GIS staff will develop a working knowledge of scenario based software and its use will be standard procedure in the planning process.
- 75% of Stakeholders will recognize SLR as a significant concern to coastal communities and 75% will have developed computer skills necessary to effectively work with scenario based software.
- At least 75% of stakeholders participants report better understanding of coastal hazards such as SLR impacts and storm surge; at least 75% of participating stakeholders indicate that they viewed Cat 1-5 storm surges under various SLR scenarios and understand some of the reasons that may prevent these predictions from being completely accurate;
- At least 85% of participating stakeholder respondents indicate improved understanding of the connections between land use planning and resilience;

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?

- Establishment of a Post Disaster Redevelopment Plan with predictable and useful procedures to effectively quick the redevelopment of disaster areas in Sarasota County.

Are there any certificates associated with this program

- No
EDUCATIONAL METHODS
What topics and subject matter will you cover?

- SLR, Basics of Planning, Aspects of resilient communities and structures

What methods or activities will you use to teach program participants?

- Active participation, classroom workshops, Web based instruction/webinars

Are any methods used to specifically reach underserved and underrepresented clientele?

- We will be working with various organizations and non-profit groups to access various populations within Sarasota County.

RESULTS AND IMPACTS
Do you have a statewide evaluation plan in place or in progress?

- Not yet

HOW DO YOU MEASURE PROGRAM RESULTS AND IMPACTS? PRE/POST SURVEYS AND ADOPTING OF FINAL PLAN

What difference will this program make in the lives of participants or Florida’s citizens?

- Program will provide the basis to establish baseline approach and methodology for PDRP adoption in other cities and counties.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- Economic benefits will result for a more efficient rebuilding of a disaster area/community or the mitigation of additional impacts associated with long term SLR.

FUNDING SOURCE
Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded?

- NOAA Grant (e.g., internal funds provided by unit, external grants, program fees, etc.)

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- Completion of the draft PDRP plan and adoption by the BOCC will result in the completion of both the grant and funding. Additional resources will be necessary to advance the use of this program to additional coastal communities.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM
Do you need resources or additional financial support to continue to implement this program in the future?

- Yes. Opportunity to work in multiple counties /demonstrate the significance of properly developing a PDRP as well as additional uses of the CommunityViz / Coastal CHARM software.
SUPER ISSUES

What Super Issues does this program relate to? [Resource Sustainability.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 4 & 6 - Community capacity development.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

RESILIENT AND SUSTAINABLE COASTAL COMMUNITIES

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Libby Carnahan/Pinellas County Extension

UF/IFAS PROGRAM PARTNERS/UNIT: Ramona Madhosingh-Hector/Pinellas County Extension, Mary Campbell/Pinellas County Extension

EXTERNAL PROGRAM PARTNERS: Pinellas County Government including but not limited to Planning Department and Emergency Management Department, Municipalities in Pinellas County including but not limited to Clearwater, Treasure Island, Safety Harbor

SITUATION

- Pinellas County is a coastal county, very susceptible to the impacts of coastal storms in the short term and sea level rise and other climate impacts in the longer term. It is a peninsula located on the west central coast of Florida, bounded on the east and south by Tampa Bay and on the west by the Gulf of Mexico. Pinellas County is the second smallest Florida county by total land area, yet the most densely populated county in Florida, ranking sixth terms of county population. As a result of dredging and filling submerged land in the middle of the 20th century, new real estate was created where water levels once made development impossible. This has resulted in highly populated barrier islands and coastal communities.

  The maximum elevation of Pinellas County is only 97 feet, with a large percentage of the residential land mass at less than 10 foot elevation. In the event of a Category 1 hurricane, 37% of county residents would be evacuated from their homes. In the event of a category 5 storm, that number increases to a staggering 64%. The protection of life, property and infrastructure investments are of primary importance, and maintaining the economic vitality that coastal resources provide will help ensure future prosperity.

- Target audience(s): County and Local Government Officials and Employees

- All Florida counties lie either on the Atlantic Gulf Coast or are a relatively short distance from the coast. Every county in Florida has experience some impact from a tropical storm or hurricane in the past century. As time goes on, the effects of sea level rise and other results of sea level rise are being felt throughout coastal and adjacent counties. The need for coastal resilience exists throughout Florida.

  Coastal resilience programs require willing and able partners. There is an opportunity for a state-wide collaborative approach as many tools and resources can be applied state-wide. Challenges include lack of staff time at all levels, funding, and full recognition of the issue by all parties.

PROGRAM OBJECTIVES

What do you intend the participants will know, think or do as a result of completing the program?

- Participating governments will complete the Coastal Resilience Index Self Assessment and increase their knowledge of their preparedness for disasters. Participating governments will assess their preparedness for climate change impacts by utilizing existing data sets and models.

What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- After identifying gaps in preparedness, governments will make changes to their policies and procedures. Governments will then potentially modify existing planning to incorporate adaptation to sea level rise and other potential coastal impacts.

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?
In the long-term, governments will increase their resilience to acute storms and chronic climate changes. The benefits are difficult to forecast, but will include economic savings (decrease in property loss), decreased loss of life from storms, and increased quality of life for community residents.

**EDUCATIONAL METHODS**

What topics and subject matter will you cover?

- Coastal Resilience, Sea Level Rise, Emergency Preparedness, Adaptation Strategies

What methods or activities will you use to teach program participants?

- Coastal Resilience Index, Focus Groups, Government Forums

Are any methods used to specifically reach underserved and underrepresented clientele?

- We will provide equal opportunity to all municipal governments within our county.

**RESULTS AND IMPACTS**

Do you have a statewide evaluation plan in place or in progress?

- The Coastal Resilience Index is a tool of preparedness. We have a survey tool to evaluate the effectiveness of the program.

How do you measure program results and impacts?

- Follow up with municipalities on actions and strategies they have implemented.

What difference will this program make in the lives of participants or Florida's citizens?

- The program will increase communication, inter-department and inter-agency collaboration, and therefore increase public safety.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- Most certainly, but unknown at this time.

**FUNDING SOURCE**

Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc.)

- To date, this program is being conducted with a low budget. County and municipal meeting spaces are utilized at no cost, booklet cost is covered by grants. Unpaid interns will be utilized for data collection. Coordinators have completed Florida Natural Resource Institute program, paid for by UF IFAS, so they have the skills needed to facilitate these sessions and do not have to pay for a consultant.

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- In the future grants may be pursued to cover intern salaries, travel, workshop materials, etc.
NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Do you need resources or additional financial support to continue to implement this program in the future?
- Additional funding will expand the reach and enhance the program, but is not necessary at this point.

SUPER ISSUES

What Super Issues does this program relate to? [Must list at least one.]

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 6. Strengthening urban and rural community resources and economic development.
  3 Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
  2 Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

DESIGNING AND MANAGING GREEN DEVELOPMENTS
FOR NATURAL RESOURCE CONSERVATION

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: Mark Hostetler, Department of Wildlife Ecology & Conservation

UF/IFAS PROGRAM PARTNERS/UNIT: Program for Resource Efficient Community (PREC) and over 30 county extension offices have collaborated to help create model, conservation developments and organize workshops and trainings.

EXTERNAL PROGRAM PARTNERS: There are at least 10 state, national, and international organizations that collaborate on hosting trainings and workshops concerning urban biodiversity conservation and development.

SITUATION
The State of Florida expects to see its population grow from 17 million to approximately 36 million by the year 2060. With this magnitude of growth will follow significant pressure to urbanize large amounts of rural lands to accommodate the new homes, schools, shopping and amenities. How urban communities are designed and managed affect the consumption of natural resources and impacts on the environment. For example, the maintenance of homes and yards translates into the consumption of energy and water. In particular, the carbon footprint of homes and yards can be reduced in a resource-efficient community. The way urban areas are designed and managed also impact urban biodiversity. Residential subdivisions that contain a large proportion of exotics and few natural areas offer little habitat for native wildlife species and contain few native plants. Further, urban areas impact regional biodiversity because they are embedded in the rural/wildland areas. Planners, developers, and citizens often make decisions that result in impacts on nearby natural habitats and wildlife populations. Examples include polluted, stormwater runoff impacting wetlands, invasive plants migrating into terrestrial and aquatic habitats, and humans feeding wildlife or allowing pets to roam free.

With growth in Florida, builders, developers, the general public, politicians, and municipalities are interested in building and managing “green” communities. The goal of green communities is to achieve a balance between accommodating growth, conserving natural resources, and maintaining a quality of life and a healthy environment. However, there is often confusion and misunderstanding as to what constitutes a green community and how one goes about designing and managing a green community. Decisions made by a variety of people, from politicians to homeowners, ultimately determine whether a community functions as a green community. Land use planning, where roads are placed, how subdivisions and commercial areas are built, and how people manage their workplaces and homes all interact in unique ways to produce a green community. Often, economic and environmental interests seem to run counter to each other when in fact, “win-win” solutions are available.

My program targets the three major decision hierarchies within urban communities: 1) homeowners and the general public, 2) developers and built environment professionals, and 3) planners and policymakers. The focus of my Extension program is not only on promoting green design, but also on developing and implementing long-term management programs that create functioning, resource-efficient communities.

With the current slowdown in the housing market and a rising interest in creating green communities, opportunities exist to upskill planners and built environment officials on ways to design and manage urban development to conserve biodiversity and natural resource. The main challenge is to identify county-specific developers and city officials that we could partner with to create model communities and planning policies to support alternative types of developments that conserve Florida’s natural resources.
**Program Objectives**

1) to increase the number of “green” developments in Florida that incorporate design and management strategies that help counties and cities conserve natural resources.

2) to increase exposure of homeowners to natural resource conservation issues and best management practices in urban communities.

**Educational Methods**

One method to increase the number of green developments is to educate planners, city officials, developers, and other built environment professionals on the design and management of green developments. We currently have a 4-hour course called Conserving Biodiversity in Subdivision Development and this is accompanied with a 146 page resource manual. This course could be offered in person (as a workshop) or people can take the course online through several national partnering organizations (e.g., Green Building Research Institute http://www.gbrionline.org/). This course has been approved by the Florida Board of Landscape Architects (BOLA), Florida Board of Architects (BOARID), and American Institute of Certified Planners (AICP) and architects (AIA) and has been offered to landscape architects, planners, and other environment professionals through the Program for Resource Efficient Communities (PREC). The course emphasizes the importance of addressing issues during the design, construction, and postconstruction phases of subdivision development and participants get CEU credits.

Another method to increase the number of green developments is to collaborate with planners, city officials, developers, and other built environment professionals on building a green development. Extension can offer expertise and education programs to guide this process of creating a model green community. Through PREC, we have had several successful examples of this and have consulted with the development of Madera and the Town of Harmony (representing over 11,000 acres). In addition, with Low Impact Development (LID) workshops, we reached over 1740 attendees in 30 counties.

To engage with residents in neighborhoods, we have developed a unique Education Program for Homeowners of Green Communities. This education program targets homeowners and addresses the management of green-design communities and can be used to retrofit existing neighborhoods. The overall program contains two primary elements:

- **Interpretive Kiosks:** Highly visible interpretive kiosks are placed in a trail/sidewalk system within a neighborhood. Each of the kiosks contains informative displays that discuss a particular topic, such as water, energy, and wildlife. Kiosks are dynamic and different informative panels can be easily changed.

- **Web Site:** A Web site is constructed (in association with the kiosks) that gives detailed environmental information and management strategies pertinent to a community.

To date, we have produced 28 panels that cover seven themes: Water, Energy, Wildlife, Environmental Landscaping, Insects/Pollinators, Lakes, and Natural/Human History. We have installed and tested the program in the Town of Harmony (Kissimmee, FL) and in a subdivision called Madera (Gainesville, FL) (see http://www.wec.ufl.edu/extension/gc). Most recently, panels have been adapted and installed in kiosks in the Lake County Park system (11 panels) and in Pinellas County Parks. I would like to install the education program in other new and existing neighborhoods.

Further Extension methods that educate and engage residents are 1) the Living Green Web site that contains content and seven, 30 minute videos addressing sustainability issues (see http://livinggreen.ifas.ufl.edu/), 2) a bird-monitoring Web site (http://wec.ifas.ufl.edu/birds/), and 3) a number of fact sheets that address Conservation Subdivisions and Evaluating Green Communities (see EDIS). I have also explored blog postings. I have partnered with Huffington Post (online) and I have submitted 11 blog articles concerning urban biodiversity conservation; I submitted several online blog article about green developments to The Nature of Cities (http://www.thenatureofcities.com/).
RESULTS AND IMPACTS

- Increased number of new urban developments that adopt sustainable design and management practices
- Increased number of planners, developers, and built environment professionals that understand design, construction, and postconstruction issues when building green communities
- Increased number of neighborhoods that incorporate signage that address conservation of natural resources
- Increased number of yards and shared open spaces that adopt sustainable landscaping practices

*Living Green* TV shows had a 45% carriage rate of all PBS stations, reaching over 140,000,000 people in 44,740,000 households. About 195 PBS affiliate stations have aired the show in 24 states.

Financial: Working with developers that have built or are in the planning phase for a development, we potentially will impact 17,488 homes. Potential Economic, Environmental, and Carbon Savings of Green Developments:

- 30% reduction in home energy consumption, 17,488 homes X $400 per home = $6,995,200.
- Carbon sequestration, 80,000 forested acres conserved = 3,766,004 kg CO2/yr
- Increased native species biodiversity in urban yards, at an average of 40% of a yard (1/3 acre lot) converted to native landscaping: 17,488 lots X 0.132 acres = 2,308 acres.
- Reduced stormwater infrastructure and landscaping costs (per lot - $1,000) 17,488 lots X $100 = $17,488,000

FUNDING SOURCE

Currently, internal funds and some grants help fund the program. Several of the continuing education courses are fee based and cities/counties have funded workshops. In a few cases, developers help with the funding to implement programs within their developments (e.g., educational signage in the Town of Harmony).

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

We need to collaborate with Extension personnel in different counties that can identify developers, planners, and built environment professionals that could take the Conserving Biodiversity in Subdivision Development course. It could be marketed through FYN, Sustainable Floridians Program, and various other Extension programs that deal with an urban audience. We also need local identification of a development project to establish green, model communities and green policies that encourage building green developments in each county of the state. This would require several workshops to foster trust between different parties and would require some seed funding to put on these workshops.

Further, we need to identify local planning staff in order to consult with and develop policies that support the creation of green developments. In terms of the Education Program for Homeowners of Green Communities, neighborhoods need to be identified to install educational kiosks and monitor results. This also would require some seed funding and/or grants for the kiosks and panels. Again, I think this fits in well with various water initiatives and FYN. Also – can still air the Living Green shows in various counties and stations need to be identified.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
HIGH PRIORITY INITIATIVES

- Initiative 2. Enhancing and protecting water quality, quantity and supply (Objectives 1, 2, 3).
- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality (Objectives 1, 2, 3).
- Initiative 4. Producing and conserving traditional and alternative forms of energy (Objectives 1 & 3).
- Initiative 6. Strengthening urban and rural community resources and economic development. Objectives 1 & 3).
FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

NET-ZERO EXTENSION BUILDING RETROFIT 
TRAINS COUNTY STAFF ON SUSTAINABLE LIVING TECHNOLOGIES

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: W. Sheftall*, Leon County Extension; D. Marshall, Leon County Extension; S. Rosenthal, Leon County Extension; H. Copeland, Leon County Extension; K. Zamojski*, Leon County Extension


SITUATION:
Leon County Extension faculty programs which teach Sustainable Living have been augmented by a major infrastructure investment to “walk the talk.” In 2009, with advisory committee and county support, we developed a scope of work for making our building a model within county government.

OBJECTIVES
We outlined retrofits that would achieve net-zero consumption of electric power from the grid, and 75% reduction in potable water drawn from municipal supply. The energy objectives would be met by interior lighting upgrades, by conversion of HVAC from conventional to closed-loop geothermal, by addition of solar PV, and by conservative operation of the building’s thermostats and lights. The water objectives would be met by capture and storage of rainwater from 13,000 SF of roof, for use in meeting 82% of irrigation demand in the demonstration gardens housing 2000 plants. County staff would learn the permitting, engineering, construction and operation of these systems by building and/or managing the projects in-house. Their knowledge and skills would then be applicable to new construction projects and other retrofits within county government.

METHODS
County financial support for the project provided $171,706 for the rainwater harvesting retrofit. This included cost of materials plus in-house value of supervision, labor and equipment. A grant of $481,517 from the Florida Clean Energy Grant Program was matched by $91,000 from Leon County to construct the energy project, plus in-house costs for serving as general contractor.

RESULTS
Professional and technical staff at Facilities Management installed a 40,000-gallon rainwater harvesting system comprised of four 10,000-gallon repurposed fiberglass gasoline storage tanks, two pumping systems, and a closed loop of irrigation trunk line fitted with 10 value boxes for connecting micro-jet irrigation. Staff supervised design and installation of 17.5 Tons of 40-SEER HVAC with closed loop geothermal heat exchange, and 60 kW of solar PV on a ground-mount over parking.

CONCLUSIONS
The expertise of Facilities Management in understanding, operating and maintaining these sustainable building systems at Leon Extension can now be leveraged to facilitate their integration into other Leon County buildings.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

ESCAMBIA COUNTY GREEN ROOF: THE VALUE OF COUNTY EXTENSION DEMONSTRATED THROUGH A SUSTAINABLE LANDSCAPE DESIGN PROJECT

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT  C. Stevenson*, Escambia County Extension; E. Bolles* Escambia County Extension

OBJECTIVE
To reduce project costs, Escambia County included Extension in the design of sustainable landscaping and a green roof for a LEED-certified building.

METHODS
The building architect asked the Extension Agents to make recommendations on existing landscape plans. Agents sought to include plants adapted to Escambia County, and updated plant installation and irrigation guidelines to coincide with IFAS recommendations. Agents selected species for the green roof based on drought tolerance and odds of survival in full sun and 5 inches of growth media. After meetings with the roof contractors, seven species were installed in September/October 2010 on the 33,000 square foot roof.

RESULTS
Escambia County experienced several below-freezing nights in December, which froze the growth media on the roof. Although plants were injured, the majority are recovering in 2011 and filling in open space. One species died and will be replaced with a more successful species. By utilizing the expertise of Extension Agents, Escambia County saved approximately $55,000 in consulting fees. The Central Office Complex (also known as the “One-Stop Building”) boasts the largest green roof in Florida and serves as a demonstration site to builders and developers seeking permits from the departments housed there.

CONCLUSIONS
As part of the team for a LEED Gold certified county building, Extension Agents’ expertise reinforced the fact that agents are valuable resources for their county partners. The information provided by Agents during the design process offered significant cost savings and created a successful experiment in designing landscapes for green roofs in north Florida.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FLORIDA FRIENDLY LANDSCAPING

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT
Lynn Barber, FFL Agent, Hillsborough County Extension Service

UF/IFAS PROGRAM PARTNERS/UNIT
UF FFL, Hillsborough County Extension Service

EXTERNAL PROGRAM PARTNERS:
Tampa Bay Water, City of Tampa Water Department, Southwest Florida Water Management District and others

SITUATION

Hillsborough County’s population continues to expand with the majority of new residents coming from the northeast and midwest areas of the country. These new residents are generally unfamiliar with Florida-friendly landscaping practices, drought conditions historically present in Florida and the criticality of water conservation and methodologies available. New residents have pre-determined ideas about landscape design and management that may not be appropriate in Florida. Many believe incorrectly that their northern plant favorites will survive and thrive in our Florida climate, and in many cases that is not true. This provides us with a huge opportunity to teach new residents about water conservation, quality, quantity and the appropriate use of fertilizer and pesticides.

PROGRAM OBJECTIVES

Objective 1: A minimum of 2,500 Hillsborough County residents will attend a Compost, Water-Wise and/or Rainwater Harvesting workshop which provide environmental conservation information about water conservation methodologies. As a result of these workshops and based on an end-of-program and annual questionnaire:

Objective 2: 75% of Compost, Water-Wise and Rainwater Harvesting workshop participants will indicate a 100% increase in knowledge, based on pre-and post-survey data.

Objective 3: 75% of Water-Wise workshop participants will install or retrofit to a low-volume irrigation system. This behavior change will result in a minimum 15% decrease in potable water use for landscape irrigation within 1 year of installation. These impacts will be determined by a 1-year post-survey and public water use records.

Objective 4: 75% of Rainwater Harvesting workshop attendees will install the rain barrel received. This behavior change will result in a minimum of a 15% reduction in their water/sewer billing. These impacts will be determined by a 1-year post-survey of workshop attendees.

Objective 5: 25% of Compost workshop participants will recycle 3, 32 gallon containers per month. This behavior change will result in a minimum of 36, 32 gallon containers per year being recycled on-site versus transported for landfill recycling. These impacts will be determined by a 1-year post-survey of workshop attendees.

Objective 6: 25% of Water-Wise workshop attendees will learn and implement at least two water conservation techniques presented within one year of the workshop. This behavior change will result in a minimum of a 15% reduction in their water/sewer billing. These impacts will be determined by a 1-year post-survey of workshop attendees.

Objective 7: 15% of Water-Wise and Rainwater Harvesting Workshop attendees will decrease use of potable water in landscape beds by 15% within one year of workshop attendance. The impact will include increased water conservation and a cost savings to homeowners of 15-20% on their water bills.

They will know how to create their own on-site compost, install microirrigation, retrofit an inground irrigation system, hook up a rainwater harvesting device, implement better choices regarding plant selection, maintenance activities, water use and all of the remaining principles of FFL.
What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- Higher levels of increased water conservation, decreased erosion, decreased stormwater runoff, decreased kitchen and yard waste to yard waste recycling centers and more on-site composting.
- There are no certificates, Continuing Education Units (CEUs) for participants.

**EDUCATIONAL METHODS**

- Composting, Microirrigation, Retrofitting an Inground Irrigation System and Rainwater Harvesting.
- Group presentations throughout the county, fact sheets on our website, YouTube videos on website.
- Work closely with other county entities to assist underserved populations: Head Start, Parks & Recs, Aging Services, etc.

**RESULTS AND IMPACTS**

- We have a county-wide program in place for evaluation of results.
- Through pre and post survey instruments at workshops and annual on-line survey tool with more comprehensive information gathered; i.e. gallons of water saved, $ savings from using non-potable water, # of bags of yard and kitchen waste composted on site versus taken to the curb for recycling.
- Will save program participants time and money.
- Assists the State of Florida and county by decreasing stormwater runoff, etc.

**FUNDING SOURCE**

- Funding is from contracts with other governmental entities and internal county funds
- We are always looking for additional funding opportunities as funding entitles can easily change

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

- Resources including but not limited to metrics for reporting, shared goals, communication assistance, resources both financial and personnel.

**SUPER ISSUES**

- Resource sustainability and conservation in Florida communities.

**HIGH PRIORITY INITIATIVES**

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1. Water conservation. Conserve Florida’s finite freshwater resources by teaching rural, suburban and urban audiences how to use less water.
FLORIDA EXTENSION INITIATIVE 3: ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FOUR YEARS OF LOW IMPACT DEVELOPMENT WORKSHOPS: MULTI-Agency COLLABORATIONS AND REAL-WORLD OUTCOMES

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT

M.J. Kipp, Program for Resource Efficient Communities; E.C. Foerste*, Osceola County Extension; M.W. Clark, Department of Soil and Water Science; M.E. Hostetler, Department of Wildlife Ecology and Conservation; H.S. Knowles, Program for Resource Efficient Communities; B.C. Larson, Program for Resource Efficient Communities.

OBJECTIVES

Conventional approaches to land development and stormwater management have led to significant declines in water quality statewide. Five years ago, Low Impact Development (LID) was a relatively new concept to many Florida professionals, yet LID design, engineering, and management approaches offered promise for improving land development processes and reducing associated adverse impacts. In 2006, the Program for Resource Efficient Communities (PREC) began to address the need for Florida-specific LID outreach by developing educational workshops for elected officials, developers, local government staff and field practitioners.

METHODS

Since their inception, the LID classes have grown in scope and content. To date, UF state and county Extension faculty and collaborators have delivered 22 LID local government workshops and 16 LID continuing education courses to over 1,500 professionals working in land development and water resource protection throughout the state. Program impact was evaluated in two ways: participants completed written in-class evaluations, and in April 2010, over 1200 of them were invited to complete an online “LID Implementation” survey.

RESULTS

Consistently, class evaluations were positive, with at least 4 out of 5 participants indicating that they would ‘definitely’ recommend the program to others. Online survey respondents indicated that they, collectively, are aware of 132 Florida-specific LID policy and project applications, and that the UF/PREC programs played a role in facilitating a majority (58%) of those applications.

CONCLUSIONS

LID principles and practices are gaining traction throughout the state and UF Extension is playing a key role in this critical water quality arena.
FLORIDA EXTENSION INITIATIVE 1, 3, AND 6:
MANAGING URBAN AND COMMUNITY FORESTS TO ENHANCE COMMUNITY WELL-BEING

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: Francisco Escobedo, SFRC
UF/IFAS PROGRAM PARTNERS/UNIT: County Faculty
EXTERNAL PROGRAM PARTNERS: USDA Forest Service, Florida Forest Service, County-level Environmental Protection Dpts.

SITUATION
The urban forest is an ecosystem that if sustainably managed, can contribute substantially to a community’s well-being. Unfortunately, Information specific to Florida on practices that maximize benefits and minimize the costs of the state’s urban forests and their ecosystem services is scant. Many Florida communities currently manage their urban forests with a lack of awareness of: best management practices, comprehensive planning and monitoring strategies, effective policies, and the ecosystem services provided by forests. Damage to urban forests from hurricanes also threatens public safety and creates adverse economic consequences for state and local governments in the short-term (i.e. planning, response) and the long-term (i.e. debris removal and/or loss of benefits). This lack of information and awareness has led to ineffective policies for conserving urban and natural forests and insufficient financial support for managing them. As such, there is a need to support local and regional governments with timely and Florida-specific information on the costs and benefits of urban trees, practices for mitigating hurricane and invasive species damage, and tools to better plan and manage urban and community forests. The long-term goal of this program is for Florida communities to utilize the knowledge, technologies, best management practices, and policy support instruments developed by this program. Target audiences include:

- Federal, state, county, and city land managers dealing with forests in and around communities (Florida Division of Forestry, USDA Forest Service, County Departments of Environmental Protection);
- Homeowner associations; Community tree boards and organizations;
- State faculty and county extension agents;
- Urban and regional planners; Local governments; Emergency management personnel
- Non-governmental organizations that deal with forests and natural areas in and around cities; Spanish-speakers interested in natural resources issues;
- Natural resource and environmental consultants; Tree and palm nursery growers; Tree care professionals.

PROGRAM OBJECTIVES

- Raise awareness of effective urban forest management practices through educational materials and workshops and increase adoption of best management practices, management plans, and tree protection policies by communities, professionals, and other stakeholders.
- Increase the knowledge and skills necessary to use inventories, surveys, and tools to manage and assess urban forest ecosystem services, costs, and benefits by communities and urban forest professionals.
- Ensure that target audiences implement practices, tools, and technologies that mitigate hurricane damage to urban and community forests.

EDUCATIONAL METHODS

- Conduct needs assessments to develop an effective program and identify target audiences’ needs
- Instruct workshops and In-Service Trainings (ISTs) on the use of inventories, surveys, and technologies throughout Florida and nationally
- Disseminate information and develop tools and technologies to better manage and promote the urban forest resource through presentations and the use of different media.
RESULTS AND IMPACTS

By acquiring the knowledge and skills provided by my program, urban and community forests can be managed sustainably and effectively to maximize ecosystem services such as stormwater reduction, building energy use reduction, carbon offsets, conservation of natural areas and habitat, increased property values, and community empowerment. Proper management practices can also reduce maintenance costs, mitigate hurricane damage, reduce the spread of invasive tree and shrub species, reduce the allergic effects of woody plants and palms, and lessen the urban heat island effect.

- The City of Orlando, in collaboration with my program and the University of Central Florida has completed its first ever urban forest assessment. Using the tools, technologies, and knowledge acquired from my program, we have valued the annual economic benefits of their urban forest’s ecosystem services of air pollution removal, carbon dioxide sequestration, and energy use reduction at $1.9 million. In addition, we estimated the amount of stormwater reduction by the City’s tree canopy. In direct response to information and presentations to the mayor and commissioners concerning the value of the city’s trees, budgets and personnel have been doubled during a period of city-wide budget cuts.

- Using information and approaches provided through our media and workshops, Miami-Dade County completed its first street tree master plan and urban forest ecosystem service assessment to determine tree cover changes in 2006 and 2007. We valued the annual economic benefits of the county’s urban forest’s ecosystem services of air pollution removal, carbon dioxide sequestration, and energy use reduction at $8.9 million dollars. This information is being used to advocate and justify continued funding for urban forestry and cooperative extension programs during difficult economic times.

- In collaboration with Escambia County’s Neighborhood and Environmental Services Department and the Florida Forest Service, the annual economic benefits of the southern third of the county’s urban forest’s ecosystem services of air pollution removal, carbon dioxide sequestration, and energy use reduction (i.e. $1.7 million dollars) are being used to promote increased funding for the urban forest resource. In collaboration with the USDA Forest Service’s Center for Urban and Interface Forestry, we have also used the tools and methods presented in my workshops to estimate the annual economic benefits of Gainesville’s urban forests’ ecosystem services of air pollution removal, carbon dioxide sequestration, and energy use reduction at $4.0 million dollars.

- This information is being used to advocate and justify continued funding for urban forestry and cooperative extension programs during difficult economic times.

FUNDING SOURCE

- External and internal grants

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Additional funds are needed.

SUPER ISSUES

What Super Issues does this program relate to?

- The potential role of urban forest ecosystems in reducing energy use and for providing biomass yield for bioenergy uses.
- The actual monetary values of urban forests and their effects on human health and well being

HIGH PRIORITY INITIATIVES

- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises: Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.
• Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality: Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy

• Initiative 6. Strengthening urban and rural community resources and economic development: Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
Florida Extension Initiative 3:
Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Addressing Contentious Natural Resources Issues in Florida
Through a Public Issues and Conflict Management Training Program

UF/IFAS Program Primary Contact(s)/Unit:  Joy Hazell/Florida Sea Grant/Charlotte County, Jon Dain & Bruce Delaney/NRLI/UF/IFAS/FRE

UF/IFAS Program Partners/Unit:  UF/IFAS/Extension Alumni – Over 30 faculty

External Program Partners:  Agency, Non-Profit and Business Owner Alumni – Over 150 Alumni

Situation
People often disagree over how our land and water resources should be used and managed. Disputes arise over such issues as water quality, private property rights, wetlands, timber management, and endangered species. People with a stake in these issues tend to focus on their disagreements rather than their common interests. What often follows is policy gridlock. Important decisions move from the meeting room, legislative and commission chamber to the courtroom. Typically, no one is happy with the outcome.

Program Objectives
Gridlock is unnecessary. People involved in land, water and other natural resource disputes can reach mutually acceptable solutions by becoming more knowledgeable about public issues, communicating in a more meaningful and effective manner, opening the debate to include a broader range of stakeholders, and using negotiation skills to settle disagreements. This can be accomplished in two ways;

1. Designing processes and facilitating meetings to assist diverse stakeholders in reaching common ground and finding solutions to complex issues. Objective: Participants in meetings designed and facilitated by agent and regional colleagues will discover common ground and/or find solutions to complex issues.

2. Providing education to extension faculty and natural resource professionals that will teach skills to convene stakeholders and resolve contentious issues. NRLI was created to help rising leaders in business, agriculture, government, academia and the environmental community enhance the skills required to effectively collaborate and/or manage conflict over natural resource issues. Objective: Florida natural resource management and decision making by creating a network of NRM professionals throughout the State and in differing sectors of society who are trained to facilitate dialogue, promote collaboration and manage conflict related to NRM policy and decision making.

Educational Methods
NRLI is a nine-month long program that includes seven three-day seminar and activity sessions, a practicum project, and a graduation session, eight sessions in all. In activity sessions, Institute Fellows study personal and group leadership skills, communication skills, and conflict management techniques, and learn about natural resource issues, concepts and policy. Activity sessions also include tours of key natural resource sites around the state and discussions with a diverse set of managers, leaders, citizens and policy-makers directly involved in natural resource issues – representatives of different sides of the issue being studied. Fellows learn to delve into the science, policy, politics and perceptions behind natural resource issues and explore alternatives for addressing them. The practicum is a “real world” project through which NRLI Fellows apply skills and concepts learned in the program to actual conflict or leadership issues in their professional settings.
Each NRLI “content” session includes:

- Skill and concept training in leadership, communication, consensus-building and conflict management;
- Techniques and strategies for working with diverse groups of stakeholders;
- A technical briefing by a qualified expert on the natural resource issue under study;
- An on-the-ground tour of the issue site;
- An open discussion with stakeholders representing various points of view on the issue;
- Facilitated discussion among class Fellows on lessons learned and questions raised or answered at the venue, and
- Directed work on individual practicum projects.

To make the Natural Resources Leadership Institute applicable to the work and experiences of participants, a practicum is built into the class sessions. In carrying out the practicum, participants will develop collaborative solutions and approaches to problems and issues impacting Florida’s natural resources. Working in groups or individually, participants will apply the skills and information gained through the program. At the graduation session Fellows present practicum project results to their classmates, receive their diplomas and interact with NRLI alumni from preceding classes.

**RESULTS**

Objective 1. Participants in processes designed and facilitated by agent and regional colleagues will discover common ground and/or find solutions to complex issues. Impact is measured by post surveys, meeting reports and decisions made or actions taken as a result of meetings/workshops/processes.

Objective 2. NRLI Training Program

The Florida Natural Resources Leadership Institute is a unique, highly successful and important IFAS Extension program that now boasts over 200 enthusiastic alumni. Impact is measured through a pre and post competency worksheet as well as a follow up survey. Sample results include:

- **NRLI trains UF Extension professionals in novel and cutting edge skills for convening diverse stakeholders and managing conflict related to natural resource management.** In the last 12 months NRLI alumni have been recognized for exemplary work in managing complex, multi-stakeholder meetings for the US Army Corps of Engineers (Port of Miami – Joy Hazell) and for Polk County (Water Quality – Shannon McGee) among others. At the IFAS Extension Summit last March, 9 of the facilitators were NRLI trained. NRLI is developing a cadre of Natural Resource facilitators, external and internal to IFAS that are an asset to the organization.

- **NRLI alumni integrate into IFAS.** NRLI alumni Ginger Adair (Environmental Management Director, Volusia County), Joshua Craft (Florida Farm Bureau) and Staci Grecco (Alachua County Environmental Services) currently serve on the Advisory Board for the Food and Resource Economics department.

- **NRLI reaches novel constituencies and brings them together to facilitate and form lasting and important professional networks.** NRLI convenes professionals from a broad variety of State and Federal agencies, Local governments, Non-profits, the Private Sector, Academia and, more recently, from other countries. These professionals, from a wide range of political and economic backgrounds, form a State-wide network of trusted colleagues. NRLI brings together regulators and the regulated, advocates and academics, law enforcement and policy makers and teaches them how to understand and appreciate each other’s perspectives and how to communicate with each other’s constituencies. These interactions are not experienced in a 2-day seminar but rather throughout an intensive eight-month training program where true relationships are established.

- **NRLI alumni impact the State of Florida.** Alumni Adrienne Denney and Thomas Ruppert (both attorneys) are proving successful in their efforts to help cities and counties incorporate climate change and sea level rise concerns into their comprehensive plans. Alumnus Dr. Kelly Keefe was recently awarded the US Army Corps of Engineers’ Coin Prize for her work in facilitating collaboration in Everglades’ restoration efforts and subsequently sent across the country to help other USACOE offices with their planning efforts. Alumni Sue Colson, Leslie Sturmer and
Gregory Lang have been instrumental in assuring the sustainability of aquaculture industry in Cedar key and recently helped the city avert a serious salt-water intrusion crisis.

We believe that the NRLI program has been a success story, not just as a program, but for IFAS as it supports a State with rapidly evolving political, economic and ecological issues that demand broad public involvement in decision making.

**NEEDS**

This will also be an important transition year for the program with the departure of NRLI Director, Dr. Laila Racevskis and our full-time Office Manager Candace Kaswinkel. We are confident that the NRLI program is on solid ground for this year, however NRLI planning, recruiting and budgeting for the 2013-14 academic year begins now and we must fulfill certain administrative and personnel needs if we are to maintain the quality and momentum of this very unique IFAS Extension program.

**SUPER ISSUES**

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Facilitate dialogue

**HIGH PRIORITY INITIATIVES**

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  3 Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education.
- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
- Initiative 4. Producing and conserving traditional and alternative forms of energy.
  3 Community capacity development. Improve community energy policy and management decision-making quality and capacity by educating professionals in the built environment, government, and industry about how to foster environmental, economic and social forces to shape sound foundations for change.
- Initiative 6. Strengthening urban and rural community resources and economic development.
  2 Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.
  3 Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
SITUATION
Solar energy is expanding throughout the U.S. as a renewable energy source. In a follow up survey, from an alternative energy program, clientele expressed a desire to learn how to design and use solar energy for home and commercial projects.

OBJECTIVES
Clientele want to learn how to build solar panels, design photovoltaic cells for maximum energy output, and integrate solar power into their homes and businesses.

METHODS
Using LEGO educational materials we taught both adults and youth, the following: introduction to photovoltaic systems, solar radiation, conversion of solar energy to electricity, and applications of solar power. We demonstrated the following: components of solar panels and their applications and how to utilize solar to off-set current energy consumption in homes/businesses. In addition local electric providers provided education on current policies for incorporating solar on and off the grid.

Results
Local greenhouse completed installation of photovoltaic system which reduced electric consumption by 62%. Participants used solar cells to build solar panels which powered small devices. Solar education display was constructed for use in future programs. Pre-tests showed 98% (49) of the 50 participants had limited knowledge of solar panel function, installation, and how to connect to local grid. Post-test results showed that 70% (35) of participants plan to use information learned to implement the use of solar energy in their homes/business.

CONCLUSIONS
This program suggests there is a need for more educational programs/information for homeowners, small businesses and local electric providers on incorporating solar energy.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

SUSTAINABLE FLORIDIANS™

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Kathleen Ruppert, PhD, PREC
UF/IFAS PROGRAM PARTNERS/UNIT: 6 participating counties – Leon, Wakulla, Osceola, Pinellas, Sarasota, Marion
EXTERNAL PROGRAM PARTNERS: Pinellas County Volunteer Services Department

SITUATION

Many coastal and inland counties experience strong development pressure coupled with increased economic growth which places significant stress on natural resources. Not only are more people at risk due to increased climate change effects (storm surge, inland flooding, sea level rise) but so are the natural resources and wildlife that inhabit these environments. Although a challenge, balancing resource use with human and economic needs is critical to a successful and thriving local economy. Achieving this goal is possible with a motivated, engaged, and educated citizenry.

Sustainable Floridians fills the need for citizen education about land use patterns, transportation needs, resource efficient strategies, and economic opportunities. County Extension offices provide an ideal interface for promoting sustainability awareness and engaging the citizenry with sustainability education.

Sustainable Floridians website: http://pinellas.ifas.ufl.edu/sustainability/sustainFloridians.shtml

PROGRAM OBJECTIVES

Sustainable Floridians is offered as a teaching and volunteer program in Pinellas but each county does have flexibility to adopt the approach that best suits their needs (education only, train-the-trainer, or volunteer based). In addition to the overarching statewide objectives, the program seeks to provide sustainability education to new, non-traditional Extension audiences. Potential participants are attracted by the topics covered in the program and are motivated to implement conservation actions that are connected to saving money and resources.

Each participant who graduates from the 7-week program (time variations also exist at the county level) receives a certificate of completion. Participants continue to be mentored through ongoing monthly meetings and tours that explore the interconnectedness of the economic, environmental and social aspects of sustainability at the local and regional level.

Participants in this program are expected to compile consumption logs for water, energy and vehicle miles travelled to enable a more personal connection to the “footprints” that are created due to daily activities. These logs serve to educate and promote behavior change in the short and medium term projection. Long term impacts will incur as a result of their continued involvement in the program and their ability to educate others within their network (friends, family, community). Volunteers at the program level will continue to make an impact on their community through community events that highlight sustainability.

The current program objective is listed as follow, “At least 70% of Sustainable Floridian interns in each class will complete the seven week training and pre-post tests. At least 50% of the new Sustainable Floridian recruits will complete the 30 hour volunteer commitment and 15 hour ongoing training requirement to become a certified Sustainable Floridian. This objective will be measured by reviewing pre-post test assessments, class rosters, and the number of hours volunteered.”

EDUCATIONAL METHODS

Currently, Pinellas County faculty utilize face-to-face 4-hr teaching sessions to deliver the materials. The materials are presented via PowerPoint presentations, YouTube videos, and recorded educational videos (PBS). Faculty also facilitate circle and discussion groups so that participants explore issues in a congenial atmosphere and utilize Turning Point technologies to conduct quizzes. Participants are required to complete reading assignments, pre and post-tests, weekly evaluations, and data logs of energy, water and vehicle miles travelled. The electronic nature of the evaluations and logs
reduces the burden on both staff and participants and allows for easy compilation of necessary data. Topics covered include Land Use, Transportation, Energy, Water, Community Leadership, Case for Change and Principles of Sustainability.

Participants receive a binder containing printed materials as well as sustainable living devices in appropriate weeks (rain barrel, energy items). Faculty sends weekly emails, evaluation surveys and conduct evaluations on the use and installation of sustainable living devices. Each participant is also educated about additional programs and resources offered by Extension (e.g. EDIS). On-going mentoring is provided through monthly meetings and provide an opportunity for further education, networking and volunteer support. Primary audiences include retirees, college aged students, part-time employees. No special emphasis has been given to under-served or under-represented clientele.

RESULTS AND IMPACTS

Faculty in Pinellas County have reported on volunteer hours, participants enrolled, participants graduated, the use of sustainable devices provided (rain barrels, energy items). Participants do receive an economic return when they consume less water, energy and vehicle miles travelled but it has not been quantified. See examples of results and impacts below –

- Overall, 93% of participants report increased practical knowledge of sustainable living and are motivated to reduce their ecological footprints.
- 100% of participants are introduced to Extension resources not previously known.
- 16 monthly meetings with 31 active volunteers
- 1800 volunteer hours promoting and extending the mission of the Extension service in the community.

FUNDING SOURCE

Participants – program fee ($50); County – general funds to purchase binders, paper/printing, partnership to provide rain barrels/compost bins; Faculty - program funds to purchase sustainable living devices (energy items).

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- State website
- Funding – books, sustainable living devices
- Ongoing training for county faculty
- Consistent marketing and promotion plan

SUPER ISSUES

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
- Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
Initiative 6. Strengthening urban and rural community resources and economic development.

Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.

Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
OBJECTIVES

The Sustainable Floridians Volunteer Program is a statewide education/community development program that teaches Floridians how to make wise use of natural resources in the attempt to improve the economic, environmental, and social sustainability of Florida communities. This program was developed in the Department of Family, Youth, and Community Sciences, with technical assistance from the UF/IFAS Program for Resource Efficient Communities, the UF Office of Sustainability, and Extension faculty in seven counties. The program materials are available to all county faculty. The program objectives are 1) to motivate participants to implement conservation and efficiency actions, 2) to promote sustainability leadership within the community, and 3) to develop volunteers.

METHODS

Participants meet with the program facilitator for seven sessions. Each session includes PowerPoint presentations, supplemental readings, homework exercises, and group discussions. Participants also complete a personal sustainability action plan and a group project.

RESULTS

27 participants in Leon County and 11 in Marion County have completed the program. 31% of participants reported conservation behavior changes by the sixth week of the program. Both cohorts have also created their own “teams” to promote sustainability in the community. Pinellas County currently has 27 participants involved in the program and will finish in May 2011. Sarasota and Osceola counties will pilot the program in late 2011.

CONCLUSIONS

The Sustainable Floridians Volunteer Program pilot has proven successful by creating a small, but highly motivated group of volunteers that are invested in Extension and the future success of the Sustainable Floridians Volunteer program.
Situation

During the past 40 years of rapid growth, large areas of Florida’s wild native forest and ranch lands have become intermixed with urban development. The most recent USDA Forest Inventory and Analysis indicates that 25% of Florida’s forest is now urban, and that 75% of the state’s population live in these urban areas. The diverse benefits provided these urban forests are well understood (Dwyer et al. 1991). Recent efforts to quantify the value of ecological services such as heat-island mitigation, CO2 reduction, and stormwater attenuation (McPherson et al. 2005, Andreu et al. 2007) conclusively demonstrate that trees account for an important part of any community’s infrastructure, providing positive returns on investment and tangible benefits to urban residents. Surveys have documented that most people in Florida value urban trees and woodlands and want to ensure their continued existence (Escobedo et al. 2012).

Program Objectives

The Tampa Bay Watershed Forest Working Group (TBWFWG) was formed in 2006 to establish and foster a collaborative that would allow the people, agencies and organizations interested in trees, woodlands and forests within the bay watershed to work together to solve common problems, resolve conflicts and build partnerships in order to move our watershed toward a more sustainable direction. Objectives:

1. Create a scientific framework for the ecological assessment and sustainable management of the Tampa Bay watershed’s trees and forested ecosystems along the urban – wildland continuum.
2. Understand the Tampa Bay watershed trees and forest as an ecological system.
3. Use the ecological knowledge created to help support educational and community-based activities.

Educational Methods

Engage local governments in directed partnerships with USDA Forest Service, US Environmental Protection Agency, University of Florida scientists, state extension specialists and other research – based universities (USF) in the investigation and organization of ecological information and technologies that support urban forest sustainability in semi-tropical Florida. These tools, technologies and information are transferred to target audiences through the development of educational and training materials, the hosting of workshops and seminars, EDIS publications and direct assistance to governments and private citizens.

Community based educational programs include:

Community Forest Steward Program – Using lecture and problem-based learning participants are trained to conduct community forest inventories; act as a first line of consultation on insect and disease questions; and conduct public workshops and provide leadership on local conservation projects.

Neighborhood Tree Steward Program - Classes available may include any combination of the following planting site assessment; tree selection; tree planting; tree establishment; pruning young trees; pruning mature trees; preventing damage to sidewalks; curbs and driveways; city and county tree ordinances; and identifying opportunities for financial and technical assistance for neighborhood-wide tree programs.
**RESULTS AND IMPACTS**

The City of Tampa has a formalized and consensus driven strategic plan for urban forest management, made changes to its Comprehensive Management Plan to consider the urban forest as part of the green infrastructure and to implement the recommendations from the TBFWG’s studies.

Community-based social marketing efforts have led to changes in the City of Tampa’s Community Tree Program, specifically the species of trees provided and requirement of direct involvement of neighborhoods in the design of tree planting projects. The Neighborhood Tree Steward Program is a direct outgrowth of these focus group sessions in low to moderate income neighborhoods.

Since understanding the importance of the findings from the Urban Forest Ecological Analysis, the City of Tampa has legislated that these urban forest inventory plots will be re-measured every five years to continue to track changes in the distribution and condition of the urban forest and to quantify the services that they provide. This was re-affirmed in 2010 when the City Council provided necessary funding for the 2011-12 inventory and analysis.

The results from the Tampa Bay Watershed Forest Project have also been used directly by the EPA to support selection of the Tampa Bay Watershed as one of the five place based research sites to model the impact of human development and natural stressors on the economic, aesthetic and cultural value of local ecosystems. This long-term project has generated new opportunities for future collaborations in research and extension with the US EPA. Most recent has been the Cooperative Agreement signed in 2010 to support finically and collaborate in the evaluation of ecosystem services being provided by trees, woodlands and forests within the watershed.

Initial feedback from the Community Forest Steward Program showed that 99% of the participants strongly agreed that the classes met or exceeded their learning expectations and 93% felt that the instructional materials would be immediately useful. Pre and post-testing documented 68% gains in knowledge and skills.

**FUNDING SOURCE**

Funding has been on a project by project basis. Sources have included: City of Tampa, US EPA, US Forest Service, and the Florida Forest Service.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

A full time coordinator and educator will be needed to grow this program to its full potential.

**SUPER ISSUES**

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.

**HIGH PRIORITY INITIATIVES**

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
- Initiative 5. Empowering individuals and families to build healthy lives and achieve social and economic success.
- Initiative 6. Strengthening urban and rural community resources and economic development.
**FLORIDA EXTENSION INITIATIVE 3: ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY**

**KEEPING FLORIDA’S URBAN TREES HEALTHY**

**UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT:** Jason A. Smith, Associate Professor, School of Forest Resources and Conservation, University of Florida

**UF/IFAS PROGRAM PARTNERS/UNIT:** Jiri Hulcr, Ed Gilman, Aaron Palmateer, Celeste White, Larry Figart, Rob Northrop

**EXTERNAL PROGRAM PARTNERS:** International Society of Arboriculture, Florida Forest Service

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**SITUATION**

Urban forests in Florida provide multiple environmental services (i.e. filtering air pollution, carbon sequestration, protection from hurricanes, reduced heating/cooling needs etc.) as well as economic and aesthetic services to those living in them. Maintaining healthy urban forests is vital to the economy and well-being of the citizens of Florida. A recent needs assessment conducted by the School of Forest Resources and Conservation showed that according to county agents, the 2 most frequently identified training needs in forestry were for programs on diseases and insects of trees and enhancing urban forests. With the emergence of many new exotic pests and diseases in Florida, and many more poised to move into the state, a vibrant and flexible program is needed that provides the most recent scientifically based information to agents.

The primary audience for this program is a mixed population of county agents, FFS county and district foresters and municipal and commercial arborists who need help identifying new tree diseases and developing management strategies to reduce their impacts. The greatest challenge to this program is the lack of any state funds to carry out the needed travel, diagnostic sample processing and associated activities that are needed. Opportunities include the interaction with state and federal agencies to collect data (surveys etc.) and also to build partnerships for developing and delivering educational programs focused on tree health.

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**PROGRAM OBJECTIVES**

1. Assist county agents in identifying and reducing impacts of urban tree disease by acquiring and disseminating information about the cause, biology and management of urban tree diseases. (Long term (5+ years)

2. Provide knowledge necessary to change how trees are grown, planted and cared for in urban landscapes in Florida. (Long term (5+ years)

3. To assist county agents with developing basic skills in diagnostics. Emphasis will be placed on how to differentiate between secondary organisms (i.e. common saprophytic fungi and beneficial insects). Short term (1-3 years)

4. Provide training and awareness of new or potential future forest health threats in Florida. Short term (1-3 years)

CEUs are given as part of joint training with the ISA and FDACS CEUs have been provided at some of the workshops.
EDUCATIONAL METHODS

The content being delivered by this program includes proper urban tree health instruction and supporting materials that is provided to participants to better equip them to develop and conduct their own future programs. ISTs, ISA workshops and other tree-related workshops (UF/IFAS Extension programs such as “Shade Tree Short Course” and “Trees Florida”), EDIS publications, DDIS, forest health website and online presentations are the primary venues for delivering the following content:

- Advanced topics (disease biology and epidemiology, integrated pest management, interactions of abiotic and biotic factors in plant health etc.),
- Diagnosis (with live samples) and how to improve the diagnostic pipeline from agent to specialist, biotic (insects/diseases) and abiotic issues (planting depth, construction damage, nutritional issues etc.)
- How to effectively use Distance Diagnostic and Identification System (DDIS) as a tool for early pest and pathogen detection
- Policy issues (new construction spec requirements etc.) associated with tree health in the landscape
- Prevention of new tree health problems in the state of Florida (potential threats outside our borders will be highlighted)

RESULTS AND IMPACTS

Over 20 workshops, including 5 in-service trainings (total attendance = 3,000) have been given in support of this program. Pre/post tests at 2 of the ISTs showed a knowledge increase of 12% on common urban tree disease recognition, biology and management. Post-activity evaluations at the FL ISA Coast Series workshops revealed that more than 50% of attendees believed they had “significantly increased” their knowledge of the subject. During the period of 2007-2012, I responded to a total of 510 requests for information about tree diseases in Florida. During the period of 2007-2012, 245 samples were received from county extension agents, arborists and DOF for diagnosis. Diagnoses included on-line submissions (DDIS system), e-mails and direct processing of samples. During the period of 2007-2012, 6 new diseases not previously reported from Florida were found as a direct result of collaboration with county extension agents. We carried out research on these and disseminated results to well over 400 arborists, agents and landcare professionals through the ISA Coast Series workshops. This improved awareness by clientele has led to further reporting of symptomatic trees for our state-wide surveys. A total of 13 EDIS documents have been published to support this program. State-wide evaluation of the program has not been carried out, however, with future funding it may be possible. At this point, evaluation occurs for each activity or workshop, but not for the program overall.

FUNDING SOURCE

Currently, this program is not directly funded. Although it is an important service for citizens in Florida, no state funds have been available to support the work. I “piggy-back” off of research grants when possible and last year received an IFAS extension enhancement award to help with the cost of the program. In 2013, the dean for extension office provided $3,000 to help cover the costs of diagnostic work needed to investigate the cause of pine mortality/dieback on central Florida. In addition, RREA funds were leveraged for this project. Isa covers the costs of workshops run jointly with their program. I am seeking more permanent funding to help defray the costs of diagnostics and travel in the future.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

My greatest need for this program right now is some financial support for the lab technician who carries out sample processing, field visits and writes up diagnostic reports for clients (usually extension agents). Currently, he is paid 100% from grants, but this is not sustainable. I am seeking an arrangement for sharing the cost with UF, SFRC and another faculty member who shares this technician’s time. Without staff, I will not be able to carry out the objectives of this program.
SUPER ISSUES

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

- This program directly supports Initiative 1. “Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.”
- It also directly addresses program area 1 under this initiative:
  1. Sustainability of production systems and alternatives. Maintain and enhance production systems of all types and scales by improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, food safety and environmental stewardship.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Waterfronts & Waterways

UF/IFAS Program Primary Contact(s)/Unit: Bob Swett, associate professor SFRC/Florida Sea Grant extension specialist

UF/IFAS Program Partners/Unit: Currently, 7 county (marine) faculty are members of the Florida Sea Grant Waterfronts & Waterways Work Action Group (WWWAG); Tom Ankersen, UF Levin College of Law’s Conservation Clinic & Dr. Tim Fik, Geography Department

External Program Partners: National Working Waterfronts Network, West Coast Inland Navigation District, FWC Boating and Waterways Section, Florida Department of Environmental Protection Office of Sustainable Initiatives

Situation
Florida’s coastal and inland waterways are popular destinations for residents and visitors alike. For example, nearly 1 million boats are registered in Florida—more than any other state—and state waters are the number one U.S. destination for saltwater fishing. Furthermore, Florida’s marine industry has an economic impact exceeding $18 billion and employs over 220,000 people. Nonetheless, communities struggle to preserve recreational and commercial access to their waterfronts and waterways. A Florida Senate report concluded that availability of access to Florida’s coastal waters is not keeping pace with demand. This trend threatens to disenfranchise many citizens from their claim to the public trust—the state’s waterways—and to jeopardize the viability of traditional waterfronts that serve commercial and recreational maritime needs and contribute to community character. The issues to be addressed call for planning and management in ways that balance public use with resource protection. Stakeholders—no matter on which side of an issue they find themselves—consistently insist that basic scientific information must guide planning and that processes are needed to build consensus among competing interests.

Program Objectives

- Disseminate science-based methods and information that support and improve waterfront and water use planning, management, and decision-making.
- Provide historical, economic, financial, and policy information and resources needed to address issues on waterfronts and waterways.
- Maintain and strengthen a diverse network of partners who collaborate and act as liaisons to their stakeholders and communities to educate people about waterfronts and waterways.
- Foster interagency communication and cooperation at local, regional, state, and national levels.
- Facilitate the development and implementation of comprehensive local and regional plans that address waterfront and waterway uses.
EDUCATIONAL METHODS

- Promote or advance comprehensive waterway planning and management by assisting local, regional and state governments directly, in conjunction with local marine extension faculty.
- Synchronized recurring regional workshops organized by the UF/IFAS/FSG WWWAG, a triennial statewide waterfronts/waterways management conference with the FWC and the Florida Department of Environmental Protection, and a triennial national symposium with the National Working Waterfronts Network.
- Development and distribution of tools and applications, as represented by the Sustainable Working Waterfronts Toolkit (www.wateraccessus.com).

RESULTS AND IMPACTS

The value of participation in, and information gained at, our regional, statewide and national workshops/symposiums is measured via participant surveys. Furthermore, most workshops/symposiums include a strategic planning session, the results of which are used to guide future efforts of program collaborators, both at regional, state, and national levels. For example, strategic recommendations at the 2010 national symposium resulted in formation of a National Working Waterfronts Network, members of which (including FSG) obtained federal funding and produced the Sustainable Working Waterfronts Toolkit (www.wateraccessus.com). The NWWN steering committee (includes FSG) organized and attended the March 2013 symposium and, afterwards, developed strategic initiatives for the next three years. One initiative includes further development of the Toolkit, which was “rolled out” at the 2013 symposium.

Programmatic results and impacts are further measured by the degree to which local and state governments adopt science-based waterfront and waterway planning, management and decision-making methods, data, and recommendations. For example, FSG currently is working with Charlotte County to develop a long-range comprehensive plan element to guide future provision of waterway access. FSG also is working with the West Coast Inland Navigation District to finalize a regional waterway management system that comprises four southwest Florida counties and results in innovative state policy. These efforts are designed to balance the use and protection of natural resources, and to minimize tax payer expenditures.

FUNDING SOURCE

Excluding employee salaries, the costs (fuel, educational materials, etc.) of this program are funded by external (non-UF) sources.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Additional funding and expertise (e.g., economics, policy, human dimensions, planning) would enhance the reach and effectiveness of the program.

SUPER ISSUES

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
- Initiative 6. Strengthening urban and rural community resources and economic development.
  3. Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
FLORIDA EXTENSION INITIATIVE 3:  
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY  
[PROFESSIONAL/INDUSTRY FACILITATION AND EDUCATIONAL Programs]

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Lisa Krimsky, Program Extension Agent II/Sea Grant

UF/IFAS PROGRAM PARTNERS/UNIT: Cassandra Weston, Miami-Dade 4-H and Sea Grant Fisheries WAG

EXTERNAL PROGRAM PARTNERS: The Fishing & Conservation Trust/Reward Fishing Fleet

SITUATION

• What problem are you trying to solve? Why is this important?
The need to develop and promote an environmentally literate citizenry who understands the relevance of a healthy coastal ecosystem to the quality of their everyday lives and to the economic vitality of the region and the nation is critical to maintaining a healthy sustainable coastal community.

Extension can play a leading role in helping citizens and other stakeholders make informed decisions and policy choices. This program accomplishes this task in two ways: 1) Providing traditional education (workshops, classes, and the dissemination of print and web media) that will help to increase awareness and promote stewardship of marine and coastal resources and 2) Designing processes and facilitating meetings to assist diverse stakeholders in reaching common ground and finding solutions to complex issues.

These educational initiatives are necessary to impart a sense of community pride and ownership to Miami-Dade residents and workers, which are precursors to informed decision-making and good stewardship.

Who is the target or primary audience for your programs?
Marine industries and educational and governmental institutions

• What challenges or opportunities exist to establishing this program topic as a statewide program?
Continued support and training for FSG agents

PROGRAM OBJECTIVES

Participants attending professional and industry workshops either taught, developed and/or facilitated by agent will increase their knowledge of economically and environmentally sustainable approaches in Florida

Participants in meetings designed and/or facilitated by agent will discover common ground and/or find solutions to complex issues.

EDUCATIONAL METHODS

With agency and extension partners, the agent teaches, facilitates and organizes industry and agency workshops to increase the cooperative management and learning within the marine professional community.

RESULTS AND IMPACTS
One hundred and fifty-five participants attended the statewide From Stem to Stern conference. Of the 61 participants who completed a post Stem to Stern II conference evaluation questionnaire:

- 68.9% (42) learned a good deal and 3.3% (2) learned a significant amount of new information about boating and waterway projects/work in Florida;
- 62.3% (38) learned a good deal and 13.1% (8) learned a significant amount from this conference.

Overall, the participant responses to the evaluation questions suggest that most of the topics presented at the conference were extremely relevant and perceived as moderately and very helpful. Based on 30 participant responses, 8 (27%) respondents plan to use information from conference sessions to daily work/activities, 7 (23%) respondents plan to use information from conference sessions to continue building partnerships and networking, and 7 respondents plan to use information from conference sessions to enhance planning efforts.

Three workshops were offered before the conference to train stakeholders on the following topics/tools: (1) valuing boating access in Florida using economics to more effectively manage Florida’s boating infrastructure, (2) a primer on the tools and concepts of social marketing for environmental behavior change, and (3) Florida’s maritime infrastructure planning tool overview. For all three workshops, 100% of 36 participants agreed that the workshops were relevant to their work and approximately 70% (25) of the attendees are planning to use the workshop information in their work activities and future projects.

The agent facilitated the Northeast Florida Regional Boating and Waterways Workshop. As determined by a post evaluation survey, the 56 workshop participants increased their knowledge of economic and sustainable approaches to waterways management by 84%.

With the Brevard County Sea Grant Extension Agent, the agent organized and moderated the Southeast Florida Regional Boating and Waterways Workshop. 77 professionals from the boating and waterways industries participated in the workshop, 29 of which attended the second day’s facilitated discussion. As determined by a post evaluation survey, workshop participants increased their knowledge of economic and sustainable approaches to waterways management by 86%.

The agent, with the Department of Environmental Protection (FDEP) and the Reef Environmental Education Foundation (REEF), hosted and facilitated an interagency coordination meeting for lionfish management along the Florida reef tract. 37 government and agency employees from the 5 Southeast Florida reef tract counties (Monroe, Miami-Dade, Broward, Palm Beach and Martin) participated. As a result of the facilitation, participants increased their knowledge of lionfish management strategies by 94% as determined by a post-survey evaluation.

The agent, with Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission (FWC) staff, organized a Marine Mammal Protection and Rescue Basics Workshop. 22 law enforcement agents completed the classroom and on the water training to help FWC specialists with marine mammal rescues. Participants had a knowledge gained of 16% and 94% (21) said their behavior in responding to marine mammal rescues would change as a result of the training.

The agent was invited by National Geographic to give a presentation for the southeast Florida marine recreational community on conveying environmental information to the public. The 120 people in attendance increased their knowledge by 98% as determined by a post evaluation survey.

The agent hosted and organized a meeting with 6 coordinators for the Miami-Dade County Monofilament Recovery and Recycling Program. As a result of the meeting an additional 15 monofilament recycling bins were established throughout the county.
66% (5) of 8 participants from the NOVA Southeastern University Oceanographic Center Visioning Retreat completed a post retreat survey. 100% of respondents agreed or strongly agreed that faculty began developing a strong vision for NOVA Southeastern Oceanographic Center as a result of this workshop. 75% agreed or strongly agreed that they felt more motivated and enthusiastic for the future of NSU-OC as a result of the retreat and 100% agreed or strongly agreed that the retreat provided critical engagement and communication with fellow NSU-OC faculty members.

Facilitated a meeting for FDEP’s Southeast Florida Coral Reef Initiative Maritime Industry and Coastal Construction Impacts section. The one day meeting was designed for coastal managers and construction companies to present tools and techniques to assess and minimize impacts in Southeast Florida. 37 people in attendance.

Facilitated two meetings for Florida Fish and Wildlife Conservation Commission’s Coastal Wildlife Conservation Initiative (CWCI), an FWC led effort to create a network of partnerships throughout the state – to address issues facing coastal wildlife, to help bridge the gap between coastal recreational use and wildlife needs, and to help partner groups be more efficient (by combining resources and reducing overlap). Led the group breakout activities designed to address community challenges and issues and result in the formation of regional working groups. 22 people in attendance

Facilitated the meeting to receive public comment for the DEP Biscayne Bay Aquatic Preserve’s management plan. 70 attendees.

The agent designed and facilitated the advisory committee meeting for the Florida DEP Biscayne Bay Aquatic Preserve’s management plan. The meeting was designed to allow invited advisory committee members to provide final input on the Aquatic Preserve’s ten year management plan. The management plan is under approval and can be found online at http://www.dep.state.fl.us/coastal/sites/biscayne/pub/Biscayne_Bay_AP_Management_Plan.pdf

**FUNDING SOURCE**

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

**SUPER ISSUES**

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.

**HIGH PRIORITY INITIATIVES**

- Initiative 6. Strengthening urban and rural community resources and economic development.
  2  Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.

  3  Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
   1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.

Initiative 2. Enhancing and protecting water quality, quantity and supply.
   1. Water conservation. Conserve Florida’s finite freshwater resources by teaching rural, suburban and urban audiences how to use less water.
Overview
These programs primarily target persons that manage natural resources on natural areas, farms, and commercial forests; and persons that earn their living from the land, such as marina owners and ecotour guides.
The announcement of EPA’s Proposed Numeric Nutrient Water Quality Criteria for Florida in January or 2010 created a great deal of concern and fear for farmers and ranchers. Local producers did not understand the repercussions of these standards, or what the best course of action was for their individual farms.

**Objectives**

An advisory committee of agriculture leaders was organized to discuss the proposed standards. The committee developed the idea for a Forum to provide farmers and ranchers a better understanding of the EPA’s proposal, find out what level of nutrient loading had been measured in local area water bodies, and the best course of action to protect them from liability.

**Methods**

The Forum was held on April 15, 2010. Seventy eight farmers, ranchers, and government agency personnel attended the educational forum. Four informational presentations were followed by a panel discussion which allowed audience interaction.

**Results**

Each speaker recommended that the best approach to dealing with the proposed was to sign up for the BMP program.

**Conclusions**

Exit surveys indicated that: 85% found the information presented at the Forum helpful, 83% had a better understanding of how water quality issues relate to agriculture after attending, and 63% plan to take action as a result of the Forum with 32% still considering action. Of those planning to take action: 50% plan to investigate the BMP program, 36% were ready to sign up for the BMP Program, 46% wanted more specific information related to their farm, and 21% will seek professional advice.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

AQUATIC WEED CONTROL SHORT COURSE

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Dr. Lyn Gettys, Ft. Lauderdale Research and Extension Center

UF/IFAS PROGRAM PARTNERS/UNIT: Currently, state faculty in the Agronomy Department and the Center for Aquatic and Invasive Plants and county faculty actively teach short course material.

EXTERNAL PROGRAM PARTNERS: Federal, state, local and private entities also contribute material for short course topics.

SITUATION

Water plays a crucial role in maintaining the health of Florida’s ecosystem. We rely on this valuable resource to provide drinking water, irrigation and recreation; in addition, appropriate management of our waters is critical for flood control efforts. A diversity of native aquatic plants constitutes an integral part of the aquatic environment. These mixed populations of hydrophytes provide structure, habitat and food for fish, waterfowl and other wildlife and act as nutrient sinks by removing phosphate, nitrogen and other elements from the water column. The mild climate of South Florida makes the region an ideal habitat for many organisms, including aquatic plants. This fact, coupled with the popularity of water gardens and ornamental ponds, makes the region ideally suited for invasion by non-native aquatic plants. Non-native plants are often invasive and outcompete native aquatic species, resulting in monocultures that fail to provide the services afforded by a diverse aquatic ecosystem. Efforts to reduce or prevent invasion by exotic species are often hampered by a poor understanding of newly introduced aquatic plants. For example, many stakeholders are unable to identify non-native species and lack information regarding their control. Therefore, educating aquatic plant managers and other stakeholders through a robust extension program is critically important to protect the health of Florida’s aquatic ecosystem.

PROGRAM OBJECTIVES

The aquatic weed control short course (AWCSC) is a statewide educational program designed to benefit those new to the industry and experienced professionals seeking a comprehensive update. Clientele benefit from this program by attaining CEUs for aquatic, right-of-way, natural areas, forestry, and general standards (CORE) pesticide licenses. They also are updated on various topics related to natural areas resource management through classroom-type settings as well as hands-on demonstrations.

EDUCATIONAL METHODS

The AWCSC curriculum includes a full day general session covering special topics related to aquatic weed control. The second day of the short course involves concurrent sessions where participants can either receive training to take general core and category (aquatic and/or natural areas) exams, while those whom already have Florida pesticide licenses may opt for other concurrent sessions on updates in weed biology and control. The third day of the short course ends the program with concurrent sessions in the morning and time for participants to take the general core and category pesticide exams in the afternoon.

RESULTS AND IMPACTS

The AWCSC has a statewide evaluation plan in place. A survey is conducted at the end of the short course that collects information on participant demographics, satisfaction, and knowledge gain. Success stories are also collected, which provide a means of illustrating the difference this program makes in the lives of clientele. This program attracts approximately 430 attendees annually, with 50% of the participants taking exams for new pesticide licenses.

FUNDING SOURCE

The AWCSC operates on a fee-based cost recovery system.
NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Need to determine the best method to measure long-term knowledge gain and/or changes in behavior as a result of this program. This is extremely difficult as there appears to be rapid turnover in pesticide applicators.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiatives 3, 2, and 1.
 FloridA Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Protecting Florida’s Aquatic Resources and Natural Areas from Weeds

UF/IFAS Program Primary Contact(s)/Unit: Dr. Kenneth Langeland, Center for Aquatic and Invasive Plants

UF/IFAS Program Partners/Unit: Currently, state faculty in the Agronomy Department and the Center for Aquatic and Invasive Plants and county faculty.

External Program Partners: Federal, state, local and private entities also contribute as needed.

Situation

According to recent estimates, invasive species cost the United States nearly $120 billion per year and put significant pressure on about 42% of threatened and endangered species. The costs and problems associated with invasive species impact agriculture, horticulture, forestry, aquaculture, recreation, the environment, and natural habitats. Strategies to ameliorate the problem include prevention, early detection, rapid response, eradication, control, and restoration, along with education and outreach. Over 150 invasive plant species impact or threaten thousands of acres of publicly owned waterways and conservation lands in Florida as well privately owned lands and ponds. Native plants, as well, can interfere with water uses and require management. Highly trained County Agents who have readily available information, highly skilled and well informed public land managers, and highly trained herbicide applicators are essential to combating weeds in Florida’s water resources and natural areas. A Restricted Use Pesticide Applicator License is often required, or held as an industry standard, for application of herbicides to control weeds in aquatic habitats and natural areas. Licensed applicators in the aquatic and natural areas categories are required to earn 20 continuing education units (CEUs) during a 4-yr period in order to maintain their licenses without having to retake the certification exam.

Program Objectives

County Agents are provided with up-to-date technology for managing weeds in private ponds. Land managers, including biologists, commercial, and public licensed restricted use pesticide applicators are kept appraised, based on IFAS research, of current weed control technology. New herbicide applicators, who wish to become licensed to apply restricted use pesticides, are trained and tested for their competency. Opportunities are provided for licensed applicators to earn CEUs for license renewal. Non-native plants that occur in Florida are assessed with the “IFAS Assessment of Non-Native Plants in Natural areas of Florida and this information is used to guide the recommendations of all IFAS personal in recommending non-native plants for various uses, and by the Florida Department of Agriculture and Consumer Services for guidance in biomass crop permitting.

Educational Methods

Current weed control technologies/recommendations are maintained and readily available electronically in the following publications:

- “Efficacy of Herbicide Active Ingredients Against aquatic Weeds” SS-AGR 44/AG262
- “Integrated Management of Non-Native Plants in Natural Areas of Florida” SP 242/WG 209
- Updated training for certification training is maintained in:
  - “Aquatic Pest Control Training Manual” SM 003
  - “Natural Area Weed Management” SP 295

Numerous additional publications on specific topics and additional training aids are provided and searchable on the EDIS Web site, http://edis.ifas.ufl.edu, and the Center for Aquatic and Invasive Plants Web site, http://plants.ifas.ufl.edu.

Restricted Use Pesticide Applicator Certification Training and advanced topic training for earning CEUs is provided annually at the “Aquatic Weed Control Short Course” in Coral Springs and every two years in Panama City Beach. Assistance is
provided to County Agents for pesticide applicator training and private pond owners at the county level. Distance education via Polycom is also used for county level meetings. In-service training in for County Agents is provided, as needed.

**RESULTS AND IMPACTS**

Over 2000 Restricted Use Pesticide Applicators in the aquatic category and over 1,000 in the natural areas category have passed tests to become licensed applicators and maintain their licenses by earning CEUs.

**FUNDING SOURCE**

Internal funds.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

Need to determine the best method to measure impacts in a system that is not related to cash-crops; it is extremely difficult to determine a dollar-amount impact.

**SUPER ISSUES**

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.

**HIGH PRIORITY INITIATIVES**

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiatives 3, 2, and 1.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

CLEAN MARINA PROGRAMS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Libby Carnahan/Pinellas County Extension
UF/IFAS PROGRAM PARTNERS/UNIT: Florida Sea Grant Extension Agents
EXTERNAL PROGRAM PARTNERS: Florida Department of Environmental Protection, Clean Boating Partnership (Florida Fish and Wildlife Conservation Commission, Marine Industries of Florida, Florida Sea Grant, US Coast Guard Auxiliary, Marinas throughout the state of Florida)

SITUATION

- Florida is defined by water. With more than 1,350 miles of coastline, 50,000 miles of inland and coastal rivers and streams, 700 freshwater springs and countless lakes, Floridians depend on water more than any other natural resource. The continued success of the state’s $56 billion tourism industry, its $14 billion marine industry and $6.6 billion fishing industry rely on Florida’s waterways and coastlines to be clean. Since 2000, the Florida Department of Environmental Protection (FDEP) has encouraged clean boating through the development of the Clean Marina (CM) designation programs which recognize facilities engaging in environmentally friendly practices, beyond regulatory requirements, in and around Florida’s waterways.
- Target audience(s): Marina Owners and Operators, Boatyard Owners and Operators, Marine Retailers, Marine Industries, Boaters, Coastal Governments, General Public
- The Florida Clean Marina program is a state-wide program facilitated by the Florida Department of Environmental Protection. Florida Sea Grant is a partner of the Clean Boating Partnership (CBP). Sea Grant should continue to hold a seat on the CBP and attend CBP meetings. There are opportunities for Sea Grant and other Natural Resource agents to partner on Clean Marina walk throughs and workshop with their local DEP Clean Marina Program Coordinator.

PROGRAM OBJECTIVES

What do you intend the participants will know, think or do as a result of completing the program?

- The Florida Clean Marina Program is a voluntary designation program with a proactive approach to environmental stewardship. To become designated as a Clean Marina, facilities must implement a set of environmental measures designed to protect Florida’s waterways.

What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- Marinas will attend a sponsored workshop, begin an action plan, and hopefully achieve CM designation in the short time frame.

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?

- The Best Management Practices implemented as part of the CM program will help to improve water quality, increase staff safety, decrease hazardous waste spills, increase clientele and staff environmental awareness, decrease waste through recycling programs and more.
EDUCATIONAL METHODS

What topics and subject matter will you cover?

- These measures address critical environmental issues such as sensitive habitat, waste management, stormwater control, spill prevention and emergency preparedness.

What methods or activities will you use to teach program participants?

- Participants receive assistance in implementing Best Management Practices through on-site and distance technical assistance, mentoring by other Clean Marinas and continuing education. Designated facilities and those facilities seeking designation receive ongoing technical support from the Florida Clean Marina Program and the Clean Boating Partnership.

Are any methods used to specifically reach underserved and underrepresented clientele?

- Marinas are invited via email and when possible, phone and personal visit. Notice is filed in the Florida Administrative Weekly as well as online and with press releases to announce workshops.

RESULTS AND IMPACTS

Do you have a statewide evaluation plan in place or in progress?

- Yes, Marinas must complete the Clean Marina Action Plan Analysis and score enough points to be certified as a Clean Marina.

How do you measure program results and impacts?

- The number of marinas that enter the program, as well as those that sustain participation over many years are a testament to the success of the program. A pilot survey is underway to assess the economic and environmental impacts of the state-wide program.

What difference will this program make in the lives of participants or Florida's citizens?

- Participant marinas are recognized on the DEP website as Clean Marinas and are give a CM flag to fly at their facility. Outreach events promote the CM program and encourage boaters to patronize the marinas who adhere to higher environmental standards.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- Marinas that belong to the CM program and have submerged land leases with the state of Florida save 10% each year on the cost of their lease. Other economic benefits include decreased electrical costs from converting to increased efficiency, decreased water costs from converting to Florida Friendly landscaping, and so on.

FUNDING SOURCE

Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc.)

- Sea Grant has paid for travel costs for CBP representative to attend meetings. DEP funds (grants, in house) cover promotional materials such as signage for marinas, bilge socks, life vests, educational pamphlets).

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- Unsure, would have to ask DEP.
NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Do you need resources or additional financial support to continue to implement this program in the future?

SUPER ISSUES

What Super Issues does this program relate to? [Must list at least one.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  3 Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education.

- Initiative 6. Strengthening urban and rural community resources and economic development.
  1 Economic development and entrepreneurship. Improve economic vitality of Florida’s communities by engaging community members in assessments, strategic planning, and business/entrepreneurial support.
  3 Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

ECOTOURISM

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT:  Holly Abeels, University of FL IFAS Brevard County Extension; Joy Hazell, Florida Sea Grant/UF/IFAS Lee County Extension

UF/IFAS PROGRAM PARTNERS/UNIT:  Florida Sea Grant, IFAS Faculty involved in ecotourism (e.g. Taylor Stein), business planning, marketing, Florida Master Naturalist Program

EXTERNAL PROGRAM PARTNERS:  Florida Society for Ethical Ecotourism, Brevard Nature Alliance

SITUATION

Nature-based tourism is one of the fastest growing industries in the world. A 2011 national survey found that 90.1 million U.S. residents 16 years old and older (38% of the U.S. population) participated in wildlife-associated recreation. Nearly 71.8 million people in the U.S. fed, photographed, and observed wildlife in 2011 and they spent $55 billion on their activities. In 2011, over 4 million people participated in wildlife-watching activities in Florida and spent over $3 billion on those activities. It’s because of Florida’s diversity of natural and cultural wonders that attract people from outside of and within Florida to want to participate in nature-based tourism. With an increase in nature-based tourism it is important that ecotour operators provide quality opportunities for eco-travelers to experience nature in ways that lead to greater understanding, appreciation and enjoyment by adhering to the following ecotourism ethics:

- Employ knowledgeable staff/guides that provide accurate information.
- Are sensitive to and involve indigenous cultures.
- Contribute to the conservation of natural areas and local resources.
- Provide constructive and ongoing contributions to your local community.
- Evaluate programs and procedures to incorporate up-to-date knowledge and practices.
- Marketing which is accurate and leads to realistic expectations.
- Consistently meets client and community expectations.

Florida Sea Grant and UF/IFAS Extension can enhance ecotour operators’ knowledge and awareness of ecotourism principles through education programs and partnering with organizations like Florida Society for Ethical Ecotourism to provide statewide certification.

PROGRAM OBJECTIVES

1. Endorsing compliance with federal, state, and local laws regarding the protection of natural resources and customer safety.
2. Providing environmental education and awareness which encourage behaviors that contribute to the sustainability of Florida’s natural ecosystems and resources.
3. Promoting professionalism and integrity within the ecotourism industry by providing and maintaining a certification/recognition program for ecotour providers.

EDUCATIONAL METHODS

The agent was a Florida Society for Ethical Ecotourism (Florida SEE) board member and in that capacity co-wrote the certification program and helped raises the organization to statewide status. The agent will continue to partner with Florida Society for Ethical Ecotourism to educate ecotour operators on subjects which will increase their likelihood of reaching Florida SEE Certification. Educational workshops, webinars, field trips, and networking opportunities will be used for this program as well as certifications/programs through various other entities in Florida (i.e. Florida Master Naturalist certification and Florida Society for Ethical Ecotourism certification). Topics covered include tourism trends, latest
environmental and natural resources information/research (specific to the area the ecotour operators work in), business marketing and promotion, improving clientele experience and operator knowledge, and business management as well as natural resources and environmental education from the other certification programs.

**RESULTS AND IMPACTS**

Initial results will be measured by number of ecotour operators becoming certified by Florida SEE. Teaching event participants will be surveyed on knowledge gained and on if they use the knowledge in their business. Participants will also be asked if the knowledge and practices learned has helped in improving their business over time (i.e. increase in number of clientele, increased revenue, more streamlined business practices/management, etc.).

**FUNDING SOURCE**

Existing certification programs are participant paid. Educational workshops are either fee-based (i.e. $10 to cover cost of food) or free depending on the topic and if food is provided. Networking meetings are free and ecotour operators are encouraged to “host” a meeting by providing food and showcasing their business to other operators.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

The program will be maintained by those who continue to be interested in assisting ecotour operators and while there are operators interested in the program.

**SUPER ISSUES**

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.

**HIGH PRIORITY INITIATIVES**

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  2. Natural resources operations. Develop and sustain natural resource entrepreneur opportunities by teaching clientele how to start and maintain a businesses with focus on natural resources-related jobs.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
- Initiative 4. Producing and conserving traditional and alternative forms of energy.
  1. Community capacity development. Improve community energy policy and management decision-making quality and capacity by educating professionals in the built environment, government, and industry about how to foster environmental, economic and social forces to shape sound foundations for change.
- Initiative 6. Strengthening urban and rural community resources and economic development.
  1. Economic development and entrepreneurship. Improve economic vitality of Florida’s communities by engaging community members in assessments, strategic planning, and business/entrepreneurial support.
Florida Invasive Species Partnerships: Thinking Locally, Acting Neighborly

UF/IFAS Program Primary Contact(s)/Unit: C. Demers*, UF/IFAS School of Forest Resources and Conservation.

Situation
Invasive species know no boundaries and continue to degrade Florida’s habitats. If landowners and land managers wish to achieve long term success in controlling invasive species, it is critical for them to collaborate with all stakeholders.

Objectives
The Florida Invasive Species Partnerships (FISP) is striving to focus statewide efforts on prevention as well as treatment. By working together across agency and property boundaries, we hope to encourage development of innovative management approaches, provide new tools, decrease implementation costs, and ultimately increase effectiveness.

Methods
FISP developed a dynamic Incentive Program Matrix of existing federal, state and local funding sources, incentive programs and technical assistance for landowners in Florida. The interactive matrix database will allow private and public land managers to determine what current technical and financial assistance is available to meet their specific needs and coordinate control efforts across boundaries. FISP is also promoting Cooperative Weed Management Areas (CWMA) in Florida, to encourage development of local partnerships between federal, state, and local government agencies, tribes, individuals and various interested groups to manage noxious weeds or invasive plants in a defined area.

Results
To date there are 10 CWMA across Florida from Walton County to the Florida Key’s Invasive Task Force. The Incentive Program Matrix and locally led CWMA allow us to expand invasive species management efforts across the landscape and build community awareness.

Conclusion
Coordinated efforts serve to protect our valuable conservation areas, public lands and private lands from the continuing colonization of invasive species across the landscape.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

North Florida Pond Workshops

UF/IFAS Program Primary Contact(s)/Unit: Martin Main, Dean of Extension Office
UF/IFAS Program Partners/Unit: Currently, 5 county faculty from the NE Extension District actively teach pond workshops

Situation

Freshwater fishing is also a popular activity in this region. Although north Florida has numerous parks which allow fishing, many residents would like to be able to fish in their own stocked ponds for sport fish such as largemouth bass or food fish such as bluegills or channel catfish. While many county residents have what could be a fishing site on their property, they lack the management practices required to successfully maintain this water resource. Citizens of north Florida will greatly benefit from education on fish pond construction, selection of non-competitive species, stocking rate for the correct species and numbers of fish, water quality, and aquatic weed control. Residents must also know that once the pond has been correctly stocked, it must be harvested or the population will become overstocked, and stunted. This extension program will allow county residents to establish backyard ponds or pits that will provide countless hours of outdoor recreation for home owners as well as an economical source of fresh fish for consumption.

Program Objectives

Residents that attend these workshops will learn the basics of pond construction, the correct time of year to stock ponds, the recommended stocking rates for various fish species, how to maintain optimum water quality for the pond, and identification and control of aquatic weeds that are commonly found in recreational fishing ponds. Long term benefits include an increased citizen awareness of the importance of maintaining good water quality for north Florida, ponds lakes and rivers.

Educational Methods

The North Florida Pond Workshops have been taught in conjunction with Dr. Chuck Cichra, Dr. Denise Petty and Mark Hoyer. The workshops have been held at both county extension offices and at local pond sites. Instructors at the workshops have all used PowerPoint presentations, aquatic plant samples, and live fish and samples of fish parasites to help facilitate learning. The workshops held on site give participants to the chance to explore how the pond was constructed and learn how the owner properly maintained the pond for recreational fishing. The North Florida Pond Workshops do not specifically target under represented audiences.

Results and Impacts

The workshops provided residents of north Florida with important information on pond construction, fish stocking season, the recommended stocking rates for various fish species, maintaining optimum water quality for the pond, and identification and control of aquatic weeds. Attendees of these workshops now know how to correctly build, stock, and maintain a fishing pond. These ponds provide excellent outdoor recreation for families as well as an inexpensive source of protein.

Funding Source

The North Florida Pond Workshops charge a fee to recover the costs of providing a meal.

Needs to Maintain, Improve, or Grow Program

A better system of documenting program impacts and return on investment.
SUPER ISSUES

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Natural resources operations
  2. Environmental stewardship

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1. Water quality
  2. Public awareness of water issues

- Initiative 4. Producing and conserving traditional and alternative forms of energy.
  1. Conservation practices and efficiency improvement. Save energy by educating citizens and business people about the social, economic and environmental effects of energy use in Florida and conservation practices they can adopt as an integral part of their everyday lives.
  2. Alternative energy solutions. Expand the energy landscape by teaching citizens and business owners about the availability, viability, applicability, and use of alternative energy and water (as related to energy) sources.
  3. Community capacity development. Improve community energy policy and management decision-making quality and capacity by educating professionals in the built environment, government, and industry about how to foster environmental, economic and social forces to shape sound foundations for change.

- Initiative 5. Empowering individuals and families to build healthy lives and achieve social and economic success.
  1. Food safety and nutrition. Improve Floridians’ food choices and ability to handle food safely by providing education and intervention for consumers, families, and food handlers.
  2. Housing. Improve Floridians’ access to affordable housing (purchase and finances) and teach owners and renters how to operate and maintain their homes.
  3. Family financial management. Improve individual and family financial stability by teaching Floridians about knowledge and behavior aspects of money management.
  4. Aging well. Improve the lifestyle of older Floridians by educating individuals, families, and communities about aging-related issues.
  5. Human development and family relationships. Empower individuals to make positive lifestyle choices that improve physical and mental health, strengthen relationships, and improve parenting and child care.
• Initiative 6. Strengthening urban and rural community resources and economic development.

1 Economic development and entrepreneurship. Improve economic vitality of Florida’s communities by engaging community members in assessments, strategic planning, and business/entrepreneurial support.

2 Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.

3 Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.

• Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.

1 Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.

2 Organizational and volunteer systems. Foster learning environments to make positive 4-H Youth Development possible by educating caring adults about volunteerism and using youth-adult partnerships.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FLORIDA FOREST STEWARDSHIP PROGRAM

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Michael Andreu, Chris Demers, Pat Minogue, Bill Giuliano
UF/IFAS PROGRAM PARTNERS/UNIT: Faculty in Extension Offices and Research and Education Centers across the state participate in Forest Stewardship Program activities.
EXTERNAL PROGRAM PARTNERS: There are approximately 40 external partners (federal, state, local and private) that contribute expertise and assistance to FSP events and publications.

SITUATION
Over half of Florida’s forest lands are owned by nonindustrial private forest (NIPF) owners. Under continuous, active management, NIPF lands can make important contributions to the quality of our environment and economy including: a sustainable supply of timber, habitat for many species of wildlife, soil and water conservation, aesthetic qualities and recreational opportunities. Unfortunately, NIPF lands are often unmanaged, contributing fewer benefits than their potential; they may even pose hazards related to wildfire, insects and diseases, and spread of invasive exotic plants. At the same time, increasing development pressure in some areas offers owners of unmanaged lands much greater revenue than they can generate from idle land. Forest Stewardship offers opportunities for NIPF landowners to more actively manage their forest and related resources and to keep these lands in a productive and healthy condition for present and future owners.

PROGRAM OBJECTIVES
The Forest Stewardship Program (FSP) provides technical assistance and educational programs, through Florida Forest Service (FFS) (the administering agency), UF-IFAS, Florida Fish and Wildlife Conservation Commission and other state, federal, local and private partners, to NIPF owners to encourage and enable active long-term forest management. A primary focus of the Program is the development of comprehensive, multi-resource management plans for NIPF owners. Through a FFS grant, UF-IFAS SFRC develops and provides information and technology transfer services that enhance the management capabilities of landowners and resource professionals. In the short term landowners gain land management and planning skills, and a connection to a network of professionals and other landowners that can help and assist them with their land management challenges. Long term benefits include a stronger conservation ethic among landowners and professionals and increased planning, active management, and conservation of forest resources in Florida. When appropriate, natural resource professionals receive Continuing Education Units.

EDUCATIONAL METHODS
The FSP offers a variety of methods to reach landowners and professionals. Each year series of workshops and tours are provided across the state, covering a variety of topics including timber management, wildlife management, recreation management, succession and conservation planning, taxation and greenbelt assistance, and control of invasive exotic species. When appropriate, Polycom is used to reach a larger audience at multiple Extension facilities. The quarterly Florida Land Steward newsletter is sent to approximately 4,600 landowners and professionals across the state to deliver the latest news, results from recent research that may be useful for landowners and forest practitioners, program updates, certified landowner recognition, timber price update, and upcoming events. Over 30 extension publications on a variety of resource management topics are available through EDIS and the IFAS Solutions for Your Life web site. The FSP web site contains information and links for a vast array of topics. The Forest Vegetation Management web site contains a wealth of information about site preparation, herbicides, prescribed fire and other topics of importance to landowners and land managers. An email listserv and the FSP and Florida Land Steward Facebook pages maintain regular contact with clientele to keep them informed of upcoming events and relevant news. FSP is networking with Florida A&M University faculty in an attempt to reach underserved clientele.
RESULTS AND IMPACTS

The FSP has a statewide evaluation plan in place. Post-event evaluations are provided to collect information about the participants and their management objectives, relevance of the information provided, knowledge gain, intention to apply the information provided, how they learned about the event, and how they prefer to receive the newsletter and updates. Electronic evaluations are sent 3-6 months prior to workshops to measure longer term results and behavior change. Success stories are also collected in all evaluations, which provide a means of illustrating the difference this program makes in the lives of program participants, including some economic benefits. We do not have a good measure on return on investment for the FSP.

FUNDING SOURCE

Operational expenses for FSP are covered by an annual FFS Forest Stewardship Program grant, support from the Florida Sustainable Forestry Initiative Implementation Committee, sponsor contributions and event fees. Options to continue to fund FSP absent the FFS grant include a more robust fee-based cost-recovery system and/or support from other partners.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

A better system of documenting large-scale, long-term program impacts and return on investment is needed. Should the FFS grant be discontinued, additional financial support would likely be needed to continue to implement this program in the future.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
- Awareness and appreciation of food systems and the environment.
- Financial management for individuals and enterprises.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Natural resources operations.
  2. Environmental stewardship.
- Initiative 1. Increasing the sustainability, profitability, and competiveness of agricultural and horticultural enterprises.
  1. Sustainability of production systems and alternatives.
  2. Farm economics, entrepreneurship, and management.
- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1. Water quality. Improve the quality of Florida’s water resources by teaching target audiences how to implement agricultural Best Management Practices.
FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FOREST VEGETATION MANAGEMENT PROGRAM

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Pat Minogue, Assistant Professor of Silviculture, SFRC/NFREC, Quincy, FL
UF/IFAS PROGRAM PARTNERS/UNIT: Forest Stewardship Program, Conserved Forest Ecosystems Outreach and Research/SFRC

SITUATION

Forests cover 16.2 million acres or 47% of Florida’s land area. Forest industry represents a $16 billion value to Florida’s economy, but forest resources are also valuable for ecosystem services such as soil and water conservation, wildlife habitat, recreation, and aesthetic values. Forest land area in Florida has declined by more than 25% since the 1930’s, typical of much of the southeast, as land was converted to agriculture and urban uses in particular. Conventional forest industry declined in area by 23.5% between 1997 and 2012, and stumpage prices have declined 20% in the past 12 years, necessitating improved production efficiencies and alternative income sources to sustain forest ownership. This program targets IFAS county faculty, non-industrial private forest landowners, forest industry, and government or conserved forest land managers, to improve forest health, productivity, and to mitigate threats of wildfire and invasive plants.

PROGRAM OBJECTIVES

This program strives to increase the sustainability, profitability, and competitiveness of forestry enterprises by improving knowledge of silvicultural systems and promoting adoption of new technologies, effective and efficient forest vegetation management practices, and environmental stewardship. The success of commercial silviculture, ecosystem restoration, and invasive plant management is improved by providing information regarding the appropriate use of fire, machinery, and herbicides for greater profitability, ecosystem services, and environmental protection. Adverse impacts from the use of forest fertilizers, herbicides, and fire are mitigated by promoting effective BMPs and selection of site-specific methods. An important objective of invasive weed workshops is to teach participants to recognize invasive weed species and manage outbreaks early. Clients are given information regarding herbicide toxicity, action in plants, and environmental fate so they will use herbicides in a manner to minimize adverse environmental impacts. Clients are encouraged to work with “certified burners” or other knowledgeable professionals and to avoid too frequent fire intervals to protect against property loss. To protect streams and other bodies of water from sedimentation, clients are taught to follow BMPs when using heavy machinery in forestry operations.

EDUCATIONAL METHODS

Outreach activities in this program include presentations at county faculty in-service training events, grower workshops, Forest Stewardship programs, state vegetation management conferences, state invasive plant council annual meetings, regional extension workshops, and professional meetings. The program is supported by the “Forest Vegetation Management” website within the IFAS Solutions for Your Life extension framework to provide information regarding vegetation management in southern forests for silvicultural and wildlife management objectives. On-site program initiatives with forest industry involve applied forest vegetation management research to solve real-world management problems. On-line EDIS and publications co-authored with University of Georgia Extension faculty on the “Forest Productivity” UGA website strongly support this program.
RESULTS AND IMPACTS

A standard post session evaluation form is used to collect and compile information on participant job function and affiliation, acreage managed, and state residency. Program effectiveness is evaluated by determining the percentage of responders that learned something new, will do something differently, or learned something that improved productivity or reduced costs. Feedback regarding areas for improvement, new content interests, internet course interest, and overall satisfaction are collected. The cost savings or increased income resulting from the integrated “Forest Industry Initiatives” have been an important way to document impacts from this program’s integrated applied research and Extension efforts. Over the last five years this program has generated 3,673 forestry continuing education credits (CFEs) and 5,606 pesticide continuing education units (CEUs). A follow-up survey of workshop participants to assess long-term change and better identify economic outcomes is needed.

FUNDING SOURCE

This program is funded through integrated research and Extension funding, as the research program closely meets Extension needs. In the past five years, this program obtained $181,286 (Extension portion) in 14 external grants or contracts and $7,000 in 2 internal Extension grants.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

This Extension program is funded through integrated funding. In the last two years, private industry funding has become more important and I suspect that this trend will continue.

SUPER ISSUES

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.

HIGH PRIORITY INITIATIVES

- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.
  This program strives to increase the sustainability, profitability, and competitiveness of forestry enterprises by improving knowledge of silvicultural systems and promoting adoption of new technologies, effective and efficient forest vegetation management practices, and environmental stewardship.

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  This program improves water quality through teaching forest managers how to implement Silvicultural BMPs and contributes to water quantity by maintaining forest land area.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  This program teaches forest stewardship and the importance of forest ecosystem services.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Improving Florida Pond Management Practices

UF/IFAS Program Primary Contact(s)/Unit: Charles E. Cichra, SFRC Fisheries & Aquatic Sciences

UF/IFAS Program Partners/Units: Ken Langeland & Bill Haller [Center of Aquatic and Invasive Plants], Ruth Francis-Floyd & Denise Petty [College of Veterinary Medicine], and 25 county faculty who have pond management programs.

External Program Partners: There are currently approximately 20 external organizations (e.g., federal [USFWS, USDA NRCS, USDA ADC, US Army Corp of Engineers], state [FFWCC, local [five WMDs], and private aquatic weed control applicators) that contribute expertise and assistance to this program.

Situation

Florida has more than 100,000 ponds and 7,700 named lakes. While many of Florida’s ponds and lakes are natural, increasingly, ponds are being constructed for aesthetics, recreation, attracting wildlife, fire control, livestock watering, irrigation, flood control, or to collect and cleanse storm water runoff. Ponds and lakes often have water quality problems, poor fishing, fish kills, odor problems, unstable water levels, nuisance levels of aquatic plants, and can be unattractive to wildlife and people. Proper management can help solve these problems and ensure ponds and lakes are attractive, provide recreational opportunities for people, water for agriculture, and habitat for wildlife.

Freshwater recreational fishing in Florida is estimated to be worth $2.4 billion, with more than 1.9 million anglers participating. Many privately owned ponds and lakes exist, however, their fishery resource potential is underdeveloped. Many sites exist where recreational fishing ponds and lakes could be a productive alternative land use. Realistic opportunities also exist for utilization of existing ponds for fee fishing, sportfishing, and recreation (of direct or indirect economic value to the pond owner). Realizing this potential will allow private landowners to better utilize ponds and lakes as productive components of farms, or as enhanced recreational fishing resources with associated economic benefits.

Florida's growing population, which for the most part is located on or near water, has the potential to negatively impact aquatic systems. Floridians need to be informed as to how these systems function and how their activities affect these systems. By having such knowledge, Floridians will hopefully have a greater appreciation and understanding of their environment, and will change their activities to minimize any negative impact of their actions on aquatic systems.

The type of information needed by pond owners is diverse. Historically, both the Soil Conservation Service and the Florida Fish and Wildlife Conservation Commission have been sources of information and assistance, however, because of other demands within these agencies, they no longer supply this assistance. The Cooperative Extension Service provides this valuable role.

Program Objectives

- County faculty that interact with the public to address pond management issues, private pond managers in particular aquatic pesticide applicators, and the general public will gain a better understanding of their aquatic environment, in particular how pond and lake ecosystems function, and how to manage them to achieve their goals.
- New and existing pond and lake owners will employ recommended aquatic resource management practices.
- Landowners will increasingly utilize ponds and lakes to their benefit.

Educational Methods

This program has worked with over 50 county faculty over the years. Recently, many have retired, their position have been filled with individuals with little aquatic training. Recent and future effort will be expended to train new faculty. Pond
management in-service training programs have been and will be organized and conducted for new faculty. Topics include pond construction, fish stocking, fish harvest regulations, aquatic weed control, fish health management, water quality management, and sources of information and supplies.

Numerous pond management programs have been held in past years for the public. These will continue to be conducted throughout Florida, when requested by county faculty. These offer an excellent opportunity to educate pond owners, pond managers, and county faculty. Although not specifically targeted, minorities represent a major portion of our audience. A variety of extension materials have been and will be developed, including EDIS publications, PowerPoint presentations, videos, and websites.

Site visits will be made throughout Florida when requested by county faculty or the public. These provide an opportunity to train county faculty on a one-on-one basis, and provide quality information to clientele.

RESULTS AND IMPACTS

County faculty are more knowledgeable and better able to respond to requests for pond management/ecology information. County faculty are conducting their own workshops using materials provided to them through this educational effort. County faculty are preparing articles for inclusion in their own newsletters.

Aquatic pesticide applicators are managing aquatic weed problems with reduced impacts on fish populations and other components of aquatic systems by being better informed as to how their activities relate to the limnology of the systems that they are trying to manage. Aquatic pesticide workshop attendees passed the Florida Department of Agriculture and Consumer Services’ aquatic pesticide certification test at twice the rate as those who did not attend our workshops.

In the last 10 years, >15,000 pond owners, and the general public, are more aware and better able to understand and manage water quality problems, poor fishing, fish kills, pond bank erosion, odor problems, unstable water levels, and nuisance levels of aquatic plants and algae.

FUNDING SOURCE

At the state and regional level, this program operates using primarily RREA funds and funds from the Center for Aquatic and Invasive Plants. In addition, UF SHARE, overhead, and residual funds are used. At the county level, some pond management workshops are funded on a fee-based cost recovery system.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Reinstatement of lost state funding for one technical support staff (senior biologist) is needed.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality
  1. Environmental stewardship
  2. Natural resources operations
- Secondary: Initiative 2. Enhancing and protecting water quality, quantity and supply
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

INVASIVE PLANT ID/CONTROL TRAININGS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Maia McGuire, Mark Warren (Flagler County Extension), Matt Lollar (Seminole County Extension), Eleanor Foerste (Osceola County Extension)

UF/IFAS PROGRAM PARTNERS/UNIT: Chris Demers (School of Forest Resources and Conservation/Forest Stewardship program)

EXTERNAL PROGRAM PARTNERS: Florida Forest Service, First Coast Invasive Working Group, East Central Florida CISMA, Central Florida Invasive Species Working Group, Osceola County CWMA, Marion County CISMA, St Johns Soil & Water Conservation District, Putnam Soil & Water Conservation District, St Johns County land management, Flagler County land management.

SITUATION

- Control and management of invasive species of plants and animals in the US is estimated to exceed $120 billion annually. Florida ranks among the top three states in the US in number of invasive species and the economic, environmental, and negative quality of life impacts they cause.
- Target audience: Public and private land managers; forest, parks & roadway landscape maintenance workers
- Extension faculty should partner with the statewide network of Cooperative Invasive Species Management Areas to offer these trainings. CISMAs have large networks of participants/members, and have education as one of their goals, but often do not have anyone in the group who is an educator (except for extension faculty).

PROGRAM OBJECTIVES

- Land managers and their maintenance staff will be able to identify the most common invasive plants in their geographic area (so that they can control them in natural areas)
- By recognizing invasive plants, workers will take appropriate steps to remove/control them as soon as they are spotted. Workers will also take steps to prevent the spread of the invasive plants (e.g. by rinsing equipment before transferring it to another location).
- In the long-term, the spread of invasive plants throughout Florida will be slowed.
- Participants can receive pesticide applicator Continuing Education Units (CEUs)

EDUCATIONAL METHODS

- Instructors use PowerPoint presentations, fresh and preserved plant samples to teach participants how to identify the “top” dozen invasive plants in the county. The workshop also includes a presentation and demonstration about control methods, and a hands-on identification activity/quiz using plants and plant parts. Participants watch a USDA/US Forest Service DVD called “Dangerous Travelers” which explains the need to manage equipment properly to prevent the unintended spread of invasive plants through transport of seeds, rhizomes, etc.

RESULTS AND IMPACTS

- A TurningPoint pre/post test is used to measure knowledge gain at the beginning and end of the 4-hour workshop. Participants’ ability to identify invasive plants using actual plant samples (with some natives mixed in) is also assessed using answer sheets where participants match invasive plant names with samples.
It is much less expensive to prevent the introduction of invasive plants (or eliminate them when they first appear) than to treat large-scale invasions. Recently (2012), two patches of Old World Climbing Fern were found and treated in Duval and St Johns Counties. Invasive plant trainings by the FCIWG are credited with resulting in these reports and subsequent treatments. Old World climbing fern is not yet established in either Duval or St Johns County, and we hope to keep it that way.

**Funding Source**

- County funds pay for printing and laminating of materials used for the workshop. Local soil and water conservation districts sometimes are able to provide funds to provide lunches for participants.

**Needs to Maintain, Improve, or Grow Program**

- Need to raise awareness about CISMA and encourage extension agent involvement in these groups.

**Super Issues**

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.

**High Priority Initiatives**

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.
  1. Sustainability of production systems and alternatives. Maintain and enhance production systems of all types and scales by improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, food safety and environmental stewardship.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

THE EXPANDING ROLE OF UF/IFAS EXTENSION IN THE MANAGEMENT OF INVASIVE SPECIES ON PUBLIC AND PRIVATE LANDS IN NORTH FLORIDA

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: J. Ludlow*, Calhoun County Extension, M. Brinkley, Liberty County Extension, R. Carter, Gulf County Extension, H. Grant, Gadsden County Extension, B. Mahan, Franklin County Extension, C. Smith, Jackson County Extension.

OBJECTIVES

North Florida landscapes are not typically associated with having monocultures of invasive plants like those found in south Florida, but there are many non-native species which impact thousands of acres and threaten native landscapes in north Florida. The Calhoun County Herbarium has documented 93 non-native species in Calhoun County alone. Because successful management of invasive species on public lands is not effective without management on adjacent private lands, it is critical to educate private landowners. The University Of Florida/Institute of Food and Agricultural Sciences (UF/IFAS) Extension Service is structured in a way that can support federal, state, and local government management efforts on public lands, by educating the private landowner.

METHODS

Five multi-agency, multi-county invasive species workshops were held in 2010. The objectives of these workshops were to educate private landowners about the important role they play in long-term invasive species management, about controlling locally common invasive plants, and about funding opportunities for which they may be eligible.

RESULTS

One hundred thirty seven (137) people attended these workshops and gained knowledge of invasive plant management. The majority of participants (>80%) indicated they would change some aspect of their current land management practices based on what they learned.

CONCLUSIONS

These results are encouraging and the UF/IFAS NW Extension District will continue these multi-county, multiagency efforts through future workshops, field days, newsletters, and other suitable channels of information.
Florida Extension Initiative 3: 
Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Reducing Risks and Improving Management of Non-Native Fishes

UF/IFAS Program Primary Contact(s)/Unit: Jeff Hill, SFRC Fisheries and Aquatic Sciences
UF/IFAS Program Partners/Unit: Tropical Aquaculture Laboratory
External Program Partners: Florida Fish and Wildlife Conservation Commission; Florida Department of Agriculture and Consumer Services; U.S. Fish and Wildlife Service; U.S. Geological Survey; U.S. Department of Agriculture; Center for Environment, Fisheries, and Aquaculture Science (UK), Introduced Fish Section of the American Fisheries Society; Florida Tropical Fish Farms Association, Pet Industry Joint Advisory Council

Situation

Florida is one of the most heavily invaded regions in the United States and the world, with introductions of over 160 freshwater fish species. Non-native species present a dilemma for natural resource management and agriculture agencies because some species are invasive, causing ecological or economic harm, whereas some species provide ecological, economic, or other benefits. Fisheries and aquaculture are good examples. Recreational fishing in Florida had a total estimated value of $4.3 billion in 2006. Some non-native species threaten fisheries, yet some fisheries are actually based on or augmented by non-native species. Economic losses due to non-native fish in Florida have not been estimated, but a value of $5 billion annually is cited for the U.S. Many of the fishes successfully established in Florida are aquarium or food species. Yet, Florida’s aquaculture industry, dominated by the production of non-native species, has an annual farm-gate value of $75-100 million. Moreover, Florida accounts for 90-95% of U.S. domestic ornamental fish production and a high percentage of ornamental fish imports. Collectively, these non-native species contribute substantially to the $2.5 billion aquarium industry in the U.S. (fish value about $1.2 billion).

Florida has a long history of introductions of non-native aquatic species and has in turn developed one of the most comprehensive regulatory frameworks in the U.S. for addressing this issue. Effective and reasonable regulation balances environmental protection with economic and fiscal realities and incorporates stakeholder participation to improve ecological and socio-economic sustainability. Considerable scientific information is needed to effectively accomplish such regulation, including the use of risk analysis methods. Florida agencies actively seek information on non-native organisms, including biology taxonomy, ecology, and management options, to fulfill their mandates of conserving natural resources, preserving biodiversity, or promoting and protecting agriculture. The aquaculture and aquarium industries require science-based information concerning species in culture or proposed for culture, risk management for culture facilities, regulations, and non-native species pest management to enhance the sustainability and profitability of their activities.

This extension program is geared towards providing clientele with specific information and decision-support products to reduce the risks associated with new species introductions and to help manage species that are already established.

Program Objectives

- Educate agency personnel, industry groups, aquaculture producers, teachers, county and Sea Grant Extension faculty, and the public about non-native aquatic species, their biology, distribution, impacts, and management.
- Provide information to agency personnel, industry groups, and aquaculture producers about ecological risk analysis methodology and the implications of risk and risk management, including science-based regulation. Assist regulatory agencies with risk analysis efforts.
- Educate industry groups, aquaculture producers, and agency personnel about non-native aquatic species regulations and Best Management Practices to facilitate compliance and to reduce the introduction of non-native aquatic species into the environment.
EDUCATIONAL METHODS

Educational methods vary widely depending on the specific topic and audience. Topics include identification, biology, ecology, distribution, and impacts of non-native fishes, as well as management topics such as control methods, regulation/Best Management Practices, and risk analysis. Much of the program is delivered via presentations, publications, site visits, informational displays, and one-on-one communications. Underserved and underrepresented clientele are not specifically targeted but are represented throughout the audience of the extension program, including agency personnel, aquaculture producers, teachers, and the public.

RESULTS AND IMPACTS

Agency staff, aquaculture producers, and teachers are more knowledgeable concerning identification, biology, distribution, and impacts of non-native fishes. Agency staff, industry groups, and aquaculture producers are more knowledgeable about ecological risk analysis and non-native aquatic species regulation. Changes in behavior are clearly evident in agency and aquaculture audiences and non-native species regulations have been set and changed based on the extension program.

Evaluation is primarily through observation of changes and interviews with stakeholders. Specific programs (e.g., teacher’s education) are evaluated via pre- and post-tests and questionnaire. Economic benefits are not formally evaluated, though economic and ecological benefits accrue from a reduction in realized risks of invasive fishes and from decisions made by the aquaculture industry in relation to potential new species culture.

FUNDING SOURCE

- Funding for this program is provided by an opportunistic mix of state, federal, and industry sources. This program receives no state Extension or support-staff funding. Primary funding for activities and travel has historically been the RREA program, though this source has recently been reduced to about one fifth of previous levels. Overhead, residuals, and other laboratory accounts support much of the remaining activities and travel and will be shouldering an increased burden. The US Department of Agriculture-Southern Regional Aquaculture Center has funded a series of regional extension publications. The Florida Fish and Wildlife Conservation Commission, Florida Department of Agriculture and Consumer Services, and US Fish and Wildlife Service have funded workshops and some extension activities related to risk analysis. The USDA-NIFA has funded some outreach to agencies in the area of risk assessment via the now-defunct TSTAR-C program. The Florida Tropical Fish Farms Association and the Pet Industry Joint Advisory Council have funded some travel for extension-related meetings and workshops.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- More consistent and reliable source of funding; development of more educational materials (EDIS publications, videos, PowerPoint presentations, etc.) to multiply my ability to reach a larger and more diverse audience; increased use of graduate and undergraduate students plus volunteers in the program

SUPER ISSUES

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making.
  3. Environmental stewardship.
- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  2. Water quality.
Forest pests are causing increasing damages across the country and are entering public awareness and mainstream media. But most lay citizens, as well as extension personnel, have never or rarely seen a bark beetle, and have little understanding of their ubiquity, appearance, and management options. Extension agents, industry entomologists, and other stakeholders who need bark beetle identification to perform their duties do not have any opportunity for hands-on training, and consequently identification of even common species often requires experts. Also, the contemporary general population lives increasingly disconnected from the natural world, and thus public support for research on forest health issues and environment conservation is in danger.

PROGRAM OBJECTIVES

This program is intended to increase awareness of forest pests in two primary audiences:

1. Professionals connected to forestry, mostly extension personnel, forest industry experts and interested landowners and land managers. The professional audience will be offered Bark Beetle Academy: a week-long workshop providing intense training in contemporary bark beetle identification and management. Participants of the annual workshop will be able to identify the most important forest pests, understand their likely impact, recognize when management action is due, and use appropriate management methods. Participants will receive a certificate or CEUs issued by the University of Florida.

2. Youth, educators and nature enthusiasts interested in (or in need to learn about) forest health. This audience, oriented more towards natural resource conservation, will be addressed in a project Backyard Bark Beetles. In this project, participants will be instructed to create and deploy a simple beetle-trapping device in their own surroundings. Captured insects will be processed by us, and the data, insect images and educational metadata will be posted on an online interactive map as feedback for participants. The project represents the increasingly popular Citizen Science approach: it will benefit both the participants as an experiential learning opportunity, as well as the scientists in the form of new data.

EDUCATIONAL METHODS

The Bark Beetle Academy workshop will feature in-class lectures, microscope lab identification sessions, and field trips to impacted areas. Instruction will be provided by leading experts from local (Florida Forest Service), regional (Southeastern forest entomologists) and international institutions. A website for the project has been developed and is currently being advertised: http://ambrosiasymbiosis.org/academy/

Backyard Bark Beetles will rely on collaboration with Extension personnel and 4-H coordinators, but also a network of collaborating teachers and nature education centers (i.e., museums). We will work with these local coordinators on the best approach to incorporate the project into their curriculum. Participants will gain several educational outcomes: 1) “yes, there are bark beetles in my backyard!”, 2) “most bark beetles are completely harmless”, 3) “bark beetles are very diverse, even in my backyard”, and most importantly and inevitably, 4) “most species identified from my backyard are actually exotic!”
RESULTS AND IMPACTS

The overall program is still under development; therefore the first data on impact will be available in 2013.

However, the long-term benefits to the State and landowners will be great. Forestry in Florida generates $21.2 billion annually, more than fruits and vegetables combined, and provides 81,000 jobs, almost all in rural communities. Widespread knowledge of forest pests, their role in forest ecosystems, and appropriate management methods is essential to the maintenance of this resource. The program presented here – Enabling Florida to tackle the impact of forest pests – will educate forestry workforce, extension personnel and landowners in forest pest issues, and enable them individually and collectively to prevent and mitigate damage.

Behavioral change and economic benefits will be assessed annually by questionnaires sent to all participants of both program components.

FUNDING SOURCE

Supported by:

- RREA funds to the UF School of Forest Resources and Conservation
- NSF grant to J. Hulcr.
- IFAS (Office of the Dean for Research)
- CALS (Office of the Dean for Teaching)

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Better connection to the Extension network.
- Funding for year 2015 and beyond.

SUPER ISSUES

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.

HIGH PRIORITY INITIATIVES

- Initiative 1. Increasing the sustainability, profitability, and competiveness of agricultural and horticultural enterprises.
  1 Sustainability of production systems and alternatives. Maintain and enhance production systems of all types and scales by improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, food safety and environmental stewardship.
  3 Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  2 Natural resources operations. Develop and sustain natural resource entrepreneur opportunities by teaching clientele how to start and maintain a businesses with focus on natural resources-related jobs.
3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.

1 Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
**Florida Extension Initiative 3:**
**Enhancing and Conserving Florida’s Natural Resources and Environmental Quality**

**Ecosystem-Based Management:**
**Marine and Estuarine Goal Setting for South Florida**

**UF/IFAS Program Primary Contact(s)/Unit:** Pamela Fletcher, Regional Extension Coordinator, Florida Sea Grant

**UF/IFAS Program Partners/Units:** Martin Main, Program Leader NR and Sea Grant Extension

**External Program Partners:** Approximately 90 external partners (federal, state, local, and private) that contribute expertise and assistance to develop project information.

**Situation**

There is a need to synthesize ecosystem science for decision making especially in the coastal/marine region of south Florida. The Marine and Estuarine Goal Setting for South Florida project (MARES) is an attempt to make science more relevant to ecosystem restoration efforts in south Florida and to facilitate ecosystem-based management (EBM) in the region’s coastal marine ecosystem.

Target audiences are: 1) Resource managers/decision-makers, 2) members of community organizations, and 3) citizens interested in local and regional community issues

**Program Objectives**

The MARES project goal is to “reach a science-based consensus about the defining characteristics and fundamental regulating processes of a South Florida coastal marine ecosystem that is both sustainable and capable of providing diverse ecosystem services.” The approach taken in pursuing this goal is based on the hypothesis that scientists participating in a systematic process of reaching consensus can more directly and effectively contribute to critical decisions being made by policy makers and by natural resource and environmental management agencies. Once complete (January 2014), MARES findings can be incorporated into UF extension programs such as the Florida Master Naturalist Program (FMNP).

**Educational Methods**

Interpersonal Communications: One-on-one meetings with decision-makers and focus group sessions

Formal and nonformal education: Science synthesis reports, fact sheets, Internet-based products (website and blog), power point presentations (webinar), case studies, curricula materials, reporting reading-writing assignments, focus/study groups

**Results and Impacts**

**Results**

- Resource managers and decision-makers use science synthesis for improved understanding of the ecosystem and informed decision making
- The University of Florida is recognized as a reliable source of science-based information
- Community members and citizens build an awareness of the coupled human-ecological ecosystem in South Florida resulting in a more sustainable, resilient coastal community

**Impacts**

- Short-Term: Improve the awareness of South Florida’s ecosystem by updating the FMNP and relevant extension materials with MARES science and case studies. Metrics include number of publications (EDIS, peer-reviewed publications, reports, fact pages) produced for target audience and FMNP curricula.
- Medium-Term: Build an understanding of the MARES ecosystem-based management process within the FMNP and extension professionals for inclusion in statewide programming. Metrics include number of extension professionals using MARES-related materials in outreach education and the FMNP course.

- Long-term: Empower resource managers/decision makers and community citizens to make informed resource management decisions and report measurable results. Metrics include the number of resource management decisions being made with MARES information, numbers of acres influenced by those decisions, and effects of those decisions on plant communities, fish and wildlife populations, or other measurable ecosystem responses.

**Funding Source**

MARES is funded by the National Oceanic and Atmospheric Administration Center for Sponsored Coastal Ocean Research.

**Needs to Maintain, Improve, or Grow Program**

Funding is needed in 2014 to carry out incorporating MARES-related information into extension programs (e.g., training, program costs (materials and travel), regional extension coordinator salary, and formal evaluation of short, medium, and long-term activities.

**Super Issues**

What Super Issues does this program relate to?

2. The sustainability and conservation of resources in our Florida communities.

4. The opportunity for our youth to experience science, technology, engineering, and math (STEM).

**High Priority Initiatives**

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  
  2. Natural resources operations. Develop and sustain natural resource entrepreneur opportunities by teaching clientele how to start and maintain a business with focus on natural resources-related jobs.
  
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
The state of Florida has acquired >2 million acres of ecologically sensitive lands during the past 30 years. Managing these sensitive and valuable lands in such a way that the natural resources found within are protected for future generations requires an extensive breadth of expertise that is typically not acquired through formal academic education. The majority of new hires in agencies with responsibilities for managing these resources have not received training in the diversity of subject areas with which they need familiarity in order to effectively perpetuate long-term sustainability. We have engendered willingness on the part of various agencies and organizations with different missions to participate in a unified training program (the Natural Areas Training Academy). This training program was initiated by The Nature Conservancy in 2000; I assumed leadership in 2008. The program brings together regional land management experts from numerous agencies and organizations with extension specialists and agents to provide training and share experiences with newer land managers.

The official mission of the Natural Areas Training Academy (NATA) is to create a network of land managers with current knowledge and skills to conserve Florida’s natural resources. The specific objectives are to:

- increase knowledge of sustainable land management practices;
- invoke changes in behavior of trainees (i.e., facilitate adoption of sustainable practices);
- create a network of trained land managers and foster partnerships among them to promote future learning from one another;
- provide training that results in certification;

The training curriculum offered by NATA was developed in 2000, when a group of experienced land management professionals representing numerous agencies and organizations convened for this purpose. These representatives provided insight into the specific information and skills they believed job candidates would need to be competitive for jobs in their respective agencies and organizations. A series of workshops was then developed to provide training that targets the set of skills these representatives believed new hires should have. A ‘Certificate in Natural Areas Management’ is conferred to individuals who complete the series of 5 workshops that cover the most important topics identified by these land management experts. The 5 core workshop topics are:

- Site assessment and management planning
- Promoting biodiversity
- Ecosystem management
- Managing visitors and utilizing volunteers in natural areas
- Managing lands through prescribed fire
Other workshop topics less frequently offered are:

- Vegetation monitoring
- Restoration planning for forested lands
- Plant communities of Florida
- Plant communities of the Panhandle

All NATA workshops were historically 3-6 day events offered at most once per year. In 2012 we began the process of converting several workshops to a hybrid format, with a portion of each curriculum material presented online, followed by shorter, in-person skill-building events in the field. Enrollment in each workshop is capped at 25 individuals per workshop to promote a learning environment where each trainee receives individual attention from instructors. Upon completion of the full complement of trainings NATA offers, trainees are better prepared to integrate science-based management techniques associated with the conservation of biodiversity into their everyday work. I oversee an Advisory Committee that meets annually to ensure NATA is continuing to meet the needs of professional land managers.

RESULTS AND IMPACTS

I distribute evaluations at the close of each workshop to assess how well our trainings are meeting our objectives. These surveys indicate overwhelming evidence of increases in knowledge and anticipated changes in behaviors as a result of the new knowledge and skills obtained through NATA trainings. On a triennial basis, I also conduct surveys that gauge interest in potential future workshop offerings and barriers to enrollment to guide our planning efforts.

FUNDING SOURCE

The entire NATA program is run by myself and my biological scientist, who works on NATA part-time. Although at one time we had contracts with numerous agencies, we currently rely entirely on registration costs to cover our travel expenses and a portion of my biological scientist’s salary.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Funding to cover a portion of my biological scientist’s salary would ensure the sustainability of the program to a degree that is not currently present. At the present time, we charge relatively high registration fees in case workshops do not fill and we therefore make little profit to use towards her salary. If there were a small but steady supply of funds that could be counted on to support the time she invests in running the program, we could charge less, which would likely lead to increased attendance. A better system of documenting volunteer instructor hours and return on investment would also be advantageous.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
- Initiative 2. Enhancing and protecting water quality, quantity and supply.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Nature-Based Tourism and Recreation Opportunity Development in Florida

UF/IFAS Program Primary Contact(s)/Unit: Taylor Stein, School of Forest Resources and Conservation

UF/IFAS Program Partners/Unit: Holly Abeels, Sea Grant and Brevard County Extension; Holly Ober (Natural Areas Training Academy), Department of Wildlife Ecology and Conservation

External Program Partners: Florida National Scenic Trail Staff and Recreation Personnel, US Forest Service; Nels Parsons, St. Johns River Water Management District; Other county, state, and federal land management organizations that participate in recreation management and the Natural Areas Training Academy

Situation

Much natural resources research has focused on biological- and ecosystem-level issues, and IFAS extension specialists have long provided quality information in this arena. However, researchers and managers have found that the social system is a vitally important cog in the natural resource decision-making process for both public and private landowners. With expertise in nature-based tourism, recreation, and the human dimensions of natural resources management, I have been able to provide extension programming that impacts the management of public and private conservation areas, as well as, communities.

The primary target of my program is natural resource managers on public and private lands who are in need of information to better incorporate the human dimensions into decision-making – particularly in terms of managing for valued recreation and tourism nature-based opportunities (e.g., ecotourism). Florida provides a great opportunity to expand opportunities to residents’ and tourists, which could result in economic, social, personal, and environmental benefits. However, actively managing quality nature-based recreation and tourism in Florida’s natural areas is still a mystery to many managers, who might not even aware that management strategies and planning frameworks exist to provide for sustainable and quality recreation and tourism opportunities.

Program Objectives

My extension program helps Florida’s residents, landowners, resource professionals, and decision-makers implement scientifically-based nature-based tourism and recreation management practices throughout the state. They need knowledge and skills to efficiently and effectively provide for the public’s demand for recreation and tourism opportunities while at the same time sustaining the environmental quality of natural areas. Potential short- and medium term knowledge participants would include the awareness that tourism is a potentially beneficial natural resource practice that can result in a multitude of benefits if appropriately managed for. Also, participants would develop basic business and natural resource management skills that would allow them to create quality recreation opportunities on their properties. Long-term impacts would include increased recreation participation on public and private lands that would result in more environmentally engaged citizenry, greater economic benefits to individual businesses and communities, and greater protection for environmentally sensitive lands that host recreation and tourism.

Educational Methods

I serve a variety of audiences in order to introduce nature-based tourism and recreation management frameworks into public and private natural resource management. The majority of my extension activities focus on the impacts (e.g., economic, ecological, or social) of increased recreation. These impacts are often related to how managers can best work with visitors while they are engaging in recreation issues on conserved lands. The other areas of my work focus on regional planning and tourism policy related to nature-based tourism and recreation. In these cases, I work to integrate managers of conserved lands with county decision-makers and local tourism professionals to provide holistic and sustainable tourism plans for city and county areas.
My on-going educational methods include videos posted on an extension website – devoted to this program. I also have written a variety of EDIS papers associated with the business and natural resource management issues related to nature-based tourism management. Finally, I attend extension workshops to present introductory seminars on nature-based tourism or other specific aspects related to the topic. Another major initiative is that I act as co-instructor for the Visitors and Volunteers Workshop, which is part of the Natural Areas Training Academy (NATA), led by Holly Ober. In collaboration with Nels Parsons with the St. Johns River Water Management District and Dr. Ober and her staff, we have developed several on-line presentations that describe the management of visitors and volunteers. Upon completion of the on-line training, we host a day-long workshop where we specifically address management issues with participants.

RESULTS AND IMPACTS

Extension programs are evaluated on a case-by-case basis. Both participation and quality are evaluated when possible. In terms of EDIS papers and on-line videos, numbers of people accessing the sites can be determined. The NATA workshop is extensively evaluated in terms of the on-line material, as well as, the one-day workshop.

FUNDING SOURCE

Funding sources usually are provided by the state and through RREA. Funding sources are low, so more educational materials are planned, than can be delivered. For NATA, funding is mostly provided through participants’ registration fees; however, some state money also contributes to the workshop. In the past, specific projects with counties (Jackson and Baker) have resulted in grant funding to achieve specific objectives.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Additional state funding to assist in travel and general program development is always in need. I would like to initiate more workshops and potentially In-Service Training for county agents if resources were more available. I would also like to develop a greater network of Extension specialists and agents who are involved in recreation and tourism issues, who I could work with to enlarge this program.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making.
  2. Natural resources operations.
  3. Environmental stewardship.
- Initiative 6. Strengthening urban and rural community resources and economic development.
  1. Economic development and entrepreneurship.
  2. Community capacity building.
  3. Resources for community decision-making.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

IFAS ASSESSMENT OF NON-NATIVE PLANTS IN FLORIDA’S NATURAL AREAS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Dr. S. Luke Flory, Agronomy Department

UF/IFAS PROGRAM PARTNERS/UNIT: Currently, state faculty in the Agronomy Department and the Center for Aquatic and Invasive Plants.

EXTERNAL PROGRAM PARTNERS: Federal, state, local and private entities also contribute as needed.

SITUATION

The initial IFAS Assessment was developed in 1999 by a subcommittee of the IFAS Invasive Plants Working Group (IPWG) and consisted of a single component evaluating non-native plants that were known to be invading natural areas of Florida. Continued research efforts have helped to evolve and expand the IFAS Assessment into a well-defined mechanism that today is comprised of three components: the Status Assessment, the Predictive Tool, and the Infraspecific Taxon Protocol. Documents pertaining to each of these three components are available to view and/or download from the IFAS Assessment of Non-Native Plants in Florida’s Natural Areas website (http://plants.ifas.ufl.edu/assessment.html). There is a growing awareness in Florida and nationally of problems related to non-native invasive species. For example, the problem of invasive species in the United States is second only to habitat loss as the leading threat to threatened and endangered species. In 1999, federal government recognized the problems associated with invasive species and President Clinton signed an Executive Order that provided provisions to prevent introductions, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Only a small percentage of introduced species create problems in natural areas, and most quantifiable ecological and economic impacts caused by the invasive plants in this group are negligible. However, a few invasive plant species have caused catastrophic damage. The IFAS Assessment provides extension faculty with consistent recommendations concerning the use of non-native plants throughout Florida.

PROGRAM OBJECTIVES

The objective of the Status Assessment is to summarize relevant ecological, management and economic value information on species already present in Florida by latitudinal zones. This approach provides substantially more information than would be indicated by simple presence or absence of an “Invasive Species List.” This information is summarized by four indices, Ecological Impacts, Potential for Expansion, Difficulty of Management and Economic Value. Wherever possible, predictive items have been avoided, and are directed to the Predictive Tool. Most questions have been reduced to simple two-choice answers. The Status Assessment does not address economic impacts other than management costs and economic value. Such data (lost revenue, management costs other than control in natural areas, etc.) should be included in any detailed risk-benefit analyses of the current, or future, infestations of a species.

The Predictive tool is used to evaluate species that are either new to the state or proposed for a new use (i.e. biomass planting, biofuels). This protocol is a version of the Australian Weed Risk Assessment that has been modified to specifically apply to Florida and consists of 49 questions designed to predict the invasive potential of a given species. Gordon et al. (2009) tested the accuracy of the predictive tool and determined 90% accuracy for major invaders and 70% accuracy for non-invaders.

The Infraspecific Taxon Protocol is an internal tool for UF faculty to tests cultivars, varieties, or subspecies of resident species that are known to be invasive and is used to determine if the same recommendations apply from the resident species to cultivars, varieties, or subspecies.
EDUCATIONAL METHODS

The IFAS Assessment is updated annually and results are posted on a website: http://plants.ifas.ufl.edu/assessment/. The website contains all the information needed for extension faculty. Also, the IFAS Assessment staff are available and readily give talks at universities, schools, gardening clubs, professional meetings, etc. to disseminate information regarding the IFAS Assessment.

RESULTS AND IMPACTS

Over 725 non-native plant species have been assessed with 89 found to be invasive and 29 predicted to be invasive. Through continued monitoring through the Status Assessment, the conclusions of 104 species have been amended. The Assessment has also been written into state legislature and is included in the Biomass Planting Rule. The Florida Department of Agriculture and Consumer Services (DACS) uses the Assessment for evaluation of proposed bioenergy crops and implementation of their biomass planting rule. To date 17 species have been evaluated for FDACS with 6 recommended, 5 requiring further evaluation, and 6 rejected.

FUNDING SOURCE

UF/IFAS Deans for Research and Extension and Florida Fish and Wildlife Conservation Commission

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Website redesign for a more user friendly format.
- Hire one or more support staff to assist with the IFAS Assessment.
- Expand program to include one or more graduate students.

SUPER ISSUES

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  2 Natural resources operations. Develop and sustain natural resource entrepreneur opportunities by teaching clientele how to start and maintain a businesses with focus on natural resources-related jobs.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.
  1 Sustainability of production systems and alternatives. Maintain and enhance production systems of all types and scales by improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, food safety and environmental stewardship.
2 Farm economics, entrepreneurship, and management. Help producers and growers protect the economic sustainability of their operations by teaching about agricultural business planning, financial management and succession planning.

3 Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1 Water conservation. Conserve Florida’s finite freshwater resources by teaching rural, suburban and urban audiences how to use less water.
  3 Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education.
Situation

Sea level rise is a growing threat to Florida's coastal ecosystems. Ecosystems in low-lying areas are already changing due to increasing inundation by salt water: increasing inundation, increasing salinity, erosion from higher high tides and increased storm intensity have begun to change, and even eliminate, certain habitat types in areas like the Florida Keys, where sea level has risen 8-9 inches over the last 100 years and is expected to rise another 1-4 feet by 2100.

The wildlife and habitat managers of the Florida Fish and Wildlife Conservation Commission (FWC) need information and tools to help them understand and plan for the effects of sea level rise on coastal wildlife and habitats. While there is much information available about climate change, and sea level rise specifically, many FWC wildlife and habitat managers need help finding the most relevant data and tools. Without this information, efforts to adapt to sea level rise will not be based on the best available science and may be less effective that otherwise, wasting precious resources. Without adaptation efforts, species, ecosystems and conservation lands - investments made for the people of Florida - are at risk.

There is also a need to insert sea level rise as a factor in many of the broader planning processes engaged in by FWC for the benefit of wildlife and habitats. Programs that plan for the recovery of imperiled species, programs that focus on coastal wildlife (CWCI), and programs that implement the State Wildlife Action Plan (SWAP) all focus on the future of Florida wildlife. To effectively protect coastal Florida species, the extent and effects of sea level rise need to be accounted for in these planning processes.

My primary audience is comprised of the non-game staff of FWC including: Wildlife Management Area managers, Taxa Coordinators, the Florida Wildlife Legacy Initiative staff, the Imperiled Species Management Planning process, the Coastal Wildlife Conservation Initiative, and other interested staff members at all levels.

Challenges include the dispersed nature of FWC staff, the sometimes conflicting goals of various initiatives and programs, the volume of work already required of FWC staff, the highly variable level of awareness of sea level rise effects among staff, and the reluctance to draw unfavorable attention to the agency due to the political divisiveness of the issue.

Opportunities include working with UF/IFAS natural resources and Sea Grant county faculty and specialists to develop statewide sea level rise and climate variability education programs for a broader stakeholder group. Interest at high administrative levels to engage with other agencies such as NOAA, Sea Grant, and USFWS in climate-related initiatives; and a requirement in the SWAP to engage in some level of climate change planning in order to secure USFWS funding.

Program Objectives

Wildlife and habitat managers will have exposure to, data about, and tools relevant to planning for the effects of sea level rise on coastal ecosystems. FWC staff will recognize a sea level rise resource person available to them. The Imperiled Species Management Planning process will be informed by and respond to climate change/sea level rise. The CWCI will work towards a white paper or position paper on the effects of sea level rise on coastal ecosystems and species.
Knowledge gain - short- or medium-term: Effects of sea level rise on coastal ecosystems and species will become part of all major planning efforts in the agency, staff will have a higher level of "climate literacy." In the long-term, I anticipate FWC will value this issue as integral to their planning efforts and would sustain a position that continues to serve as a climate change/sea level rise resource. I also anticipate that FWC would include effects of climate change/sea level rise in all of its planning efforts.

Participants in the planned climate education course will receive a certificate from FWC.

EDUCATIONAL METHODS

I focus on the effects of sea level rise on coastal ecosystems, but I also seek to raise general awareness and "literacy" about climate change/sea level rise issues, data and tools. I use mass emails and blog posts to inform my audience about news and events related to climate change/sea level rise. These communications go out 2-3 times per week. I maintain an internal FWC climate change website that contains links to relevant climate related websites, announcements about upcoming events such as webinars and meetings, and downloaded climate-related research articles focused on coastal habitats and species. I participate in planning efforts to increase my exposure to FWC staff and leadership. I give presentations on the effects of sea level rise on coastal ecosystems to the public as well as to FWC staff. There are no methods used to specifically reach underserved and underrepresented clientele.

RESULTS AND IMPACTS

Do you have a statewide evaluation plan in place or in progress?

- No

How do you measure program results and impacts?

- Though somewhat intangible, I measure results and impacts based on the number and relative importance of the planning processes, initiatives, and outreach efforts I am invited to participate in. This includes agency efforts and those I am invited to because I am recognized outside the agency as the FWC point of contact on climate change/sea level rise.

What difference will this program make in the lives of participants or Florida citizens?

- The importance of proper planning for sea level rise and its effects on wildlife and ecosystems cannot be overstated. The natural environment of Florida is the basis of its economy on many fronts. The professionals that are charged with the public trust of caring for the natural resources of this state need to have the most up to date, relevant, and scientifically valid information about the future climate so that the best decisions possible can be made.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- FWC is entrusted with the management of many of Florida's critical natural resources: conservation/preservation lands necessary for aquifer recharge; fisheries; coastal natural areas vital to tourism, and many, many more. These natural resources are the basis of Florida's economy. If one considers that there are three main sustainable industries in the state - agriculture, fisheries, and tourism - FWC has direct impact on at least two of these. These industries' further sustainability relies on up to date, relevant, and scientifically valid information about climate change and sea level rise to inform decisions.

FUNDING SOURCE

All costs, including employee salary, are funded through a State Wildlife Grant or match provided by FWC. If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- Not at this time.
NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

Do you need resources or additional financial support to continue to implement this program in the future?

- Yes

SUPER ISSUES

What Super Issues does this program relate to? [Must list at least one.]

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
SITUATION

A wide variety of natural resource professionals in Florida and across the Southeast manage and utilize fire for different purposes, including ecosystem health and wildfire mitigation. These land managers and landowners have access to new and existing fire science information through several unrelated outreach delivery systems. However, an assessment conducted with fire managers across the southeastern region in 2009 highlighted a distinct need to coordinate, increase, and better translate fire science for manager application through a central organization. Fire and land managers requested information on a variety of fire-related topics, wanting information that is specific to the region and that answers their specific questions about applying science on the ground. Fire managers also noted they have limited time to locate relevant fire and technical information for their questions. Needs assessment respondents wanted to access information through digital and internet platforms, workshops and in-person trainings, meetings and networking. Both fire research and management communities requested improved bidirectional communication.

PROGRAM OBJECTIVES

The Southern Fire Exchange (SFE) is a regional consortium for science delivery across 11 states that contain southern pine ecosystems. The mission of the SFE is to increase the availability and application of fire science information for natural resource management and to serve as a conduit for fire managers to share new research needs with the research community. Short-term goals include increasing awareness and understanding of fire-science research and information resources; medium-term goals include increasing access to and adoption of science into fire management practices and increasing communication between managers and researchers; long-term goals include increasing the number of acres treated with prescribed fire, improvements in ecosystem health, and the development of research that better meets fire managers’ needs. Continuing education credits are available for many of the activities through the Society of American Foresters.

EDUCATIONAL METHODS

SFE activities fall into four broad categories and include both one-way and interpersonal communication methods about fire science and research ranging from ecological effects to fire behavior to human dimensions.

1. **Online Resource Center**: The SFE website consolidates southern fire information and provides opportunities for fire managers and research to interact in discussion and “ask an expert” forums. SFE also maintains a strong social media program, currently focused on Twitter, Facebook, and LinkedIn.

   2. **Experiential Learning and Networking**: SFE coordinates webinars, workshops, and field days to bring fire managers and research together.
Product Development: Fact sheets, a bimonthly newsletter, and multimedia products cover key fire-related topics identified through the needs assessment, subsequent evaluations, and recently completed research. In addition, information about SFE, along with recent research highlights, are presented at Prescribed Fire Council (PFC) meetings in southeastern states.

Public Education: SFE provides new science summaries and consolidates resources that public information officers can use in their education activities with citizens and landowners. In addition, SFE is providing information to K-12 educators about existing fire curriculum resources that they can incorporate into classrooms.

SFE does not have specific activities focused on underrepresented or underserved clientele.

RESULTS AND IMPACTS

SFE program effectiveness is evaluated using several methods. Participants, web-metrics, and activities are tracked to collect information about SFE outputs. Our bimonthly newsletters and other announcements reach over 750 fire managers and researchers who are currently subscribed to our email list, and SFE reached over 1,050 people at Prescribed Fire Council meetings in 2012. With a strong connection to the three PFC councils in Florida, SFE representatives have been at almost every meeting since 2009. SFE members also have assisted in fire trainings hosted by the Florida Forest Service. Surveys are conducted after presentations, webinars, and other activities to collect information on participant satisfaction and short-term awareness and knowledge gain. Results from questionnaires distributed at two Prescribed Fire Council meetings in 2012 indicate that the SFE presentation increased more than 80% of respondents’ understanding of available fire science information and research by “some” or “very much.” In addition, an annual nationwide survey coordinated by Joint Fire Science Program provides data that serve as a baseline for measuring SFE effectiveness. Our advisory board and steering committee members and consortium participants have provided open-ended comments to illustrate how SFE products or activities have made a difference in their fire-related work. For example, one respondent stated, “I am doing a better job in planning my burns. I have a better understanding of the factors that must be considered before you do a burn. I wish I had this support years ago.” We are currently expanding our evaluation plan to better understand how our activities affect managers’ behavior regarding accessing and applying fire science information in their management activities.

FUNDING SOURCE

The Southern Fire Exchange is funded through the Joint Fire Science Program (JFSP), as one of 14 regional knowledge exchange consortia nationwide. Refunding from JFSP is expected for the next two years (2013-2015), with a likelihood of additional funding on a 2-year cycle although JFSP has requested that we seek regional partners to assist with future funding. We will develop a plan to meet that request.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Better link SFE activities to Extension activities through increasing county faculty awareness of the program and available resources
- Strengthen partnerships across the region and collaborate with these groups to meet shared fire science delivery objectives
- Expand interpersonal activities, such as field days, research demonstrations and tours
- Improve evaluation plan to better measure effectiveness toward meeting medium and long-term goals

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making – enhance fire managers’ ability to make decisions that protect community safety and ecosystem health.
  2. Natural resources operations – utilize and manage wildland fire in safe and economically efficient manner.
  3. Environmental stewardship – improve environmental quality by more widely applied prescribed burning for specific ecological effects
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

TREE IDENTIFICATION LABS TEACH SKILLS THAT ARE PREREQUISITE TO APPLYING MANAGEMENT RECOMMENDATIONS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: W. Sheftall*, Leon County Extension; S. Rosenthal, Leon County Extension

SITUATION
Correct species identification (ID) is a prerequisite for managing natural plant growth in urban and rural landscapes. Traditional Extension audiences who need proficiency at tree and shrub ID include arborists and loggers; public workers managing ROW, parks and greenways; managers of private game lands; Master Gardener volunteers; and citizen-naturalists.

OBJECTIVES
We wanted field resource managers to increase their proficiency at woody plant ID through repetitive attendance at labs offered annually. At each event, learners with basic skills will master some of the species more difficult to differentiate, while those without basic skills will master the more distinctive species.

METHODS
Indoor labs on foliated woody specimens (summer/fall ID) utilize a lab practical approach to instruction. One hundred fresh specimens of native and invasive exotic species branches are collected and laid out on tables. They are grouped according to similarity in leaf shape, which means that some that are classified together end up grouped together (such as pines) while most do not. The audience is led through the lab practical as if on a field hike, with agents instructing on tips for differentiating between species having similar leaf and branch morphology. In our winter ID labs, each student is given the same 20 species of twigs for close examination. The instructor talks the class through observing twig and bud characteristics which allow ID of dormant deciduous species. A field hike following the lab provides practice, while focusing on the utility of bark and form to field ID.

RESULTS
Over the past 14 years, 1131 clientele have attended 26 summer/fall ID labs, and 437 have attended 7 winter ID labs and 6 hikes. Pre- and post-tests have been set up lab practical style, using 10 species. Increase in knowledge measured in 2010-11 indicated an increase of 119% for summer/fall foliage ID, and an increase of 150% for winter twig and bud ID.

CONCLUSIONS
Woody plant ID is not an easy skill to learn on one’s own. Our ID labs have been perennially popular because of their instructional effectiveness. Repeat attendees have been pleased with the pace at which they have increased their ID skills.
SITUATION

Nuisance wildlife such as coyotes and wild hogs are causing serious economic losses to ranchers of this county. Coyotes are a major predator of calves while wild hogs can completely destroy pastures and hayfields. Foraging wild hogs can also devastate golf courses. Other wildlife species such as whitetail deer can be serious pests in chestnuts, blueberries, muscadine grapes and other horticultural crops. Nuisance wildlife also impact homeowners’ landscapes and golf courses. Whitetail deer feed on ornamental plants and backyard gardens causing serious damage. Replacing plants damaged by whitetail deer is a major expense for homeowners and property associations. Other nuisance wildlife includes raccoons which are a major vector of the rabies virus and one of the main predators of chickens. Many residents are not familiar with the rules that govern the management of nuisance wildlife. There are many misconceptions about which control methods are legal. In addition, deer and turkey hunting is a popular activity in north Florida. Hunters need to know the best land management practices to improve the deer and turkey population and habitat. They also need to aware of the latest laws that govern deer and turkey hunting.

PROGRAM OBJECTIVES

The North Florida Wildlife Workshops are designed to help reduce ranchers’, farmers’, and homeowners’ livestock losses and property damage caused by coyotes, wild hogs, and nuisance deer. The workshops will also help hunter improve their wildlife habitat. Attendees of the workshops with learn the IFAS recommendations to properly manage nuisance and desirable wildlife. Long term benefits include a reduction of cattle and goat fatalities from coyotes, a decrease in pasture and crop damage from wild hogs, a decrease in landscape damage from nuisance deer and improvement in wildlife habitat.

EDUCATIONAL METHODS

The North Florida Wildlife Workshops have been taught in conjunction with Dr. Bill Giuliano, graduates students in the Wildlife Ecology Department and biologist and officers from the Florida Wildlife Conservation Commission. The workshops have been held at both county extension offices and at local wildlife conservation areas. Instructors at the workshops have all used PowerPoint presentations, and wildlife specimens help facilitate learning. The workshops held at conservation areas allow the participants to the see how the land was managed to improve wildlife habitat. The North Florida Wildlife Workshops do not specifically target under represented audiences.

RESULTS AND IMPACTS

The North Florida Wildlife Workshops use a post class survey to evaluate the program. The surveys measure satisfaction, knowledge gain, and behavioral changes. Follow up surveys were also used to measure behavioral changes.

FUNDING SOURCE

The North Florida Wildlife Workshops charge a fee to recover the costs of providing a meal.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- A better system of documenting program impacts and return on investment.
SUPER ISSUES
What Super Issues does this program relate to?
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES
What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?
- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Environmental stewardship
  2. Natural resources operations
- Initiative 4. Producing and conserving traditional and alternative forms of energy.
  1. Conservation practices and efficiency improvement. Save energy by educating citizens and business people about the social, economic and environmental effects of energy use in Florida and conservation practices they can adopt as an integral part of their everyday lives.
  2. Alternative energy solutions. Expand the energy landscape by teaching citizens and business owners about the availability, viability, applicability, and use of alternative energy and water (as related to energy) sources.
  3. Community capacity development. Improve community energy policy and management decision-making quality and capacity by educating professionals in the built environment, government, and industry about how to foster environmental, economic and social forces to shape sound foundations for change.
- Initiative 5. Empowering individuals and families to build healthy lives and achieve social and economic success.
  1. Food safety and nutrition. Improve Floridians’ food choices and ability to handle food safely by providing education and intervention for consumers, families, and food handlers.
  2. Housing. Improve Floridians’ access to affordable housing (purchase and finances) and teach owners and renters how to operate and maintain their homes.
  3. Family financial management. Improve individual and family financial stability by teaching Floridians about knowledge and behavior aspects of money management.
  4. Aging well. Improve the lifestyle of older Floridians by educating individuals, families, and communities about aging-related issues.
  5. Human development and family relationships. Empower individuals to make positive lifestyle choices that improve physical and mental health, strengthen relationships, and improve parenting and child care.
- Initiative 6. Strengthening urban and rural community resources and economic development.
  1. Economic development and entrepreneurship. Improve economic vitality of Florida’s communities by engaging community members in assessments, strategic planning, and business/entrepreneurial support.
  2. Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.
  3. Resources for community decision-making. Improve community resiliency by facilitating responsible decision-making and policy establishment. Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling.
Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.

1. Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.

2. Organizational and volunteer systems. Foster learning environments to make positive 4-H Youth Development possible by educating caring adults about volunteerism and using youth-adult partnerships.
Objectives

Because many wildlife are declining and concomitantly many people are exploring alternative sources of income from their properties, we provided a wildlife management program with the goal of increasing knowledge and application of proper wildlife management, increasing income generation potential from wildlife-related activities, and testing the efficacy of multi-state and multi-agency collaboration.

Methods

We used a series of field days to convey information on wildlife management to landowners in North Florida and South Georgia, utilizing the expertise of individuals from numerous organizations: FL-GA Game Management Update Series, including Bobwhite quail management, Dove and waterfowl management, Sport fish pond management, White-tailed deer management, Wild turkey management, Hunting dog and human first aid, and Soils and herbicides in wildlife food plots.

Results

322 individuals attended workshops, with 185 evaluations returned. An overview of results include: 22% increase in knowledge; 53% planned to implement their own wildlife management program; 59% planned to make changes to their practices according to new knowledge gained, potentially impacting several thousand acres of land; 79% planned to share what they learned with others; and 72% anticipated saving money and 33% anticipated earning money as a result of what they had learned at the workshops. Additional details will be discussed.

Conclusions

We achieved our goals of increasing the knowledge and application of proper wildlife management, increasing income generation potential from wildlife-related activities, and developed a model approach for multi-state and multi-agency collaboration. A description of what made the program successful and how to replicate it will be discussed.
SITUATION

• What problem are you trying to solve? Why is this important?
In 2010, Florida commercial fishermen landed approximately 90 million pounds of seafood valued at $183.6 million. Based on the most recent national statistics, Florida ranks 12th in the nation for seafood production and first in the nation for commercially viable seafood products. The state is a huge market for seafood that is sold through a $27 billion restaurant industry and 4,380 seafood retailers that satisfy 80 million visitors and 18 million residents. In addition, Florida’s seafood industry has an economic impact of nearly $1 billion annually and employs more than 30,000 people throughout the state. Floridians, on average, consume more than twice the amount of seafood than the national average. During the past several years, however, the influx of lower-cost, imported seafood has displaced local seafood in many commercial markets along with the rich traditions associated with it. For example, in 2009 imports made up 84% of the seafood Americans consumed. Many Floridians, however, are becoming more concerned about the origin, sustainability, and safety of the seafood they consume, and local food movements are compelling people to buy more locally harvested products. With more than 80 varieties of locally caught seasonal seafood commodities harvested and an increasing number of imported fish products available to purchase, the industry is complex and consumer confusion is prevalent, demonstrating a need for extension educational programming.

• Who is the target or primary audience for your programs?
Extension Agents and FL seafood consumers

• What challenges or opportunities exist to establishing this program topic as a statewide program?
Despite the statewide need for seafood consumer education, currently many extension agents do not have the access, understanding and/or ability to provide educational information and programs to consumers. Due to the abundance of outdated/inaccurate information available about seafood, many extension agents are apprehensive about trying to provide seafood-related educational programs to clientele. Agents need vetted, research-based educational tools to help them teach about the array of seafood-related subjects that concern consumers. Initial results from county-wide extension programs have shown that local seafood education efforts have been effective in increasing the knowledge and skills consumers need to make better informed choices about purchasing, handling, cooking and consuming seafood. These local program success stories are the foundation for the proposed statewide program and will serve as pilot programs to test the educational materials that will be developed and provided to agents.

PROGRAM OBJECTIVES

• What do you intend the participants will know, think or do as a result of completing the program?
Goals: To provide agents with updated, easy-to-access information regarding Florida seafood resulting in increased consumer awareness and consumption.
Agent SMMART Objectives:
1. At least 25% of extension agents who participate in the “Florida Seafood at your Fingertips” Train the Trainer workshop will offer at least one workshop to seafood consumers in their county within six months of the training.

2. Six months after the train the trainer in-services a follow-up survey will find that at least 75% of agents who teach a “Florida Seafood at your Fingertips” educational program in their county/district will “agree” or “strongly agree” that the educator resources provided to them were useful in developing and teaching their programs.

Consumer SMMART Objectives:

1. At least 50% of participants in the “Florida Seafood at your Fingertips” workshops will increase their knowledge of Florida seafood indicated by pre/post test scores.

1. Using a three-month follow up survey, at least 30% of “Florida Seafood at your Fingertips” workshop participants will report behavior changes regarding seafood selection and handling.

**Educational Methods**

- **What topics and subject matter will you cover?**
  
  **A. Seafood in Florida**
  
  i. Background on seafood regulations and standards
  
  ii. Economics background

  **B. Seafood Availability in Florida**

  i. Types and variety of local seafood
  
  ii. Matching seafood type to preparation method

  **C. Benefits of Eating seafood/food safety**

  i. Nutrition and Health Benefits
  
  ii. Seafood consumption for specific audiences (e.g. pregnant/nursing mothers)
  
  iii. Safe Handling Practices

- **What methods or activities will you use to teach program participants?**

  **Program Delivery Methods**

  Face to Face Workshops/Consultations

  Group cooking demonstration

  Recipes

  Webinar/technology based

**Results and Impacts**

- **Do you have a statewide evaluation plan in place or in progress?**

  **Overall:**

  1. Survey data results will be compiled and used to determine seafood program content.
  
  2. Program data and content will be submitted to professional meetings for presentation and publications.

  **County Extension Faculty:**

  1. Multiple “train the trainer” workshops will be conducted by members of the project team. At the trainings, materials developed will be reviewed and sample lessons will be delivered. Training sessions will be offered through videoconferencing technology such as Polycom or Go To Meeting.

  2. Agents who participate in the training will receive a resource kit containing curriculum, materials, and program support including:

    - CD/flash drive with curriculum
    
    - Marketing and outreach materials

  3. Exhibit materials will be distributed to each district (one per district):

    - Table top displays for use in programming efforts
4. Extension faculty will conduct workshops and distribute news releases to promote the “Florida Seafood at your Fingertips” mobile application.

Consumers:
1. As a result of outreach efforts, consumers will increase their knowledge of a variety of seafood topics.
2. Florida citizens will have increased opportunities to attend and participate in educational seafood workshops and access to updated, accurate educational materials.
3. Mobile application for the seafood consumer, to assist with seafood information on topics such as selecting, purchasing and preparing seafood products.

**FUNDING SOURCE**

• Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded?
The program was created using Dean Enhancement Grant funds. Continuing education by county extension agents will be provided by the extension office or by charging for programs.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

• Do you need resources or additional financial support to continue to implement this program in the future?

**SUPER ISSUES**

What Super Issues does this program relate to? [Must list at least one.]
- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Help Floridians develop healthy lifestyles.

**HIGH PRIORITY INITIATIVES**

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 5. Empowering individuals and families to build healthy lives and achieve social and economic success.
  1. Food safety and nutrition. Improve Floridians’ food choices and ability to handle food safely by providing education and intervention for consumers, families, and food handlers.

- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.
  3. Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

OBJECTIVE 3: ENVIRONMENTAL STEWARDSHIP ADULT PROGRAMS

Overview
These programs target public audiences and educators with programs that promote greater appreciation for natural resources and ecosystem services.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

EXPLORING OUR ENVIRONMENT ADULT “DAY CAMPS”

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Maia McGuire (Flagler County Extension)
UF/IFAS PROGRAM PARTNERS/UNIT: County horticulture agents (Flagler, Putnam, St Johns Counties)

SITUATION

- Flagler and St. Johns Counties are two of the fastest growing counties in the nation. Most of the people who move to this area come from other states and are not familiar with the coastal environmental issues that affect the region. Adult environmental education programs are needed to teach residents how to minimize their impacts on coastal environments and organisms.
- Target audience: Coastal residents (full and part-time)
- The Exploring our Environment classes should be customized for the area in which they are being taught (with local examples, case studies, partners, etc.) Agents will need to find collaborators/partners who are effective educators who can help teach portions of the classes.

PROGRAM OBJECTIVES

- Local residents participating in “Exploring our Environment” classes will increase their knowledge about the coastal environment and human impacts on coastal areas.
- Local residents participating in “Exploring our Environment” classes will make behavior changes to help protect coastal environments as a result of participating in the program.
- Local residents participating in “Exploring our Environment” classes will become volunteers with organizations that benefit coastal environments.

EDUCATIONAL METHODS

- The agent coordinates and teaches portions of three 5-day environmental education programs for adults called "Exploring our Environment—from the ocean to the river," “Exploring our Environment—from the past to the future,” and “Exploring our Environment: Coastal Policy and You and Me.” The theme of the first program is coastal ecology, with an emphasis on the ways that human actions affect the coastal environment. The second program addresses coastal geology, climate change, maritime archeology and sustainable living. The third addresses coastal policy, including beach nourishment, fisheries management and aquaculture. All programs are promoted through county extension offices, newsletters and local print media. Participants are mostly coastal residents, many of whom have retired to NE Florida from other states. The classes involve a combination of classroom lectures, and classroom and field-based hands-on experiences/activities. PowerPoint presentations and videos are utilized in the classroom instruction.
RESULTS AND IMPACTS

- Of 24 class participants who responded to a survey in December 2008, 22 (92%) indicated that they had made at least one behavior change to benefit the coastal environment as a result of attending the class. These behaviors ranged from changing water use practices to changing the type of light bulbs used, removing invasive plants from landscapes and being careful not to disturb shorebirds while walking on the beach. Twenty-two people had shared information they learned in the class with others; thirteen of the respondents had each shared information with more than ten other people. Eleven of the respondents had become volunteers as a result of the class, and eight had attended other Extension-sponsored programs.

- Of the 24 adults who completed the survey, eighteen (75%) stated that they had changed their water use practices as a result of participating in the class. These changes included reducing their water use in the shower, toilet or sprinkler. Three participants reported saving money on their monthly water bill—from $50 to $240 per year. One person reported a reduction in water use of 10%. Twenty-two participants reported that they have made changes that will reduce their contribution to stormwater pollution or marine debris. Nineteen people reported that they now pick up trash when they visit the beach; 18 stated that they now use reusable bags instead of plastic bags when shopping.

- Post-class evaluations show that 95-100% of participants in Exploring our Environment programs have become more knowledgeable about beach ecology, sea turtle biology, estuaries, invasive species water quality and marine mammals by the end of the class.

- Adult exposure to natural settings is the biggest factor credited with inspiring a sense of commitment to environmental protection. By introducing these adults to the ways that their actions can impact natural areas, there is a high likelihood that they will take action/change behavior to help protect these areas.

FUNDING SOURCE

- The class participants pay $100 to register for the class. This covers all expenses (including books, water bottles, tote bags, USB drives etc. which the participants keep)

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- The biggest challenge for this program has been to develop new versions of the course (at the request of past participants) and to find effective speakers to help provide talks on their subject areas of expertise.

SUPER ISSUES

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1. Water conservation. Conserve Florida’s finite freshwater resources by teaching rural, suburban and urban audiences how to use less water.
• Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1  Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3  Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

• Initiative 4. Producing and conserving traditional and alternative forms of energy.
  1  Conservation practices and efficiency improvement. Save energy by educating citizens and business people about the social, economic and environmental effects of energy use in Florida and conservation practices they can adopt as an integral part of their everyday lives.
**Florida Extension Initiative 3:**

**Enhancing and Conserving Florida’s Natural Resources and Environmental Quality**

**RESTORING BAY SCALLOP POPULATIONS**

**UF/IFAS Program Primary Contact(s)/Unit:** Betty Staugler/Charlotte County Extension

**UF/IFAS Program Partners/Unit:** Joy Hazell/Lee Co. Extension; John Stevely/Manatee & Sarasota Co. Extension; Libby Carnahan/Pinellas Co. Extension; Chuck Adams/FRED; Dorothy Zimmerman/Florida Sea Grant Communications

**External Program Partners:** Florida Fish & Wildlife Conservation Commission, Charlotte Harbor, Sarasota Bay & Tampa Bay National Estuary Programs, Sarasota BayWatch, Tampa BayWatch, Bay Shellfish Co., Mote Marine Laboratory, FDEP Aquatic Preserves, Sarasota County, Charlotte County, Sanibel/Captiva Conservation Foundation

**Situation**

- Loss of local scallop populations in southwest Florida by the early 1970s became an iconic symbol of deteriorating ecological conditions. There have been a number of sporadic small scale restoration efforts over the past couple of decades, but evidence that these efforts were successful is lacking. Over the past decade, there has been increasing evidence that water quality and seagrass coverage has been increasing in Tampa Bay and Sarasota Bay leading to hope that bay scallop populations might recover in southwest Florida bay systems that had historically supported abundant populations. Furthermore, fishery regulations have been implemented to provide increased protection for more northern bay scallop populations that are still open to harvesting. Now is the time to bring together the parties involved in these efforts so that we can learn from each other, exchange information on what has and has not worked and coordinate activities. Extension agents in southwest Florida have a unique opportunity to facilitate information exchange and coordination across the region which will guide future restoration efforts.

- Science based organizations who are involved in bay scallop restoration activities in SWFL in addition to citizen science volunteers are the primary audience for this program.

- This program is currently focuses on southwest Florida from Tampa Bay to Charlotte Harbor. The program could also be replicated in the panhandle where bay scallop populations historically occurred.

**Program Objectives**

Volunteers who participate in Bay Scallop training will acquire the skillset needed to collect stock assessment information. Further, data collected by trained volunteers will in turn be used by the bay scallop working group, organized by Extension agents and comprised of scientists working on bay scallop recovery projects in SWFL.

At least one regional bay scallop restoration project will occur annually as a result of Extension’s coordination of the Southwest Florida Regional Bay Scallop Working Group.

**Educational Methods**

- Volunteers attend a training session prior to participating in data collection activities. The training teaches volunteers how to set up and monitor along a transect deployed in shallow water seagrass, how to identify and find bay scallops by snorkeling along transect, how to identify seagrass species common to SWFL, and how complete datasheet. Other volunteers learn how to measure bay scallop monthly growth and record on datasheet. Finally, recruitment volunteers learn how to set up and deploy recruitment collection devices, how to analyze collection devices for recruitment and how to fill out datasheets.

- Onsite training using field gear and educational resource materials are used to train volunteers.
RESULTS AND IMPACTS

- Volunteers in Lee and Charlotte counties are evaluated using the same survey instrument.
- Program results and impacts are measured using pre/post training evaluation form, the ability of volunteer data to be used by scientists, and the number of restoration projects implemented.
- The citizen science bay scallop projects provide families with opportunities to engage in science and teaches the scientific method in a fun way.
- A 2003 economic impact study completed by UF after recreational harvest of bay scallops was re-opened in Citrus County concluded that the limited recreational season generated $12.5 million in economic impact to that County (2003 dollars).

FUNDING SOURCE

- Supplies for the volunteer based activities were initially funded by Charlotte County’s Local Boating Improvement Funds (BIF) and Florida Sea Grant through an Extension Enhancement Grant. Annually, the Great Bay Scallop Search is funded by sponsors (for food and T-shirts) and donations by host marinas. Bay scallop restoration has been funded (in Charlotte County) by grants (WCIND & Local BIF).

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Funding for restoration and volunteer activities is sought annually to keep these programs moving forwards.

SUPER ISSUES

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
WILDLIFE FRIENDLY LIGHTING: FROM SAVING SEA TURTLES TO SAVING MONEY

SITUATION

The advantages of sea turtle friendly lighting, also known as wildlife friendly lighting, include energy savings that may motivate additional property owners to retrofit lights.

OBJECTIVES

Teach coastal residents how to safely light their property without disorienting sea turtles. Illustrate how this lighting is friendly to wildlife and saves money. Assist property owners to retrofit their lights.

METHODS

As part of the Turtle Friendly Beach Program, Sea Grant agents in the western Panhandle partnered with US Fish and Wildlife, FL Fish and Wildlife Conservation Commission, and local sea turtle permit holders to host sea turtle friendly lighting workshops for both professionals and residents. Agents also assisted with lighting surveys on beaches to identify properties that could cause disorientation. Finally, agents worked with property owners to retrofit lights, including searching for funding for cost-share assistance.

RESULTS

Trained thirty-two professionals in sea turtle friendly lighting methods at a workshop in Gulf Breeze, Florida. Approximately one hundred people attended property owner lighting workshops in Escambia, Santa Rosa, Okaloosa, and Walton Counties. Several condo associations and Pensacola Beach Elementary School requested assistance to reduce lighting during the 2008 sea turtle nesting season. Encouraged over 2000 students to examine their home’s exterior lighting for ways to save energy and help wildlife.

CONCLUSIONS

Urban glow can still be an issue for sea turtles and other wildlife even if beaches are dark. Promoting wildlife friendly lighting and its energy saving advantages can work to mutual benefit for property owners, wildlife, and the environment.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Florida Master Naturalist Program

UF/IFAS Program Primary Contact(s)/Unit: Martin Main, Dean of Extension Office
UF/IFAS Program Partners/Units: Currently, 33 county faculty from 25 County Extension Offices actively teach FMNP courses.
External Program Partners: There are currently approximately 50 external organizations (federal, state, local, and private) that contribute expertise and assistance to FMNP classes.

Situation
Surveys have shown that most people in Florida value wildlife and healthy environments and want to ensure their continued existence. However, general understanding of wildlife requirements and how to maintain ecological functions that sustain healthy environments and wildlife populations is not well understood. A needs assessment for environmental education conducted by the Florida Advisory Council on Environmental Education indicated educational efforts are needed that provide information on how human activities influence ecosystem functions and the plants and wildlife they support. Furthermore, the economic benefits to Florida of maintaining healthy ecosystems are substantial. Eco-tourism is the most rapidly growing tourist industry worldwide, and Florida’s unique and abundant natural resources, attractive climate, and high rate of visitation by tourists provide exceptional opportunities for an expanding eco-tourism industry. Bird watching activities alone are estimated to gross more than $500 million dollars per year in retail sales in Florida.

Program Objectives
The Florida Master Naturalist Program (FMNP) is a statewide environmental education program that serves both lay and professional audiences and is taught by an instructor network of county extension faculty and external partners. FMNP graduates receive certificates of completion and use knowledge gained to be better citizen stewards, to educate others in formal and informal settings, as credentials for volunteer and employment positions, and as credit toward teaching certificate renewals to name a few examples. Long term benefits include a stronger conservation ethic among Florida’s citizens and greater engagement in land use decisions that affect Florida’s future.

Educational Methods
The FMNP curricula includes 3 natural history/conservation education courses addressing Florida’s coastal, wetland, and upland environments and 4 special topics courses (wildlife monitoring, habitat evaluation, conservation science, environmental interpretation). Classroom, field trip, speaking requirements and hands-on/project development components are included in FMNP curricula. The FMNP does not specifically target under represented audiences, but has included courses for specific audiences, including the Seminole Tribe, ecotour guides, teachers, and agency biologists.

Results and Impacts
The FMNP has classes across the state being taught by county faculty and partners and issues approximately 1,000 program completion certificates each year. The FMNP has a statewide evaluation plan in place. All FMNP courses collect consistent information on participant demographics, satisfaction, and short-term knowledge gain at the end of each course. Annual surveys of FMNP graduates measure outcomes such as volunteer hours, employment metrics, behavioral changes, and other impacts. Success stories are also collected, which provide a means of illustrating the difference this program makes in the lives of participants and Florida’s citizens, including economic benefits. We do not have a good measure on return on investment for the FMNP.

Funding Source
The FMNP operates on a fee-based cost recovery system.
NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

A better system of documenting volunteer hours and return on investment and a full-time program coordinator is needed.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Environmental stewardship.
  1. Informed community decision making.
  2. Natural resources operations.
- Secondary: Initiative 2. Enhancing and protecting water quality, quantity and supply.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FLORIDA PROJECT LEARNING TREE

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Nancy Peterson, School of Forest Resources and Conservation
UF/IFAS PROGRAM PARTNERS/UNIT: 4-H Program
EXTERNAL PROGRAM PARTNERS: Florida Forestry Association, Florida Forest Service, and National Project Learning Tree. There are approximately 100 Florida Project Learning Tree (FPLT) volunteer facilitators comprised of formal/non-formal educators and foresters who deliver this program. The program is directed by a steering committee representing the forest industry, educators, and natural resources related organizations and agencies.

SITUATION

Producing a citizenry capable and willing to address issues from political, social, economic and environmental perspectives is the ultimate outcome of FPLT. Approximately 50% of lands in Florida are forested. Yet many Floridians don’t know about our forest and their ecological and economic importance to our state. FPLT uses the forest as a centralized theme for its curriculum. Connecting youth and adults to our forest lands and what they provide helps Floridians better understand their value and importance to our state and nation. Recent research also shows that the youth of today are spending considerably less time outdoors than their parents or grandparents. FPLT utilizes the outdoors as a classroom, reconnecting youth and teachers to the outdoors. Additionally, engaging in outdoor experiences promotes healthier lifestyles.

PROGRAM OBJECTIVES

Florida Project Learning Tree’s mission is to use the forest as a “window on the world” to increase students’ understanding of our complex environment; stimulate critical and creative thinking; develop the ability to make informed decisions on environmental issues; and instill the confidence and commitment to take responsible action. FPLT is a widely recognized, well-tested educational initiative for school children. Our training workshops involve a partnership of trained educators and foresters. The materials offer a balanced picture of natural resource conservation, emphasizing neither economic nor environmental factors, but blending both in a comprehensive perspective. Beyond academics, central to PLT is connecting youth to the outdoors.

Short-term (1-5 years) goals for youth are to 1) Develop students’ awareness, appreciation, skills, and commitment to address environmental issues, 2) Provide a framework for students to apply scientific processes and higher order thinking skills to resolve environmental problems, 3) Help students acquire an appreciation and tolerance of diverse viewpoints on environmental issues and develop attitudes and actions based on analysis and evaluation of the available information, and 4) Encourage creativity, originality, and flexibility to resolve environmental problems and issues.

Short-term (1-5 years) goals for FPLT Trained Educators are to 1) Use PLT experiential, inquiry based curriculum with their youth and students, 2) Utilize the outdoors as a classroom, 3) Better understand forests and other natural resources and the issues related to them, 5) Encourage their students’ parents to engage in outdoor activities, and 4) Participate in advanced professional development PLT training.

Longer-term goals are to 1) Instill an appreciation of our forests and willingness to conserve them 2) Inspire and empower students to become responsible, productive and participatory members of society.

FPLT workshop participants receive a certificate of completion. Because this program is international, PLT trained educators’ and facilitators’ certificates are transferable to other states and countries. Continuing Education Units are available for classroom teachers. Advanced FPLT workshops are offered.
EDUCATIONAL METHODS

- PLT Curriculum is delivered through educator training workshops. Most are 6 hours, but workshop length ranges from 3 hours to 3 days.
- FPLT Special Programs: FPLT Environmental Education Centers and FPLT Schools. Specific criteria must be met annually to retain these designations
- Educator, Facilitator and Advanced Professional Development Workshops are conducted.
- FPLT Curriculum: Urban Forests, What is a Healthy Forest, and Literacy and Nature
- Annually conduct a 2-day strategic planning summit. Complete a PLT Best Management Practices Self-Assessment. Based on the outcome of this tool the programs key priorities are set. Serving under represented areas of the state and audiences are recognized as high priority areas. For the past several years, FPLT workshops were conducted in all seven PLT regions and both urban and rural communities have been served.
- Differential instruction is provided in the curriculum.
- Pre-service teacher/college student workshops are conducted at numerous Florida universities/colleges that serve traditional, non-traditional and minority students.

RESULTS AND IMPACTS

FPLT has a statewide evaluation plan in place that is consistent with the national PLT program. Facilitator and participant information is collected after all workshops. Survey information is reviewed at the state and national level. FPLT trained educators report the curriculum has increased students test scores on the FCAT and Iowa Test of Basic Skills. PLT promotes an appreciation for and connection to nature. In 2012, over 46,500 volunteer hours were donated to the program, 921 educators were trained who will teach PLT activities to 192,173 youth (Figure based on survey responses.) 23,070 youth and adults participated in 41 FPLT outreach activities. Educating Floridians about the ecological and economic value of our forests is important if we want to keep our conserved forest lands and sustain our forest industry.

FUNDING SOURCE

All program costs are generated via grants, donations, and registration fees. In addition, the only staff member (half-time state coordinator) receives part of her salary through a grant. A funding raising plan was developed in 2012 that identified new funding opportunities and is being implemented in 2013.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

It will be difficult to expand the program beyond where it is today without additional staff: a full time coordinator or a staff member to assist the coordinator. A small operating budget would also be extremely helpful.

SUPER ISSUES

- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.
HIGH PRIORITY INITIATIVES

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.
  1 Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
SITUATION

Florida is one of the most populous states in the US, with an estimated human population in excess of 18 million people presently and is projected to reach 30 million people by the year 2030. To accommodate the current and projected human population, real estate development has been proceeding at a rapid pace. As a result, wildlife species are constantly losing habitat and are coming into contact with people more frequently.

Florida is home to a great diversity of native wildlife, with over 700 species of native birds, amphibians, reptiles, and mammals. Florida also has the dubious distinction of providing a home to approximately 175 species of nonindigenous (not native to Florida) wildlife. Many of these species are well-established and have become invasive, causing problems for our native species and are a nuisance to Florida’s residents. For example, the issue of Burmese pythons in Florida is a nationally recognized invasive species problem in the state. Its estimated that invasive species of plants, animals, and microbes incur negative economic impacts annually in the US exceeding $120 billion. They also cause negative ecological impacts and can degrade human quality of life.

An outcome of the burgeoning human population, loss of wildlife habitat in the state, and the rise in numbers of invasive exotics is an acceleration of conflicts between people and wildlife. These conflicts range from green iguanas eating landscape plants, to invasive cane toads causing the death of pets that tangle with the toads, and power outages caused by invasive Cuban treefrogs. They also include potential deadly encounters between people and wildlife, such as bites from venomous snakes. The magnitude of this problem is further underscored by the increase in companies that, for a fee, help businesses and homeowners deal with nuisance animals. The Florida Fish and Wildlife Conservation Commission lists >200 licensed nuisance wildlife agents serving Florida. Clearly there is a need for Extension to address the ever-growing issue of invasive animals and the acceleration of negative encounters between Florida residents and wildlife.

The target audiences for my outreach program include county faculty, agency personnel, K-12 teachers, environmental educators, Master Gardeners/Naturalists, and members of the general public.

PROGRAM OBJECTIVES

- Train clientele and provide them with the resources that enable them to train others.
- Increase the short and long-term knowledge of target audiences so they are able to identify native and introduced species of wildlife and understand the problems associated with human/wildlife conflicts.
- Invoke changes in behaviors of clients so they adopt new practices to reduce their chances of negative encounters with wildlife, and so they react appropriately when human/wildlife conflict occurs.
- Alleviate some of the fears of the general public about wild animals so they are less likely to view wildlife as a nuisance and kill native species (especially snakes).
- Encourage Floridians to remove invasive animals from their property to decrease the chances for negative interactions and to benefit native species.
**Educational Methods**

I conduct a variety of educational activities to reach my target audiences. These include responding to inquiries from county agents and members of the general public (phone calls, emails, office visits), making presentations at the request of county agents, and conducting training seminars/workshops (e.g., in-service training). Seminars and workshops are largely directed at county agents, K-12 teachers, environmental educators, and professionals in the field of natural resource management. I also maintain a website and use social media to educate my clientele.

Specific products that I have produced in support of my educational methods include, but are not limited to: a program website (ufwildlife.ifas.ufl.edu), a quarterly electronic newsletter (The Invader Updater), a day-long Exotic Pet Amnesty event, posters and brochures, EDIS fact sheets, field guides, PowerPoint presentations, CD/DVDs, and an online training module focused on invasive constrictors and large lizards (REDDy—Introduced Reptile Early Detection and Documentation).

My “Venomous Snakes of the Southeast” poster was printed in English and Spanish. The REDDy online training module, because of its online format, is available to a broad cross-section of clientele who would not normally be able to attend face-to-face presentations. Participants who complete the online training receive a printed certificate (suitable for framing).

**Results and Impacts**

I measure the success and impact of my extension program via participant surveys, the number of participants at my outreach events, completion of the REDDy online module, site visits to my website, and downloads/views of my EDIS documents. Florida citizens exposed to my extension program increase their knowledge and about invasive animals and native Florida wildlife. They also use the information I provide to make behavioral changes (e.g., removal of invasive exotic animals on their property, removal of pythons during the FWC Python Challenge, leave venomous snakes alone) that help mitigate impacts of invasive species and negative interactions between people and wildlife. Ultimately there are benefits to Florida’s native wildlife (e.g., recovery on native treefrogs following removal of invasive Cuban treefrogs) as well as economic benefits (e.g., cost savings by avoiding a trip to the ER due to knowledge gained from my snake educational materials, exclusion of Cuban treefrogs from electrical generating equipment). Documenting the specific economic impacts of my extension program is exceedingly difficult to determine and I am not able to quantify specific return on investment. However, the cost to maintain my website annually (OPS for a support person) is approximately $5K, and in 2012 alone the website had more than 342,000 unique sessions. Additionally, my EDIS documents were downloaded almost 200,000 times in 2012.

**Funding Source**

Support for my extension program and products have come from several sources: RREA funds, grants from The Nature Conservancy, water management districts, the National Park Service, and funds generated from sale of my field guides by the IFAS Extension Bookstore.

**Needs to Maintain, Improve, or Grow Program**

One of the primary ways I provide educational materials to my clientele is via my website and production of a quarterly newsletter. I will need continued support via RREA or a suitable alternate source to maintain this over the long-term.

**Super Issues**

Resource sustainability and conservation in Florida communities

**High Priority Initiatives**

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.

Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
Pinellas County, the most densely populated county in Florida, is a peninsula bound by Tampa Bay and the Gulf of Mexico. The County's unique geography, contribution of its coastal resources toward its economy and overall quality of life require a community that is well-versed in the importance and sensitivity of marine resources.

The Pinellas County Sea Grant Extension Program has developed two marine education series designed to connect the community with marine science education and research. The ongoing “Going Coastal” marine science education series introduces the community to the habitats, organisms, and ecology of Tampa Bay and the Gulf of Mexico. To fulfill the need for higher level information, the “Salty Topics” series, is designed to bring the marine research scientists to the general public.

Target Audience: General Public

What challenges or opportunities exist to establishing this program topic as a statewide program? Challenges include time, facilities, marketing. Several agents are working around the state to increase ocean and coastal literacy. This is a good opportunity to increase the stewardship of residents and visitors around the state. As Florida has many short-term residents and newer residents, there is not as strong a sense of place as other communities. Increasing environmental awareness will help increase residents sense of place and connection to their surroundings.

Participants will have increased awareness of the ecology of their coastal and marine surroundings. With increased knowledge, they will increase their stewardship to the environment. They will share the information they learned with others, be more likely to return for another program and learn more, and take personal action to improve the environment such as participating in a coastal cleanup.

Participants will demonstrate knowledge gain through assessments. Participants will take positive actions to safeguard endangered species and their coastal environment. Actions can include respecting wildlife, not feeding manatees and other wildlife, cleaning up marine debris, practicing ethical fishing practices.

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?

Some participants will become environmental advocates. They will volunteer for environmental causes or to help teach others. They will become cleaner boaters, more ethical fisherpeople, and more concerned citizens.

Marine research including Biological, Chemical, Geological, and Physical Oceanography. Specific research topics have included sea level rise, ocean acidification, coral reef ecology, cephalopod research, and more. Coastal and nearshore ecology topics include manatees, sharks, fish anatomy, invertebrate ecology, sea turtles, and more.
What methods or activities will you use to teach program participants?

- Powerpoints, interactive games, audience participation with Turning Point technologies, hands on field activities including fishing, seining, canoeing, and coastal walks.

Are any methods used to specifically reach underserved and underrepresented clientele?

- Yes, summer camps that serve under-represented audiences will be invited. The agent will also bring the program out into the community to underserved populations.

RESULTS AND IMPACTS

Do you have a statewide evaluation plan in place or in progress?

- No, not statewide. An environmental literacy WAG was formed at Sea Grant in 2012 and may begin to tackle this issue.

How do you measure program results and impacts?

- Turning point technologies audience polling system is used to measure knowledge and satisfaction after each program.

What difference will this program make in the lives of participants or Florida's citizens?

- They will increase their sense of place in Florida.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- The programs are all free or low cost, so the participants are getting access to sound science and cutting edge research that they might otherwise have to pay for or work hard to find.

FUNDING SOURCE

Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc.)

- At this point, all in kind. Researchers donate their time for the “Salty Topics” lecture series. Friends of Weedon Island Inc. sponsors refreshments for the Salty Topics speaker series. Specimens and research tools are borrowed from partner agencies such as FWC and the Pier Aquarium for the “Going Coastal” series. Pinellas County facilities and equipment such as seine nets, buckets, microscopes, are used.

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- N/A

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Do you need resources or additional financial support to continue to implement this program in the future?

SUPER ISSUES

What Super Issues does this program relate to? [Must list at least one.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.
HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

OYSTER HABITAT RESTORATION IN THE INDIAN RIVER LAGOON

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: R. LeRoy Creswell, Florida Sea Grant – Indian River Res. and Ed. Center
UF/IFAS PROGRAM PARTNERS/UNIT: Florida Sea Grant Extension and Faculty in Coastal Restoration Work Action Group
EXTERNAL PROGRAM PARTNERS: St. Lucie County Department of Coastal Management, Florida Oceanographic Society, youth organizations (boys and girl scouts, 4-H, Police Athletic League), community volunteers, area restaurants (shell recycling program)

SITUATION

Shellfish habitat is critical to ecological function within an estuary. Oyster reefs provide physical stability and aid in the preservation of salt marsh habitat by dispersing kinetic energy associated with waves generated by boats and severe storm events. Oysters provide ecological services by filtering sediments and algae from the water column, increasing water clarity, and facilitating the removal of nutrients such as nitrogen and phosphorous from eutrophic waters. Oysters form dense clusters that compose a living reef which provides a great deal of surface area and interstitial space between shells to allow invertebrate and fish species to find suitable substrate to settle and find refuge. Oyster reefs substantially enhance species diversity and ultimately contribute to fisheries resources and economic benefits. Oyster habitat has experienced a dramatic decline in recent years, globally, throughout coastal Florida, and within the Indian River Lagoon (IRL) and its adjoining estuaries. This decline within the IRL is attributed to water quality degradation, excessive freshwater runoff, eutrophication, and suspended solids. Historic degradation of coastal habitats has created the need for restoration projects at all scales that involve all sectors of society. With a statewide network of agents imbedded in coastal communities, Florida Sea Grant is uniquely situated to provide leadership in coastal restoration, by involving coastal stakeholders through demonstration projects, citizen science, and community outreach and education. To that end, Florida Sea Grant has established the “Coastal Restoration Work Action Group” to identify opportunities for funding restoration programs, share educational materials promoting best practices for restoration projects and community/stakeholder engagement in these projects.

PROGRAM OBJECTIVES

The Indian River Oyster Restoration program will provide environmental services to the IRL and educational opportunities to instill environmental stewardship in its coastal residents. As a result of increased awareness of the importance of oyster reef as essential habitat for economically important species, these programs will attract volunteers of all ages, particularly youth groups, who through their participation will have in common an understanding of the ecological role of oysters in our coastal waters, and how their active participation will have tangible positive results in the future. A more environmentally conscious, informed citizenry will be better served to articulate their concerns relative to anthropogenic impacts on coastal marine habitats to decision makers and champion best management practices that promote habitat health and sustainability.

EDUCATIONAL METHODS

As an outreach and educational component to this oyster restoration effort, volunteers receive an overview of the environmental services provided by oyster habitat, and they learn to evaluate the temporal succession of resident fauna onto restored oyster habitat by monitoring oyster growth and the colonization by structurally important and resident species essential to a healthy oyster reef community in coastal Florida. Formal education programs are ongoing to engage high school students by creating their own oyster reefs as part of their course curriculum, as well as teacher in-service workshops. Restoration displays and literature are routinely presented at large public environmental festivals and boat shows held throughout the region.
RESULTS AND IMPACTS

Every oyster reef that is deployed in the IRL is subject to annual monitoring evaluation that includes the number and size of recruited oysters and elucidation of all associated biota. Over 800 volunteers have participated in the IRL oyster habitat restoration program, and during each session an educational seminar on oyster ecology, the contribution of oyster reefs in coastal habitat vitality, and the role of oyster reef restoration (and hence, volunteer participation) on revitalizing coastal habitats is conducted. The number of returning (and dedicated) volunteers is testament to the success of this outreach program to educate and motivate volunteers to participate in the environmental stewardship.

FUNDING SOURCE

The Indian River Oyster Restoration Program operates through volunteer participation, engaged restaurants that donate recycled oyster shell, and modest donations/grants to purchase materials. An objective for 2013 is to secure sufficient funding to source and ship oyster cultch from other locations in Florida and promulgation of educational materials. Funds for permit applications are provided by St. Lucie County, Mosquito Control and Coastal Management.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

The program has sufficient support to continue at its current level and will identify and solicit funds for expansion as they become available.

SUPER ISSUES

What Super Issues does this program relate to?

- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
- Secondary: Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Panhandle Outdoors LIVE

**Situation**

Eleven Florida Extension Agents led 10 nature-based field trips for adults to increase ecological awareness. The focus included plant/animal identification, water conservation, stormwater BMPs, and environmental stewardship. Of 205 participants, 103 surveys were returned, 100% gained new knowledge, 57% will incorporate behavior changes.

**Objective**

Annually, 50% (103/205) of adults participating in the ten Panhandle Outdoors LIVE field trips will demonstrate increased awareness or report positive behavior changes in the areas of ecology, plant and animal identification skills, water conservation, stormwater management, and healthy lifestyles as reported by surveys.

**Teaching Methods**

UF IFAS Natural Resource agents and specialists from the 17 counties of Northwest Florida developed the framework for Panhandle Outdoors Live, a series of 10 ecological field trips that highlighted the region’s biodiversity. Many of the excursions had several components to introduce participants to a variety of topics per tour. Agents for each location developed the itinerary, curriculum, educational materials, maps and surveys for their particular tour. Many agents created field guides to help participants identify key wildlife and plants in each location. All of the agents led portions of their field trip and many recruited assistance from local landowners, government partners, and other agents to share in the educational programming.

**Outcomes**

In 2012, 205 participants from 11 Florida counties and five states participated in the Panhandle Outdoors LIVE programs. Eleven percent (23/205) were new clientele to Florida IFAS Extension programs and indicated they have a better understanding of the role of Extension Agents.

Of 103 returned surveys, 100% of the participants gained new knowledge as a result of attending the POL trips. This new knowledge included: ecological systems, conservation and restoration methods, local history, plant and animal species and diversity, awareness of local natural resources, and geology/soil science.

57% of respondents (59) indicated they would incorporate behavior changes based on information learned during the POL trips. These changes include: increasing recycling and conservation methods, taking responsibility for water quality improvement, practicing wildlife-friendly and native plant landscaping, installing a rainwater harvesting system, using “Leave no trace” practices, sharing knowledge with others, and exploring the outdoors more (particularly hiking and canoeing). Several indicated their skills in scientific observation had improved, as did their ability to canoe and paddle.

**Impacts**

Communities benefit economically through the preservation of natural resources and tourism. Direct economic impacts can be measured at a gain of $2,363 for the food suppliers and liveries involved in the trips, which may be expanded via word of mouth and reuse by our participants.

By engaging clientele in the various roles Extension can play in traditional and evolving programming methods, the importance and need of UF/IFAS Extension is further justified. Marketing Extension in these ways also allows for clients to come into contact with various Extension program areas, increase partnerships, and exchange information and knowledge.
In addition, all of the participants gained health benefits from hiking, canoeing/kayaking and spending time outdoors, including burning an average of 761 calories apiece (per trip; 156,000 calories were burned in total). Research has shown that those who experience the environment firsthand develop a greater appreciation for natural resources. Being able to associate a positive learning experience in the outdoors increases the chances that participants will continue to make healthy lifestyle choices.
Florida Extension Initiative 3: Enhancing and Conserving Florida’s Natural Resources and Environmental Quality

Pharmaceuticals and Personal Care Products (PPCPs)

UF/IFAS Program Primary Contact(s)/Unit: Maia McGuire (Flagler County Extension)

UF/IFAS Program Partners/Unit: Proposed: Office of Sustainability, Vet School, Medical School, FYCS, 4-H, Environmental Horticulture, Agriculture programs, Pharmacy School

External Program Partners: Proposed: Illinois-Indiana Sea Grant, Ohio Sea Grant, New York Sea Grant, Pennsylvania Sea Grant, Oregon Sea Grant, North Carolina Sea Grant, Georgia Sea Grant, AVMA, DEA, EPA, FDEP

Situation

- How we choose to use and dispose of pharmaceuticals and personal care products (PPCPs) impacts water quality—the water that we drink, bathe in, and use for recreation. In 2002, the U.S. Geological Survey sampled streams in 30 states. Of the 139 streams tested, 80 percent had measurable concentrations of prescription and nonprescription drugs, steroids, and reproductive hormones. Most of us do not use all of the medication that we buy. But using the toilet or trash to dispose of medicine can put people, animals, and the environment at risk. So that raises the question—how do we get rid of our unwanted medicines? And what about all the soap, shampoo, cosmetics, lotions, fragrances, and sunscreens that we use? There are thousands of these personal care products on the market. Contrary to popular belief, many of the chemicals are not regulated for safety, long-term health impacts, or environmental damage. The topic of PPCPs is one that all program areas within Florida Extension could and should be addressing.

- Target audience: Hospice providers, caregivers (elderly or children), parents, elderly residents, youth, livestock producers, pet owners, environmental clubs etc.

- PPCPs are currently being addressed by Sea Grant programs in many other states. However, none of these states is involving the cooperative extension program to help deliver the message to their audiences. The initial challenge will be in developing appropriate partnerships to coordinate this as a statewide program. Funding will also be a challenge. However, there are many existing materials that could easily be modified for Florida and utilized here, including a 4-H curriculum.

Program Objectives

- Florida audiences will choose not to flush excess medications, but will dispose of them properly (through mail-back programs, drug take-back days, drop-off locations etc.)

- Florida audiences will learn how to evaluate personal care products and will choose not to use products that are harmful to the environment or our drinking water supply, including triclosan (in antibacterial soaps)

- **At the request of Floridians, additional drug drop-off locations will be created (with help of local law enforcement offices)**

Educational Methods

- Extension agents will incorporate information about PPCPs, product choice and proper disposal methods into their extension programs. Many outreach materials, including a 4-H curriculum and K-12 activities, already exist and can easily be customized for Florida audiences.

Results and Impacts

- People will choose to purchase personal care products that are not harmful to the environment, thus reducing the amount of harmful chemicals entering the drinking water stream (e.g. triclosan).
- People will not flush unused medications down the toilet, but will instead dispose of them through a drop-off or mail-back program where the medications are incinerated.
- DEP will offer points in their Clean Marina and Green Lodging programs for facilities that choose and promote the use of non-antibacterial soaps. This will reduce the input of triclosan into the waste stream.
- Pet/livestock owners will dispose of unused animal medications through drop-off or mail-back programs rather than discarding them in landfills.
- Ultimately, water quality (both environmental and drinking water) will be protected from further degradation; aquatic wildlife will face fewer pharmaceuticals in their habitats.

**Funding Source**

- This needs to be determined. Potential corporate sponsors include Tractor Supply Depot (to potentially help fund mail-back envelopes for livestock producers to return unused medications). US EPA and the National Sea Grant program have helped fund PPCP programs in other states.

**Needs to Maintain, Improve, or Grow Program**

- Training for Florida extension faculty is needed (proposal has been submitted for an IST at EPAF). Partnerships within and outside UF need to be developed. Collaboration with faculty in states that have existing PPCP programs will be extremely helpful in developing a Florida program. Georgia and North Carolina are also hoping to develop PPCP programs, so there is the possibility for a southeast US collaboration.

**Super Issues**

What Super Issues does this program relate to?

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Help Floridians develop healthy lifestyles.

**High Priority Initiatives**

- Initiative 1. Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises.
  1. Sustainability of production systems and alternatives. Maintain and enhance production systems of all types and scales by improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, food safety and environmental stewardship.
- Initiative 2. Enhancing and protecting water quality, quantity and supply.
- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 5. Empowering individuals and families to build healthy lives and achieve social and economic success.

4. Aging well. Improve the lifestyle of older Floridians by educating individuals, families, and communities about aging-related issues.

5. Human development and family relationships. Empower individuals to make positive lifestyle choices that improve physical and mental health, strengthen relationships, and improve parenting and child care.

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.

1. Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
**FLORIDA EXTENSION INITIATIVE 3:**  
**ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY**

**TRAIN YOUR EXTENSION VOLUNTEERS TO MONITOR PHENOLOGY**

**Phenology** is the study of periodic plant and animal life cycle events – such as flowering, breeding, migration, and how these are influenced by seasonal and inter-annual variations in climate. Because many such phenomena are sensitive to small climatic variations – especially temperature, phenological observations provide good detail of timing changes in the life cycles of living organisms as they respond to amplified climate variability and change.

Any shift in phenological phenomena has implications for many traditional Extension clientele groups – from growers to gardeners, beekeepers to birders, waterfowl hunters to foresters. Giving our clientele a method for observing and recording the footprint of a changing climate on the plants and animals around them, should motivate them to plan adaptation strategies in their own interest.

The need for systematic collection of phenological data nationwide, and the opportunities for involving citizen-scientists in doing so, led to the 2005 launch of the National Phenology Network (NPN) by a consortium of federal agencies, universities and NGOs. Since 2005, the NPN has developed cyber-infrastructure behind a Web page (“Nature’s Notebook”) for use by citizen-science monitors; developed protocols for data collection and entry; and developed a list of target species for each state. These steps set the stage for Extension faculty to train citizen-scientist observers for the network.

Florida Extension faculty have partnered with the NPN’s Southeast Regional Coordinator since 2008, laying the groundwork for a successful collaboration. Completion of the Web tools, including training modules and data sheets, has allowed collaborative delivery of 12 pilot training workshops in Florida. Our workshop curriculum and training methods have been refined with audiences of Master Gardeners, Master Naturalists, and botanical garden volunteers. Our workshop objective is to adequately prepare each participant to complete a first season observing and recording data.

This ANREP workshop will model our training materials and methods.

Will Sheftall received his M.S. in botany from the University of North Carolina-Chapel Hill in 1980. He has served Florida on the University of Florida/IFAS Extension faculty for 25 years. He is an Extension Agent IV for Natural Resource Management in Tallahassee, working out of the Leon County Extension office.

Co-authors and affiliations: George R. Kish is a hydrologist with the USGS in Tampa, FL and a project manager for the USA-National Phenology Network working to engage citizen scientist participation in phenology programs in Florida. George received his B.S. in biology from Drexel University and his M.S. in Environmental Science from Rutgers University.
The diversity of coastal and marine habitats in SWFL makes it an ideal destination for recreational saltwater fishermen; in fact, thousands of anglers are drawn to the region each year. Anglers from the region help contribute to Florida’s multi-billion dollar recreational fishery. Over the past three decades the number of full-time and seasonal residents as well as tourists in the region has increased tremendously. Fisheries managers have also seen a significant increase in fishing effort over this time period necessitating an increase in regulatory measures such as closed seasons, bag limits and size restrictions to conserve and sustain fisheries stocks. One result is that more fish caught by recreational anglers are being released back into the water to comply with harvest restrictions and because of a growing conservation ethic. Although catch and release angling is a valuable conservation tool, management effectiveness is diminished if fish do not survive after being released. In addition, management objectives are not achieved if information about new regulations, policies, or management options (i.e. tagging programs, use of hatcheries, gear restrictions or artificial reefs, etc) does not reach anglers in a meaningful manner. Often, new rules can be confusing to anglers, if they are aware of them at all, and if not followed, can be detrimental to local fisheries. A critical component of a sustainably managed fishery is having a well-informed, educated angling population who comprehends how fisheries are managed and can follow recommended conservation practices to help sustain Florida’s marine fisheries resources.

Who is the target or primary audience for your programs?

- Recreational anglers, commercial fishermen, charter boat captain, resource managers, (secondary audience: educators)

What challenges or opportunities exist to establishing this program topic as a statewide program?

- Florida has millions of anglers and we have a limited number of agents working in this field. We are fortunate to have a good working relationship with FWC, NOAA Fisheries and Management councils when it comes to working to expand fisheries outreach and education efforts. Most Sea Grant agents also have anglers and fishing captains on their advisory committees as well to help strengthen our network.

What do you intend the participants will know, think or do as a result of completing the program?

- Increase their understanding of and participation in the fisheries management processes as well as adopt science-based fish handling and stewardship practices to help sustain Florida’s fisheries. Resource managers will also adopt best management practices for enhancing Florida’s artificial reef programs as a result of technical assistance provided by Sea Grant faculty and partners.
What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- Better fish handling practices and use of conservation gear to improve conditions of fish caught and released; adoption of best management practices for artificial reef management;

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?

- Theoretically if mortality rates of fish caught and released significantly increase (especially in deeper waters) fishery managers could be less restrictive on setting regulations, which could have a positive economic and social impacts on Florida’s recreational fisheries. Also, artificial reefs have been shown to provide significant economic benefits to local economies. Proper guidance on management practices can help enhance Florida’s already extensive artificial reef system.

Do participants receive a certificate, Continuing Education Units (CEUs), or something similar?

- Currently no, but in the past when my colleagues and I were able to get CEUs from the Florida Recreation and Parks Association when we offered our fisheries regulations and management workshops for park rangers.

### Educational Methods

What topics and subject matter will you cover?

- Fisheries management and biology, fish handling gear and practices, habitat and debris stewardship, artificial reef management,

What methods or activities will you use to teach program participants?

- Workshops and conferences, field trials for testing out gear, public outreach events such as festivals, fishing club talks, seminar series, social media and publications (YouTube videos, fact sheets, Facebook posts, blogs, regional E-newsletter), individual consultations, regional goliath grouper surveys, youth fishing programs.

Specific examples of fisheries-related programs conducted by the agent in the past:

- Annual fisheries regulations and management workshop for park rangers, resource managers, marina works, and informal educators who commonly interact with anglers.
- Youth fishing camps and Youth fishing schools
- Artificial Reef regional workshops and statewide conference
- Scientific Angler Seminar Series (program to educate anglers on current fisheries-related research being conducted in the region)
- Artificial reef clean up events and participation in the Monofilament Recovery and Recycling Program
- Reef fishing gear workshops for recreational anglers
- Fish Identification training
- Pelican rescue techniques (and other birds entangled by fishing line) workshop for park rangers, resource managers, and volunteers
- Derelict Trap recovery
- Great Goliath Grouper Count-(regional stakeholder-based survey of goliath grouper on artificial reefs
- Fish Descending Gear field trials with anglers.
- Fisheries related displays at boat shows, fishing tournaments, community festivals
- Fisheries related talks/programs for fishing clubs
- Publications for boating/fishing trade papers
Brown Bag Webinars that have focused on Florida’s commercial fisheries
Florida Master Naturalist Program—while this is not directly a fisheries program, it helps build a solid foundation on the importance of having a health ecosystem. Several fishing captains take the course to be better informed.

Are any methods used to specifically reach underserved and underrepresented clientele?

Youth fishing programs often target underserved populations. Several years ago with the help of Dr. Mickey Swicher Joy Hazell and Bryan Fluech hosted a series of focus groups with Hispanic fishermen to try and get a better idea of how to better reach out to this group. Lack of resources (funding and staff time) made it difficult to carry out the recommendations made by the participants.

RESULTS AND IMPACTS
Do you have a statewide evaluation plan in place or in progress?

Past reef fishing gear workshops conducted by agents around the state used similar surveys in order to be consistent in documenting impacts. Currently, agents working on fish descending gear assessment project are using similar methods to evaluate the project. However, besides these examples we are not aware of a statewide evaluation plan in place.

How do you measure program results and impacts?

Workshops often include post-event evaluations and/or pre-posttests to evaluate changes in participant knowledge or attitudes and levels of agreement regarding workshop goals. Another common practice is to send out a follow up survey (via Survey Monkey) to get a better idea of whether participants are adopting recommended practices and using the information presented to them during programs. For cleanup activities, the amount of debris remove (number of traps, pounds of monofilament, etc.) is calculated to determine environmental impact.

What difference will this program make in the lives of participants or Florida’s citizens?

Anglers who adopt conservation measures can have a significant impact to the health of Florida’s fisheries, habitats, and natural resources. The health of Florida’s fisheries and marine and coastal habitats are paramount to the health of Florida’s economy.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

Yes. Florida’s recreational and commercial fisheries are each multi-billion dollar industries. Proper management practices, angler compliance and habitat protection are key to sustaining these industries long-term. Having an uninformed and non-compliant angling population can have negative impacts to the overall health of the fishery and industry, which can spill over to other sectors of the economy.

FUNDING SOURCE
Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc.)

Grants have been applied for through Florida Sea Grant and Fish Florida to obtain fishing gear and other educational materials needed for outreach programs. FSG grants have also paid for fuel costs on some projects. Local captains and anglers, commercial fishermen, resource managers, and even the local Sheriff Offices have donated boat time to support artificial reef clean ups, trap recovery efforts, goliath grouper surveys, and fish descending gear trials. FWC and tackle companies have also provided agents with educational materials for outreach programs, and local fishing clubs have donated funds to support some lecture series. For some programs, a small fee to cover the cost of workshop materials has been assessed. Many agents have used funds generated
from the Florida Master Naturalist Program or funds from other programs such as “Are You Smarter than a Stone Crab?” to cover the costs associated with their fisheries program (e.g., gear, fuel, travel, etc.)

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- Currently no, but if that happened, we would need to work with local partners to better leverage resources. We might also have to charge more for other programs in order to generate revenue to cover program costs.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

Do you need resources or additional financial support to continue to implement this program in the future?

- Due to staff changes (retirement, attrition, shifts in job duties) and constraints placed by some county administration it seems fewer Sea Grant agents are directly focusing on fisheries outreach efforts now. This is extremely unfortunate as Florida Sea Grant is recognized as a leader in fisheries outreach and education, particularly when it comes to deep water release practices. Because many fisheries and natural resource issues extend beyond county lines, we wonder if establishing regional extension agents might be a way to better address these topics. As with everything else, funding would probably be an issue, but at least this option might allow us greater geographic coverage.

**SUPER ISSUES**

What Super Issues does this program relate to? [Must list at least one.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.

**HIGH PRIORITY INITIATIVES**

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1. Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options. (artificial reefs, habitat restoration)
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy. (sustainable fishing practices, fisheries management, habitat protection)

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.
  1. Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness. (fishing camps and marine education programs with youth)
FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY
THE PANHANDLE BUTTERFLY HOUSE

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: T. Friday*, Santa Rosa County Extension

OBJECTIVES
To promote environmental stewardship; to teach about butterflies and their habitat; to teach and encourage the use of integrated pest management; to assist with butterfly conservation efforts and to increase awareness of 4H.

METHODS
Teaching methods include (1) A 2,000 square foot vivarium filled with host and nectar plants and approximately 300 Florida native butterflies. (2) —Kiderpillar School, a youth education program, focuses on teaching butterfly identification, life cycle, integrated pest management and conservation. (3) The Agent coordinates a group of approximately 80 volunteers and provides an annual docent training. (4) Surrounding gardens demonstrate Florida-friendly landscape practices. (5) Annually, a three day Butterfly Festival is held. The public assists in the tagging of monarch butterflies to support the Monarch Watch program. (6) Our website provides exhibit information as well as butterfly educational resources. (7) A quarterly educational newsletter is published and distributed.

RESULTS
In 2008, Grade K-2 participants increased their knowledge of beneficial insects by 42% (98/236), knowledge of metamorphosis by 49% (111/226). Grade 3-12 participants increased their knowledge of butterfly conservation by 80% (64/80), knowledge of metamorphosis by 47% (34/72) and knowledge of butterfly plants by 88% (57/65). Pre-K participants increased their knowledge of good vs. bad bugs by 92% (111/121). First grade participants increased their knowledge of beneficial insects by 100% (48/48).

CONCLUSIONS
In 2008, there were 14,132 visitors, educational programs were conducted for 1,051 youth and 397 adults, 80 volunteers contributed a total of 3,241 hours and 3,085 people attended our Butterfly Festival.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

WOODS WALKS TEACH LOCAL ECOLOGY IN THE OUTDOORS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Eleanor Foerste (UF IFAS Extension in Osceola County, Natural Resources)

UF/IFAS PROGRAM PARTNERS/UNIT: Jennifer Pelham (UF IFAS Extension in Osceola County, Urban Horticulture)

EXTERNAL PROGRAM PARTNERS: Florida Master Gardeners, Osceola County Public Lands, Osceola County Natural Resources, Kissimmee Valley Audubon Society, Florida Native Plant Society Pine Lily Chapter

SITUATION

Osceola County and much of Florida have experienced tremendous population increase. Many residents have not experienced natural Florida and therefore are not familiar with ecosystems or human impacts. There are limited nearby natural areas with public access. Osceola County has no State Parks. Citizens recognized the need for conservation of natural lands for parks and wildlife and Osceola County has been acquiring land through an ad valorem tax initiative passed in 2004.

- Target audience: local residents, school groups, garden club, neighbors, general public, 4-H members, and Osceola County HR department for employee wellness.

This program could be easily adapted in any county to showcase local natural areas and environmental issues. It is a great way to integrate and provide exposure to other UF IFAS Extension programs such as 4-H, urban horticulture, Master Gardeners, Master Naturalist, agriculture and sustainable living. Faculty should be trained in safety, interpretation and planning for field experiences. Information is available in the Florida Master Naturalist Curriculum Interpretation.

PROGRAM OBJECTIVES

Participants will:

- Develop appreciation for outdoors
- Understand significance of ecosystem diversity
- Share experience with others
- Learn about UF IFAS Extension as a resource
- Become more involved in environmental activities (Audubon, Florida Trail Association, Native Plant Society)

In the long-term, participants will:

- Continue to be involved in other UF IFAS Extension programs (Master Gardener, Master Naturalist, 4-H, etc)
- Become involved as environmental advocates at community meetings
- Become appointed to local advisory boards

EDUCATIONAL METHODS

- The program consists of FREE 1 to 3 hour outdoor interpretive walks on local nature trails (day, night, sunrise, sunset, Saturday, Sunday). Topics covered include: Trail Safety; Ecosystems; Ecology; Plant identification; Landscape applications; Future Woods Walks; Wildlife signs; Geology; Importance of fire; Human impacts; Invasive species and Local issues.
- Are any methods used to specifically reach underserved and underrepresented clientele? I have offered walks with the Health Department for their low income clients. I have been learning Spanish since some clients who prefer Spanish.
RESULTS AND IMPACTS

- This is a local program at this time, but has potential for statewide application. I have a short survey for after the activity and a follow-up online survey.

<table>
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<th>Participants</th>
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In 2008, 160 youth, adults and government workers participated in Woods Walks. Of 20 that completed surveys after events: 100% indicated that they learned about native plants, animals and local history and enjoyed being outdoors. In addition, a follow-up online survey completed by 24 participants indicated that:

- 58% participated in 2 or more experiences.
- 81% were very satisfied with the experience(s).
- 21% did not know about UF/IFAS Extension before they participated.
- 96% recognize different types of Florida ecosystems
- 91% are more comfortable walking in the woods
- 100% feel natural areas have value
- 100% felt natural areas should be protected and 19 of 23 respondents answered that they owned property and were willing to continue to pay a portion of property taxes to buy and manage lands for environmental protection.
- 84% are using safety precautions when walking in the woods.
- 100% have walked on other natural trails.
- 86% have told others some of the things they learned.
- 61% have joined or participated in meetings of conservation organizations.
- 61% have participated in other UF/IFAS Extension educational activities.
- 96% felt that the Woods Walks Educational Program was an appropriate and worthwhile use of local tax dollars.

In addition, Osceola County Human Resources Department has endorsed the Woods Walks as part of their employee wellness program providing incentives for participation since walking contributes to wellness and stress reduction. Some participants have become environmental advocates and served on volunteer boards. Some have taught lessons for family and youth groups. Some have gone on to take other UF IFAS Extension educational programs.

Is there any economic benefit to the individual participant or state of Florida?

- Individuals are learning about local ecosystems for low cost outdoor recreational opportunities with family and friends. Gate fees at state parks and wildlife management areas for future trips is an economic benefit.

FUNDING SOURCE

- This program is low cost as only evaluation and minimal EDIS fact sheets are distributed by paper copy. Email link to evaluation tool is provided. GPS units and compasses were funded by District Director mini-grant. Currently, we
use the free online SurveyMonkey tool, but would benefit from having access to deluxe, more powerful version for analysis if input.

- Currently, Woods Walks are free, however, almost all other UF/IFAS Extension in Osceola County programs have an associated registration fee, maybe $5, collected via Eventbrite online. Not sure if clients will pay for guided walks at this time.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

- Funds are needed for advanced survey tools.
- I would like to develop a Parks Visitor Experience program similar to State Parks with either patches, or buttons for visits or geocache finds somehow linked to web feedback to build a customer experience database. This would help for follow-up and long range tracking. I would also like to explore follow-up evaluation with long term participants.
- I also feel it is important to develop volunteers or entrepreneurs who are fluent in Spanish to be able to conduct these tours for a wider local audience.

**SUPER ISSUES**

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida Communities.

**HIGH PRIORITY INITIATIVES**

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
Florida Extension Initiative 3: 
Enhancing and Conserving Florida’s Natural Resources and Environmental Quality 

[Suggested Management Practices (SMPs) Canal Residents Highlands County]

UF/IFAS Program Primary Contact(s)/Unit: Highlands County Extension – Mike Jensen

UF/IFAS Program Partners/Unit: UF LakeWatch

External Program Partners: Highlands County (Natural Resources, Road and Bridge) Highlands County Lakes Association, Highlands County Tourism and Visitor Bureau, Highlands County BMP Advisory Council, Florida Forest Service, Town of Lake Placid, Erin Park Canal Association

SITUATION

• What problem are you trying to solve? Why is this important?
Help residents understand Water Issues and the important role Agriculture plays in conservation and protection of water resources.

Water-control efforts during the 20th century created major changes in the south Florida landscape, dramatically altering hydrology and ecology while enabling rapid agricultural and urban development. Historically, Lake Okeechobee, the sawgrass plains, ridge and slough habitats of the Everglades, the cypress swamps and prairies of the Big Cypress, and the mangrove swamps along the coasts were connected hydrologically and were shaped by the steady south/southwestward flow of a wide sheet of shallow water (Light and Dineen 1994; SCT 2003). Today, water depth, flow, and flooding duration in the region result from a combination of seasonal rainfall and a management regime that attempts to balance ecological needs with those of agriculture and the growing population of south Florida's ever-expanding urban areas.

Canals and levees are the foundation of the south Florida water-management infrastructure. Although small-scale, shallow canals existed in the Everglades as early as A.D. 300—built by the native Ortona and, later, Calusa and Tequesta people to connect villages to coastal trade routes (Carr et al. 2002; MacMahon and Marquardt 2004; NPS 2010; Figure 2)—modern canals are wider, deeper, and hundreds of kilometers longer than the pre-Colombian navigation trails (Light and Dineen 1994, Carr et al. 2002).

• Who is the target or primary audience for your programs?
Residents who live on or near, or are impacted by Canal systems (Agricultural, residential, drainage, or recreational)

• What challenges or opportunities exist to establishing this program topic as a statewide program?
Highlands County is a mix of developed and rural land but much of the county is still rural. The county is known for its natural areas and recreation. Residents and thousands of annual tourists enjoy automobile racing, biking, hiking, birding, camping, horseback riding, canoeing, boating, golfing, fishing, and hunting. Agriculture is still a dominant force in the county with citrus and cattle the main agribusiness-nesses. The 86 named lakes totaling over 48,000 acres of surface water are frequently cited as the most attractive features of Highlands County; protection of their “quality” is a primary concern. Lake water quality ranges from naturally clear - low nutrient lakes surrounded by sandy soils, to lakes with stained, naturally higher nutrient water which have highly organic muck soils in their watersheds. Watershed surface and groundwater protection is critically important to protecting these resources. Land use in watersheds has the greatest influence in potential changes in nutrient levels, algae and transparency levels; proper practices to reduce fertilizer use, remove direct storm water runoff from roads, and pre-serve and protect in-lake habitat are critical to preventing long-term declines in lake water quality. Many lakes have been identified as impaired and needing some type of restoration work. Many Agriculture Producers in the area have adopted BMPs. A number of large landowners are involved in environmental services projects with the Water Management Districts. There are great opportunities to champion their proactive efforts in protecting the water resources of the Region. Other residents need to understand the value of the conservation efforts Agriculture producers are taking and they need to look at what they can do locally to also help reduce negative impacts on the canals, lakes and water systems.

PROGRAM OBJECTIVES
• What do you intend the participants will know, think or do as a result of completing the program?
  • Increase awareness of impacts of Land use decisions on water quality and quantity.
  • Learn and adopt suggested management practices (SMPs) for canal residents to protect water resources.
  • Understand importance of BMP for Agriculture to insure water quality.
  • Learn about UF Lakewatch and actively participate and support citizen scientists in sampling lakes and canals to monitor water quality.

• What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?
  • Data collection of water systems, canals, lakes, rivers by new and existing UF LAKEWATCH volunteers will greatly increase.
  • Usage of UF LAKEWATCH data will increase in local decision making and evaluation of BMPs, SMPs and mitigation strategies for water systems.
  • Canal residents and the general public will be knowledgeable about their everyday practices and impacts on water quality and quantity.
  • There will be an increased number of Canal Associations (grass roots residents) that work to solve local problems and seek grants and other funds to make things happen. (Erin Park Canal, Highlands County example)

• In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?
  • UF LAKEWATCH will be prevalent in each Florida County.
  • Canal Associations will work together to protect water resources and mitigate water issues on a County and State scale.

• Do participants receive a certificate, Continuing Education Units (CEUs), or something similar? Not at this time.

EDUCATIONAL METHODS

• What topics and subject matter will you cover?
  • A systematic approach to understanding water systems and issues.
  • Suggested management practices (SMPs) for canal residents
    o Florida Friendly Landscaping
    o Master Gardener Training
  • BMPs for Agricultural operations.
  • Restricted Use Pesticide Education.
  • Promotion of the economic contributions and value of Agriculture and Natural Resources to the General Public.
  • Increased awareness, volunteer recruitment, and data utilization as it relates to UF LAKEWATCH.
  • Local advisory board recruitment and training focused on BMPs, SMPs and water issues.

• What methods or activities will you use to teach program participants?
  • Community Education meetings.
  • Presentations to the County Board of Commissioners.
  • Website.
  • “Canals of Highlands County” Tour.
  • BMP Advisory Board Trainings and dialogues.
  • Newspaper Articles.
  • Radio programming.

• Are any methods used to specifically reach underserved and underrepresented clientele?
  • Tour promotion.
  • Community Educational Meeting Marketing.
• Web and social media utilization
• Newspaper and Radio promotion

RESULTS AND IMPACTS

• Do you have a statewide evaluation plan in place or in progress? Not at this time
• How do you measure program results and impacts?
  • Participation data from programs
  • Informal Feedback from program participants
  • Formal survey of BMP Advisory
  • Planning data from BMP Advisory

• What difference will this program make in the lives of participants or Florida’s citizens?
  • Increased awareness of the importance of Agriculture to the economy of Highlands County and the State of Florida
  • Enhanced public perception of role of Agriculture in protecting water resources through BMPs, and Environmental Services
  • Increased awareness of water issues
  • Increased awareness of land use decisions and their impacts on water quality and quantity
  • Recruitment of new UF LAKEWATCH volunteers and support of existing volunteers
  • Better utilization of UF LAKEWATCH data to assist in decision making and mitigation strategies
  • Safer pesticide and fertilizer usage by Licensed Applicators and the General Public
  • Adoption of SMPs for Canal Residents

• Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?
  • Promotion of Agriculture practices, BMPs and environmental services
  • Reduced pesticide and fertilizer usage (Florida Friendly)
  • Promotion of entrepreneurs and businesses
  • Vital data collected from lakes, canals and other water bodies through the UF LAKEWATCH program
    o According to Mike Jensen, County Extension Director, “There are close to sixty Lakewatch volunteers in Highlands County sampling approximately 40 water bodies. Fourteen new volunteers received the training this last year.” Jensen adds, “Each monthly sample from Highlands County water bodies provides important information about local lakes and canals that is used to monitor the health of lakes and make decisions on future management. Also for each sample, the volunteers save the county more than $100. Considering that each volunteer commits to take monthly samples this saves the County from investing $48,000 in water sampling costs. Jensen says that Lakewatch is a University of Florida project that is offered in Highlands County as part of the partnership between the Highlands County Board of Commissioners and the University of Florida IFAS Extension.” Jensen notes, “we could not accomplish this important work without the dedicated Lakewatch volunteers.”

FUNDING SOURCE

• Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc. ...) Tour Participant fees. RUP training fees
• If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

• Do you need resources or additional financial support to continue to implement this program in the future? Yes

SUPER ISSUES
What Super Issues does this program relate to? [Resource sustainability and conservation in Florida communities.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

[List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  1. Water conservation. Conserve Florida’s finite freshwater resources by teaching rural, suburban and urban audiences how to use less water.

- Initiative 1. Increasing the sustainability, profitability, and competiveness of agricultural and horticultural enterprises.
  3. Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3. Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
SITUATION

• What problem are you trying to solve? Why is this important?
Southeast Florida is home to the largest coral reef tract in the continental United States. These reefs, which in 2008 supplied approximately 41% of the total species and 32% of the total pounds landed, are not only close to shore but exist within a region of intensely developed coastal areas. Although intensely managed, Florida’s reefs are considered one of the nation’s most stressed ecosystems mostly because of their proximity to dense populations, and the constant threat from hurricanes, diseases, and various chronic human-induced impacts (Porter et al. 1999). This is especially critical since the Florida reef tract is home to two federally-listed species of hard coral, Acropora palmata and A. cervicornis. It is clear that the health of these environments is critical for the health of the marine communities and industries that rely on them. Paradoxically, intense fishing pressure constitutes one of the most significant threats to ecosystem function and biodiversity, partially as a result of derelict fishing gear. This project is designed to specifically address the impacts of marine debris and derelict fishing gear along the southeast Florida reef tract north of the Florida Keys; a region that has historically been overlooked despite the intense commercial and recreational fishing and boating pressure.

• Who is the target or primary audience for your programs?
Resource managers and commercial and recreational fishermen

• What challenges or opportunities exist to establishing this program topic as a statewide program?
Derelict trap removal is and can be a statewide program; however the use of the database is limited to Miami-Dade and Monroe Counties and removal in coral reefs presents different challenges than removal in seagrass communities.

PROGRAM OBJECTIVES

• Identify sensitive and impacted areas along the Florida Keys reef tract by developing a derelict fishing gear database utilizing the NOAA Fisheries RVC data.
• Share the database developed GIS maps with resource managers; including Biscayne National Park who participates in their own derelict trap removal programs.
• Remove lost and abandoned fishing gear in the Biscayne Region of the coral reef tract
• Focus gear recovery efforts in high density and/or high priority areas to enhance and restore near shore marine ecosystems in Miami-Dade County.

EDUCATIONAL METHODS

With funds from the National Fish and Wildlife Federation and the National Oceanic and Atmospheric Administration, the agent will work with resource managers, commercial fishermen, and volunteers to identify and remove derelict fishing gear from the Biscayne region of the coral reef tract during organized cleanup events.
RESULTS AND IMPACTS

Trained volunteers and commercial trap yards remove and prevent derelict fishing gear from entering coastal waters. This project successfully used NOAA Reef Visual Census data in Geographic Information Systems (GIS) to map the location and densities of debris in Miami-Dade County waters. GIS analysis found areas of high densities of marine debris, or marine debris ‘hot spots’, in the northern and southern portions of BNP. The northern hotspot was targeted for removal events in June-July 2012. During these removals, 5,224 m of coral reef habitat were surveyed. In total, 140 of the 211 debris articles encountered (66%) on surveys were removed. Using a trap equivalency standard, 74 traps were removed over the course this study. A total of 692 meters of trap line, 42 meters of monofilament line, and 75 meters of rope were collected and removed. Of the 211 debris items surveyed, 62 (29%) caused damage to 137 benthic invertebrates.

FUNDING SOURCE

This project is funded by external grants from NFWF and the NOAA marine debris program. New funding sources will not be sought once current funding disappears. The project will continue on a smaller scale using volunteer based removal events.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

This program cannot be continued as is without the support of a Miami-Dade program assistant and boat use. Boats are currently being rented at a cost-prohibitive rate and the agent is unable to safely get on the water without additional staff.

SUPER ISSUES

What Super Issues does this program relate to?
- Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
FLORIDA EXTENSION INITIATIVE 3:

ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

[SEA TURTLE FRIENDLY BEACHES]

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Ken Gioeli, Program Extension Agent III / Natural Resources
UF/IFAS PROGRAM PARTNERS/UNIT: Unknown
EXTERNAL PROGRAM PARTNERS: St Lucie County Board of County Commissioners

SITUATION

• What problem are you trying to solve? Why is this important? Improper beachfront lighting can imperil Florida’s endangered and threatened sea turtle populations. There are St. Lucie County regulations that stipulate beachfront lighting requirements. St. Lucie County enforces these rules during Sea Turtle Nesting Season which runs from March 1 – November 15. Failure to comply with sea turtle lighting requirements can result in a code violation and increased sea turtle mortality. The Sea Turtle Friendly Beaches Program addresses the sea turtle nesting season lighting code violation issue. The goal of the Sea Turtle Friendly Beaches Program is to teach St Lucie County residents that improper oceanfront lighting directly impacts the safety and well-being of our threatened and endangered sea turtle populations and teaches these residents how to comply.

• Who is the target or primary audience for your programs? Beachfront lights along 21 miles of St. Lucie County beaches are reviewed annually by a contracted sea turtle lighting expert. The audience for this program includes those oceanfront residents, visitors and businesses included in the annual evaluation. In addition, code enforcement and other government agencies participate in training.

• What challenges or opportunities exist to establishing this program topic as a statewide program? Sea turtle lighting ordinances are in place is several oceanfront communities throughout Florida. Each community has a different lighting ordinance and inspection process.

PROGRAM OBJECTIVES

• What do you intend the participants will know, think or do as a result of completing the program? Residents will learn basic sea turtle biology and conservation issues. In addition, they will learn how to comply with St Lucie County’s Sea Turtle Nesting Season lighting code. This code reads as follows: “During sea turtle nesting season (March 1 – November 15), exterior light sources directly visible from the beach or illuminating areas seaward of the primary dune must be turned off between sunset and sunrise during nesting season. Existing artificial light sources should not be directly visible from the beach and cannot illuminate areas seaward of the primary dune. Lights illuminating beach access points, dune crossovers, beach walkways, piers or any other structure seaward of the primary dune designed for pedestrian traffic must be shielded so they are not directly visible from the beach.”

• What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)? As a result of this educational program, program participants are expected to greatly increased their ability to (1) identify Florida’s sea turtles, (2) know the official dates of St Lucie County’s Sea Turtle Nesting Season, (3) identify the types of approved window treatment to comply with these nesting season light codes, and (4) know the sea turtle lighting regulations for St Lucie County.

• In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)? The following long-term outcomes are expected: 1. Increased compliance with St Lucie County’s Sea Turtle Nesting Season light codes; 2. Increased knowledge of sea turtle biology and conservation; 3. Improved nesting trends for St Lucie County’s threatened and endangered sea turtle populations.
• Do participants receive a certificate, Continuing Education Units (CEUs), or something similar? No; however, program participants receive program bumper stickers, window clings and other promotional items when funding is available.

EDUCATIONAL METHODS

• What topics and subject matter will you cover? Topics and subject matter program participants are expected to learn include: (1) identifying Florida’s sea turtles, (2) knowing the official dates of St Lucie County’s Sea Turtle Nesting Season, (3) identifying the types of approved window treatment to comply with these nesting season light codes, and (4) knowing the sea turtle lighting regulations for St Lucie County.

• What methods or activities will you use to teach program participants? Ken Gioeli is the agent that coordinates sea turtle lighting educational efforts in St Lucie County through public presentations, nighttime site visits with beachfront residents, public displays and the use of mass media.

• Are any methods used to specifically reach underserved and underrepresented clientele? Highway billboards, banner displays, bumper stickers, door hangers and other educational materials are made available to the general public at libraries, environmental education centers and other locations. He also interacted with the Public Information Officer to reach the general public throughout St Lucie County.

RESULTS AND IMPACTS

• Do you have a statewide evaluation plan in place or in progress? No. I work within St Lucie County.

• How do you measure program results and impacts? Pre and posttests are used to measure knowledge gained. TurningPoint is utilized for instant feedback as well as hardcopy pre and post tests.

• What difference will this program make in the lives of participants or Florida's citizens? Sea Turtle Friendly Beaches campaign has reached the following audience in St Lucie County: 48 million highway billboard viewers; 28,000 publications distributed through 33 table top displays; 2000 window clings; 1000 door hangers and over a dozen newspaper articles were read by St Lucie County residents. In addition, program participants have greatly increased their knowledge of sea turtle biology and conservation issues.

• Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)? Yes. People who comply with St Lucie County’s Sea Turtle Nesting Season lighting codes will not receive a violation notice from Code Compliance and avoid potential fines assessed by the Code Compliance Board.

FUNDING SOURCE

• Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? Donations; EDIS funding; grants have paid for program costs.
  (e.g., internal funds provided by unit, external grants, program fees, etc. …)

• If funded internally or by grants, do you have a plan for a new funding source if current funding disappears? Yes.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

• Do you need resources or additional financial support to continue to implement this program in the future? Yes. Funding is needed for production of billboards, publications, displays, and program promotional materials.

SUPER ISSUES

❖ Resource sustainability and conservation in Florida communities.

HIGH PRIORITY INITIATIVES

❖ Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
Overview
These programs all provide environmental education for youth.
OBJECTIVES

Eco-Camp sought to increase the awareness of the unique ecology of Falling Waters State Park by engaging youth in field based science experiments, habitat observation and the scientific process.

METHODS

The 4-H Agent approached the Park Specialist at Falling Waters State Park about implementing Eco-Camp within the park during the summer of 2009. After gaining support, two middle grades science teachers were recruited to teach the majority of the program with the Park Specialist and volunteers from the Chipola Area Groundwater Outreach Project providing the remainder of instruction. Using curriculum from Project WILD, Project Learning Tree, Project WET and The Schoolyard Activity Guide, lessons were developed that focused on the habitats within Falling Waters State Park, its unique ecology and landscape and conservation practices.

RESULTS

Thirty-seven youth participated in the six-day camp with six hours of programming each day. Three new 4-H volunteers were recruited, screened and trained. Collaborations with Falling Waters State Park, the Washington County School District and the Chipola Area Groundwater Outreach Project were established to support the camp.

CONCLUSIONS

Youth completing Eco-Camp 2009 completed activity portfolios that were assessed for completeness. 100% of youth participants received a 90% or better on their portfolio. Eco-Camp 2010 is scheduled to be held this summer and will again be taught by last year’s volunteers. Eco-Camp has expanded to a multi-county program to include youth in neighboring Holmes County. Two youth who completed last year’s Eco-Camp have been recruited to serve as teen leaders during 2010 Eco-Camp.
FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

4-H MARINE SCIENCE SCHOOL ENRICHMENT

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Dr. Keith Diem, Dean of 4-H
UF/IFAS PROGRAM PARTNERS/UNIT: Keith Wilson, 4-H Agent
EXTERNAL PROGRAM PARTNERS: Sarasota Bay Estuary Program, Mote Aquarium, Learning and Families Program

SITUATION

High School home schooled students often lack the educational resources to gain a solid understanding of the importance of enhancing and conserving natural resources in their communities. Associating environmental quality with responsible natural resource stewardship efforts provides youth the insight and skills to continue on in their educational endeavors in the field of science.

Providing educational resources to home school organizations better prepares youth to become productive citizens within their communities and be better prepared to enter the workforce upon graduation.

- The 4-H marine science school enrichment program targets home school teenagers seeking training and lab instruction in the field of environmental science.
- Marketing the educational science program statewide is a big challenge as well as recruiting a trained staff person to implement the program within each county.

PROGRAM OBJECTIVES

- Students participating in this 33 week class, which involved a weekly 2 hour marine science lab, will exhibit an 85% knowledge gain, receive high school science credits, and develop basic research skills relating to the field of environmental science.
- Participants will graduate from high school with a fundamental understanding of the importance of natural resource conservation and its application to their immediate community. Students will seek continuing education and have enhanced skills in environmental science exploration that will aid them in this endeavor.
- Participants will become actively involved in community efforts involving natural resource conservation through joining local organizations (Sarasota Bay Estuary Program, Mote Aquarium, etc.). Students will become stewards and or supporters of conservation efforts through the support of leadership efforts which seek to enhance the local environmental quality of their communities.
- Students receive high school credits for their class to apply to their high school resume.

EDUCATIONAL METHODS

- Oceanography, marine biology, fisheries management, sustainability, microbiology, ocean conservation and coastal ecology.
- Research work involving data compilation, species identification and classification, microbiology skills, salinity instrumentation use and public speaking.
- Yes, home school students are often lacking available educational resources in the field of science to gain a solid understanding of the field of natural resources. Laboratory classes offer an opportunity for them to learn scientific research skills, where there was not one previously.
RESULTS AND IMPACTS

- No.
- The Learning and Families Organization has standard evaluation forms to measure impact.
- Florida citizens will be benefited through the enhanced knowledge and skills of these students contributing to their community by their involvement in natural resource enhancement and conservation projects that will improve the quality of life for Florida citizens and visitors.
- Yes, through active involvement in community conservation and enhancement efforts, the precious coastal environment of Florida is more likely to maintain its health and attractiveness to tourists, the major economic driving force of Florida. If the environment is protected, visitors will pay to utilize it.

FUNDING SOURCE

- The Sarasota County 4-H Foundation provides financial support for resource materials for the classes as does the Learning and Families Program.
- Not at this time. The costs are very manageable to implement the classes.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- Funding for additional microscopes and seining nets would be helpful in the future.

SUPER ISSUE

- Science, technology, engineering, and math (STEM) opportunities for youth.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address?

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.
  1. Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
  2. Organizational and volunteer systems. Foster learning environments to make positive 4-H Youth Development possible by educating caring adults about volunteerism and using youth-adult partnerships.
FLORIDA EXTENSION INITIATIVE 3:  
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

THE 4H WILDLIFE CAMP AT JUBILEE: HOW TO DEAL WITH RETURNING CAMPERS

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: M. Boston*, S. Rosenthal, W. Sheftall, L. Harrison, Leon County Extension J. Lilly, H. Copeland, Jefferson County Extension

SITUATION

The 4H Wildlife Camp began in 2004 with many excited youth ready to experience a fun filled day in the woods. Since its inception we began to see many return campers who looked forward to what new exciting opportunities that awaited them on the other side of the door to the forest. We needed to establish new educational opportunities for our newcomers as well as provide challenging sessions for our returning campers.

OBJECTIVE

To teach the youth participants: How to enjoy being outdoors by engaging them in hand on educational sessions that focus on forestry, wildlife, shooting sports and natural resources,. We also wanted to provide additional educational sessions for the returning campers that would keep them engaged in the whole camping experience.

METHOD

Campers were divided into 3 color coded groups that were matched up with a specific discipline area. The regular class sessions were Forestry, Wildlife, and Conservation. This past year we added a Green group that would be for campers who had attended the camp at least 2 times prior to the current year. The Green Group sessions covered: Pioneering, Outdoor Cooking, and Nature Crafts.

RESULTS

Results from the Green Group evaluations reflected a 99% increase in knowledge of the specific material covered in the Pioneering, Outdoor Cookery, and Nature Crafts sessions.

CONCLUSION

The modification made to this existing camping program will allow us to extend the impact of our environmental education programs with our 4H members throughout their school age years.
4-H₂O Water Ambassadors is an environmental education curriculum that is a project of the Southern Regional Water Program. Over the past 1-½ years, a team of University of Florida faculty have been working to adapt the curriculum to Florida, as well as to integrate the experiential and inquiry processes to make it 4-H Science Ready.

**DESCRIPTION**

The 4-H₂O Water Ambassadors is an environmental education curriculum that is a project of the Southern Regional Water Program and a collaboration between University of Kentucky, University of Tennessee, Clemson University, University of Georgia, Auburn University, and University of Florida. The curriculum is designed to teach youth about watersheds, water quality, and water conservation. For the last year and a half, a team of faculty from the University of Florida have been adapting the curriculum to Florida, and updating it to include both the experiential and inquiry learning processes as well as national and state educational standards in order to make the curriculum “4-H Science Ready.” In addition, the lessons are being re-formatted using the standard template suggested during the National 4-H Science Academy in 2010.

The program is currently being piloted in four Florida counties with a variety of delivery modes, including club, in-school, after-school, and day camp audiences. Plans for the future are to expand piloting to additional Florida counties and southern region states.

**RELEVANCE**

The 4-H₂O curriculum is web-based and available for download, so it is easy to replicate. The new format makes the curriculum user-friendly and includes instructor background information for each unit. During the 2011 strategic planning process, water quality was the number one issue that clientele identified for Extension to address, with positive youth development as second. This curriculum addresses both issues, and is extremely relevant to the southern region, not just Florida.
FLORIDA EXTENSION INITIATIVE 3:  
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

DEEP SEA SAFARI: AN EXTREME STUDENT LEARNING ADVENTURE

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT:  B. Cameron*, Bay County; S. Jackson*, Wakulla County; A. Diller, Escambia County.

OBJECTIVES

To increase knowledge of deep ocean ecosystems through comparison and contrast to familiar marine coastal systems.

METHODS

Deep sea oceanographic exploration by Harbor Branch Oceanographic Institute and other research groups provide the opportunity to bring deep sea exploration into the classroom. Utilizing multimedia presentations and activities participants received science-based information regarding chemosynthetic ecosystems and how organisms function in the absence of sunlight. Student investigations were conducted in a tactile environment simulating extreme ocean depths. A small building was completely darkened using black paint and window coverings reproducing the lack of sunlight. Blacklights and fluorescent paint were used to create deep sea creature art. Fog machines simulated entering into another world and portrayed the presence of hydrothermal vents. Multimedia presentations included PowerPoint with embedded video clips, music, and sound effects to capture the attention of students. Additional resources included adapted materials created in association with Walt Disney Studio’s IMAX movie Aliens of the Deep.

RESULTS

112 youth attending Florida 4H State Marine Camp in Niceville, FL, participated in the Deep Sea Safari program. Pre-Post tests indicate a 40% increase in knowledge gained relating to oceanography, marine habitats, and the food web. Additionally, 30 high school students from Mosley High School in Panama City, FL, participated in the program. Post-instruction, all could discern chemosynthesis and photosynthesis.

CONCLUSIONS

As a result of this learning experience campers reported a growing interest in marine science and oceanography. Students were intrigued with bioluminescence of deep sea ocean life. Future programs will build upon this interest.
OBJECTIVES

The Environmental Explorations 4-H Day Camp provided hands-on, inquiry based water science education activities for summer day campers. The overall goal was to increase youth’s knowledge and awareness of freshwater environments, as well as their abilities in scientifically monitoring the quality of freshwater systems.

METHODS

Jackson County Extension Staff and volunteers planned and led activities that focused on the following topics: water and its importance to Earth, sources of freshwater pollution, aquatic entomology and measuring pH, dissolved oxygen (DO) and nitrate levels. Water sampling, insect collecting and fishing took place at a local pond. Campers also participated in environmental education programs during fieldtrips to Edward Ball Wakulla Springs State Park and St. Marks Wildlife Refuge. Curriculum developed for the Southern Region 4-H2O Ambassador Program was used, as well as education materials developed by the 4-H Agent. Cost was $30.00 per child. A grant from the Florida 4-H Foundation was secured to help offset equipment and curriculum expenses.

RESULTS

Fifteen youth, ages 8-14, participated in the three-day camp with six hours of programming each day. All 15 youth learned to perform and accurately interpret tests for pH, DO, and nitrates. Each camper demonstrated an increase in scientific knowledge related to water science. Campers obtained experience in making scientific observations and inferences, as well as collecting, organizing and analyzing data. New partnerships were developed with a local pond owner and the St. Marks Staff.

CONCLUSIONS

The objectives listed above were met. Environmental Explorations is scheduled again for summer 2011.
FLORIDA EXTENSION INITIATIVE 3: ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

FISHING FOR SUCCESS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Charles E. Cichra/Sharon Fitz-Coy, SFRC Fisheries & Aquatic Sciences

UF/IFAS PROGRAM PARTNERS/UNITS: Ken Langeland, Bill Haller, Karen Brown, and Amy Richard [Center of Aquatic and Invasive Plants], Ruth Francis-Floyd & Denise Petty [College of Veterinary Medicine], and 15-20 county 4-H faculty.

EXTERNAL PROGRAM PARTNERS: Florida Fish & Wildlife Conservation Commission, Florida Department of Environmental Protection, Alachua County Sheriff’s Office, Gainesville Police Department, US Fish & Wildlife Service, Rotary Club, and 20+ county school systems.

SITUATION

Florida has a vast aquatic environment and excellent fishing opportunities. Florida also has one of the fastest growing populations in the U.S. Many of our aquatic habitats are undergoing rapid change, usually for the worse. A greater awareness and knowledge of this resource may instill an appreciation and conservation ethic in today's youth.

Concurrently, many of today's youth are often in trouble. Respondents to the Florida Needs Assessment Survey indicated that educational programming that addressed at-risk youth problems was a "high priority." A non-aggressive activity like sportfishing, linked with environmental education, may help keep some of these youth out of trouble.

At-risk teenagers need strong role models that will not just teach, but involve them in adopting healthy lifestyles for themselves and their families, and introduce them to the STEM disciplines in a fun way.

Primary clientele include 4-H faculty and teachers, who have an interest in teaching aquatic ecology, fish biology and sportfishing to youth, and the myriad of youth associated with these educators.

PROGRAM OBJECTIVES

- Develop and strengthen aquatic youth education programming capabilities and knowledge base of educators.
- Increase the knowledge level of youth regarding careers in the aquatic environment and STEM-related fields.
- Increase the knowledge level of youth regarding biotic and abiotic components of aquatic environments and their interactive processes.

EDUCATIONAL METHODS

This program annually works with more than 150 county extension faculty, public and private school educators, and agency staff who conduct youth environmental education programs. These have received training through on-site and off-site in-service programs. They have also been provided with a variety of word finds, crossword puzzles, coloring sheets, fish puzzles, and bingo games boards. Recently, a coloring book and a Florida-specific ‘critter’ card deck have been developed for use in their programs. Sharon-Fitz Coy (Director of this program) has become the UF coordinator for Project WET and has offered UF’s first hands-on Project WET water-education workshop for educators.

- On-Site Programs: Fishing For Success (FFS) annually conducts 150+ informal aquatic educational activities for youth of all ages who are introduced to the wonderful world of fish, aquatic invertebrates and plants, and to various aquatic career opportunities through hands-on age-specific academic presentations and field experiences, including fishing. Activities are designed not only to stimulate their curiosity, but to show them that what they are learning in school applies to the real-world. Annually, 6,000 to 8,000 youth participate in this program.
• **Off-Site Programs:** FFS personnel visit schools to give educational presentations on the biology and ecology of aquatic invertebrates and fish found in Florida lakes and ponds and for career day seminars. FFS conducts 15+ hands-on environmental education and ecology days and interactive exhibits at many youth fairs, museums and festivals throughout Florida. Annually, these are attended by 5,000 participants.

• **Family Fishing Days:** FFS hosts monthly fishing events that provide families the opportunity to fish in a safe and fun setting at stocked “catching ponds”. Anglers catch bluegill, channel catfish, and largemouth bass, with volunteers on hand to help with baiting hooks or releasing fish. Free loaner poles, tackle and bait are provided for those that need it.

Based on data provided by group leaders and the Florida Department of Education, 54% of the participants are considered economically disadvantaged, i.e., qualify for the Free and Reduced School Lunch program.

**RESULTS AND IMPACTS**

1,500+ teachers, 4-H leaders and volunteers, adult volunteers, and parents developed and strengthened their aquatic youth education programming capabilities. Their knowledge and interest in teaching about aquatic systems increased.

Adult volunteers and leaders (500+) requested additional information that they could use in their education programs. Based upon feedback from teachers, aquatic topics are being incorporated more often into their curricula and several schools are using on-site retention/detention ponds as teaching labs where allowed.

This program has been well received by adult leaders, youth, and law enforcement agencies as indicated by the approximately $20,000 that has been donated in small contributions through the University of Florida SHARE program.

Over 100,000 children from more than half of the counties in Florida have been involved in this program since 2003. Every group, when tested (pre/post testing and/or follow-up testing) by us or their adult leaders/teachers, had increased awareness of aquatic systems.

When questioned by us or tested (pre/post testing and follow-up testing) by their adult leaders/teachers, children participating in this program had increased their knowledge of aquatic systems and potential careers, and they learned how information gained through classes in school applies to understanding and managing aquatic ecosystems.

**FUNDING SOURCE**

This program operates using SFRC soft-money funds, and limited funds from the Center for Aquatic and Invasive Plants and the USDA RREA program. Primary funding comes from UF SHARE donations, overhead, and residual funds. Many of the participants are charged $3.00 per child to cover expenses. Low-income youth are charged $1.00. 4-H groups are not currently charged to participate. This year (FY12-13), our RREA funding was cut by 60%. We receive no state Extension operating or support-staff funding for this program. This spring, Florida LakeWatch provided $10,000 in state rate for Sharon Fitz-Coy’s salary and fringe benefits.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

Reinstatement of lost state-funding for Sharon Fitz-Coy (senior biologist), who directs and conducts this program and serves as a role model for the 5,000+ African American and Hispanic minorities who participate on an annual basis, and specifically targeted for involvement in this program. Sharon is a key figure in making this program happen! All available funds are being expended on her position, allowing little to no money for operating expenses.

**SUPER ISSUES**

• Science, technology, engineering, and math (STEM) opportunities for youth

• Awareness and appreciation of food systems and the environment
HIGH PRIORITY INITIATIVE

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality (Environmental stewardship)
- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce (Youth development)
SITUATION

A literate person is one who meets specified societal standards or possesses certain capabilities that allow them to function effectively in jobs, as family members, and within their communities. Society rightly values certain skills and abilities (e.g., verbal, writing and math) as is demonstrated by rigorous curricula and corresponding literacy standards that comprise our educational system. However, we do not adequately address the importance of spatial literacy, even though spatial thinking is an important component of most academic disciplines and jobs duties. Indeed, many outstanding scientific achievements and discoveries were possible because of the superior spatial thinking abilities of those involved. As stated by the National Research Council (2006), spatial literacy plays an increasingly important role in today’s information-based economy, and “should be incorporated into K‐12 instruction.” Fortunately, increasing spatial literacy does not require adding to an already crowded K-12 curriculum, but is accomplished by adapting existing lessons and content such that they incorporate spatial thinking skills as part of the learning process. The Geospatial Semester, a dual enrollment program aimed at High School seniors, who also receive university credits, is but one step towards accomplishing the goal of increased spatial literacy. Insight into the power of the Geospatial Semester (GS), and spatial thinking, is reflected in the following quote by Julie, a Virginia high school senior:

“When I signed up for this class, I thought it would be just another science class that our school would try to put a ‘fun’ spin on, but this class is one of the most exciting classes I’ve ever taken. It makes you think, it challenges you to be innovative, but it’s something you can use. It makes the work more meaningful when you know you’re doing something that affects your life.”

PROGRAM OBJECTIVES

The program seeks to enhance geospatial, critical, and interdisciplinary thinking skills in high school seniors and to better prepare them for the educational approaches that are more typical of college courses. These objectives are partially accomplished within the context of collaborative, real-world, community-based projects that are a foundation of the Geospatial Semester.

EDUCATIONAL METHODS

The program entails a university / high school partnership: participating students receive both high school and university credit (UF faculty would serve as the teacher of record for university credits). High school teachers teach the Geospatial Semester in their schools and, with guidance from university faculty/staff, decide on course content and format. University faculty/staff involved in the GS provide various levels of support to high school teachers and students, including curriculum development, recurring classroom observational/assistance visits, giving classroom instruction/demonstrations, in-service training to high school teachers, and evaluation and critique of student projects. Though the program is NOT about learning geospatial software, the enhancement of spatial literacy/thinking among students is facilitated by providing access to desktop and online software, tools, applications, geospatial data, and teaching material via the ESRI, Inc. Schools Program.
RESULTS AND IMPACTS

A growing body of research (Wei, Lubinski and Benbow, 2009) shows that success in STEM classes and STEM majors and pursuit of STEM careers is strongly linked to spatial thinking skills. The Geospatial Semester helps to build these skills while engaging the students in a highly motivating class. The results and impacts to be expected for the Florida Geospatial Semester program can be predicted somewhat by what has been accomplished in Virginia, where the program has been in effect since 2005. In this, the eighth year of the Virginia program, James Madison University currently has enrollment of over 600 students in the GS. One outcome of the program has been increased enrollment at JMU by graduating high school seniors who participated in the Geospatial Semester; the same result can be expected at the University of Florida.

FUNDING SOURCE

The Florida program is expected to be self-supporting as is the case in Virginia, where the Geospatial Semester (GS) was created (at James Madison University). A portion of the university credit hour fees that participating high school districts and/or students pay are returned to the JMU GS program. The JMU credit hour fees for the program are intentionally low ($90/hour); despite this, fees returned to the JMU GS program have allowed it to hire part-time staff to work with high school teachers and to develop materials.

The JMU GS program also administers the ESRI software license for Virginia’s K-12 school districts. Depending on the size of the district, a software license costs $100, $500, or $2000 per year. The JMU GS program uses these license fees to support general GIS training for teachers in Virginia.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

The establishment of the program in Florida is in its start-up phase: the idea to establish the program in Florida occurred in late March 2013. Approval to proceed with the concept was obtained from Dr. Swett’s immediate supervisors at UF: Drs. Havens (Florida Sea Grant) and White (SFRC). Discussions with collaborators at ESRI and James Madison University have occurred and they continue. A meeting is scheduled with the UF/IFAS Senior Associate Dean to discuss how to implement the program at UF. Meetings with local high school personnel to further discuss feasibility and strategy have been solicited (a county school district science coordinator and a STEM program principal).

SUPER ISSUES

The primary super issue addressed would be science, technology, engineering, and math (STEM) opportunities for youth, but, depending on the project that students choose and the course subject matter, other super issues also will be addressed.

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Financial management for individuals and enterprises.
- Science, technology, engineering, and math (STEM) opportunities for youth.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

THE PRIMARY HIGH PRIORITY INITIATIVES (HPI) THIS PROGRAM RELATES TO IS:

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce. [Note by Swett: via the formal education system] However, the structure of the Geospatial Semester program will address educational objectives listed in the seven initiatives, as evidenced by the following:
- Initiative 1: (3) Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.
- Initiative 2: (3) Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education.
- Initiative 3: (3) Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.
- Initiative 6: (2) Community capacity building. Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

NORTHWEST LIVING SHORELINES

1. AWARD NAME: OUTSTANDING TEAM AWARD

2. NOMINATOR:
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3. NOMINEE: Northwest Florida Living Shorelines Team;
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   Chris Verlinde, Sea Grant Marine Science Agent UF/IFAS Santa Rosa County
   ANREP Membership: No

   Jennifer Bearden, 4-H Agent UF/IFAS Okaloosa County
   ANREP Membership: No

   Mary Gutierrez, Environmental Planner, Bay Area Resource Council
   ANREP Membership: No
Alison McDowell, Grant Coordinator, Choctawhatchee Basin Alliance  
ANREP Membership: No

Amy Baldwin, Program Coordinator, FL Department of Environmental Protection  
ANREP Membership: No

Darryl Williams, Natural Resources Conservation Service  
ANREP Membership: No

4. PROGRAM ACCOMPLISHMENTS:

Northwest Florida was exposed to multiple extreme storm landfalls during the 2004-2006 hurricane seasons. As a result, many coastal dunes and estuarine systems were negatively impacted or completely lost. These areas contain important plant communities that are necessary for shoreline and dune stabilization, wave attenuation and water quality protection. Restoration efforts were needed in order to initiate recovery of these areas.

Hardening shorelines had been the traditional technique utilized to preserve shorelines. In many cases, the installation of rip rap and seawalls disrupted natural recovery processes and degraded vital natural habitats. Living shorelines is the concept of creating natural protection areas using native vegetation instead of hardening techniques. However, the availability of plant material for such projects is often limited. The need for the establishment of a shoreline grass species nursery was recognized by many agencies across the Northwestern Panhandle counties of Florida. Additionally, the local school districts had made requests of these same agencies for programs that could provide students with meaningful hands-on activities which would provide investigative and problem-solving experiences related to science and mathematics. Therefore, school age youth were identified as the principle audience with their classrooms serving as the grass-growing facilities. Research shows that youth who are involved in environmental programs are more likely to foster an interest in environmental stewardship and participate in outdoor activities throughout their lifetime.

Implementation of the Grasses in Classes program began in 2007, with the Dunes in Schools program joining later in 2009, each created in order to unify living shorelines efforts in the gulf coast region. The basis of the program was to create community partnerships with K-12 schools, Hurlburt and Eglin Air Force Base youth centers and various non-profit natural resource based organizations in the growing of plants across five counties in Northwest Florida. Funding was provided through a $32,900 grant from the United States Fish and Wildlife Service to support the financial needs of the program. The University of Florida IFAS and Florida Sea Grant Extension Agents served to identify the participating schools in each of the counties and provided the in-house training and nursery construction. Choctawhatchee Basin Alliance, a local non-profit, assisted the agents in coordinating the program with school personnel and communicated with local government for identification of and installation at the various restoration project sites. Bay Area Resource Council served as the grant administrator, provided follow-up evaluation and continues to track progress each year. Initial plant material was donated from the Florida Department of Environmental Protection Ecosystem Restoration Section and the Natural Resources Conservation Service, both of which also assisted in the identification and permitting processes for the restoration sites.

During the program implementation and plant propagation phases, over 20 Master Gardener and Master Naturalist volunteers provided hands-on labor in the construction of production pads and plant installation supervision.

Student run nurseries were established to grow native vegetation for wetland and dune restoration systems. The local youth learned proper plant care and grew the required plant materials needed for area restoration projects. Each group was given 50 Salt Marsh Cordgrass (Spartina alterniflora) seedlings for the Grasses in Classes program and a production pad was built at their school. They were taught how to ensure the salinity of the water was maintained, how to monitor and divide the grasses as they grew, and then how to properly plant them on the restoration site during planting days. The Dunes in Schools program provided 30 Sea Oats (Uniola paniculata) seedlings to participating groups. These students were taught the importance of the plant material, proper watering and fertilizing techniques, and indoor plant nursery care with use of grow lights.
As of May 2010, the participants in the Northwest Florida Grasses in Classes program include 13 schools and two Air Force Base youth centers that are continually growing restoration plants as part of their classroom curriculum. Additionally, other schools have inquired about being included and the program is expanding each year. It is anticipated that in the near future enough plant material can be established to meet the needs of public projects and also be able to offer grasses to citizens for private property restoration efforts. Field trips to local restoration sites have allowed students to demonstrate their knowledge and skills through the planting of the plants they grew throughout the school year. As measured with follow-up visits to the participating classrooms at the end of one semester, 90% of the youth were able to identify the importance and function of estuary and coastal systems in the area and demonstrated a knowledge gain in plant science, including propagation and cultivation of the two grass species utilized for this project.

Over the past three years 10,000 plants have been grown and approximately five miles, or close to two acres, of estuarine and coastal shoreline has been restored. Participants in this program report a sense of satisfaction from the work expended in the beach area they helped to restore. Parents report pride in the efforts of their children toward community activism and teachers are requesting in-service training for this type of environmental stewardship project.
FLORIDA EXTENSION INITIATIVE 3:
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MIDDLE SCHOOL GREEN AMBASSADORS
SHOWCASE EARTH-FRIENDLY KNOWLEDGE AT GREEN LIVING EXPO

UF/IFAS PROGRAM PRIMARY CONTACT(S)/UNIT: S. Kraeft*, Wakulla County Extension.

OBJECTIVES
To mentor ten middle school students in sustainable practices and present their knowledge to youth attending the Green Living Expo event in Wakulla County. Students will form and participate in an environmental club within their schools to continue teaching what they have learned and develop their leadership skills within their communities and 4-H.

METHODS
Students were recruited through science classes and participated in a spring break camp that taught them about recycling, tree identification, natural resource preservation and litterless lunches. Students exhibited presentation skills, leadership and practiced good environmental stewardship throughout the camp. Students produced fact sheets, posters and created activities to present during the Green Living Expo. During the Expo, visiting youth presented an Eco-passport at each of the five Eco-Stations and learned about specific sustainable practices.

RESULTS
Ten students completed all mentoring sessions and presented their information to 185 youth in attendance at the event. Forty three participants received Eco-Ambassador pledge cards stating their intent to practice what they learned. Behavior change in participants and visiting youth will be measured during the month of July with a follow-up survey to see how many of the green practices discussed and taught that each student is still practicing.

CONCLUSIONS
Students who were mentored all exhibited a significant gain in knowledge of sustainable living practices, appreciation of local natural resources and expressed a positive interest and commitment to continuing their learning in an informal setting. Curriculum resources and sample materials developed and used will be available at workshop for Agents.
Reach Out With Science (ROWS) is a program that features an innovative outreach approach to teach Science, Technology, Engineering, and Mathematics (STEM) principles, though recreational and educational activities targeting at-risk youth.

Youth received instruction in marine and upland environments and scientific principles were reinforced by participation in various educational activities such as rowing, healthy lifestyles, GPS/Geocaching, ATV safety and shooting sports. Delivery methods for this program include an overnight camp, day camps, and science clubs. During the overnight five-day camp, youth self-selected the areas they wanted to participate. Youth gained hands-on instruction in their area of focus.

Nearly 1000 youth and adults participated in various adaptations of the ROWS program. Combining these multidisciplinary activities enhanced learning in the focus areas and increased appreciation of the environment in which they live. Knowledge gain and behavior changes in the areas of environmental awareness, healthy lifestyles, and science were indicated on post-surveys.

Participants that have participated thus far have reported an increased affinity for the recreational activity and the natural environment. A multi-disciplinary approach and multiple delivery methods make this program easily replicated in other counties.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

SERVICE LEARNING PROGRAMS

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Libby Carnahan/Pinellas County Extension
EXTERNAL PROGRAM PARTNERS: The Ohio State University Buck-i-SERV Program, Pinellas County Schools, St. Petersburg College, University of South Florida, University of Tampa, Eckerd College

SITUATION

- Pinellas County, Florida Sea Grant Extension provides high school and college students with experiential service learning opportunities. The collaboration is mutually beneficial- Pinellas County Sea Grant receives valuable volunteer hours for environmental restoration and extension programming; students gain environmental awareness, skill building, and a life-changing experience.

Pinellas County Extension, Florida Sea Grant has clearly demonstrated that Extension can help students diversify their academic skill set while providing a meaningful experience through service learning programs. In turn, in times of decreased budgets and staff resources, collaborations with universities and high schools can enable a New Era of Extension Programs to conduct beneficial projects and impactful educational programs that would not be possible without outside resources.

Target Audience:

- High school and College Students

What challenges or opportunities exist to establishing this program topic as a statewide program?

- Challenges—Managing volunteers takes a lot of contact time as well as planning time.
- Opportunities—when managed effectively, volunteers can help increase the efforts of overworked extension agents. Volunteers can help to create online and print publications, act as program assistants, and help with administrative tasks. Volunteer hours show strong in-kind support to the university and when applying for grants.

PROGRAM OBJECTIVES

What do you intend the participants will know, think or do as a result of completing the program?

- Students gain environmental awareness (Students were educated about the nearshore and coastal habitats of Tampa Bay and the Gulf of Mexico, local wildlife, ethical fishing, invasive plant identification, and social marine issues), skill building, and a life-changing experience.

What knowledge or skill gains and behavior changes do you expect to see in the short- or medium-term (1-3 years)?

- Participants will increase knowledge in marine and environmental issues as evidenced by pre- and post-test scores. They will demonstrate leadership as evidenced by interacting with the public, mentoring, and supporting other youth

In the long-term, what social, environmental, economic, health and well-being, or citizen engagement changes do you anticipate (5 years +)?

- Students will increase likelihood to volunteer with an environmental organization, share information with others about ethical fishing practices, and organize a volunteer event to benefit the environment or community as a result of the program.
EDUCATIONAL METHODS
What topics and subject matter will you cover?

- Students will be educated about the nearshore and coastal habitats of Tampa Bay and the Gulf of Mexico, local wildlife, ethical fishing, and social marine issues.

What methods or activities will you use to teach program participants?

- Trainings include classroom seminars, field hikes and guided canoe trips, and continuous “teachable moments” during service fieldwork.

Are any methods used to specifically reach underserved and underrepresented clientele?

- The Ranger Naturalist and OSU Buck-I-SERV service learning programs have both represented a very diverse sector of the community.

RESULTS AND IMPACTS
Do you have a statewide evaluation plan in place or in progress?

- Not state-wide, but locally where program is implemented.

How do you measure program results and impacts?

- Program results are measured through immediate and follow up evaluations. Skills are demonstrated and evaluated throughout the program.

What difference will this program make in the lives of participants or Florida's citizens?

- The Ranger Naturalist program offers high school students hours that contribute towards eligibility for Bright Futures scholarships. The experience also increases the robustness of college applications.

Is there any economic benefit to the individual participant or state of Florida? If yes, do you know the return on investment (ROI)?

- Yes, the amount of the scholarships each student receives through bright future program can be measured. Also, each volunteer hour can be measured at $18.66/hour value of volunteer hour. In 2012, High school and college volunteers working with Pinellas Sea Grant contributed over 1500 hours for a value near $28,000 to the state of Florida.

FUNDING SOURCE
Excluding employee salaries, how are the costs (fuel, educational materials, etc.) of this program funded? (e.g., internal funds provided by unit, external grants, program fees, etc.)

- In Kind contributions-Ohio State University supplements the trips their students make and students fund the rest. Utilize Pinellas County facilities and materials.

If funded internally or by grants, do you have a plan for a new funding source if current funding disappears?

- N/A

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM
Do you need resources or additional financial support to continue to implement this program in the future?

- Additional resources could enhance and improve the program.
SUPER ISSUES

What Super Issues does this program relate to? [Must list at least one.]

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Help Floridians develop healthy lifestyles.

HIGH PRIORITY INITIATIVES

What High Priority Initiatives (HPI) does this program relate to – and what HPI objectives does this program address? [List most important HPI objective first, Must list at least one – see appended list.]

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.
  1 Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.

- Initiative 2. Enhancing and protecting water quality, quantity and supply.
  3 Public awareness of water issues. Improve Floridians’ knowledge about water allocation, use, quality, and conservation through public education.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

SHOULD WE USE WOOD FOR ENERGY: HIGH SCHOOL STUDENTS CAN DECIDE!

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: M. C. Monroe* School of Forest Resources and Conservation; A. Oxarart, School of Forest Resources and Conservation; J. Tomasello Ireland, Florida Fish and Wildlife Conservation Commission

SITUATION

As communities explore options for reducing carbon emissions with renewable resources, local wood may become attractive. Whether this is a good idea depends upon local understanding of energy sources, biomass supply and cost, and forest management.

OBJECTIVES

To increase students’ knowledge of energy and the possibilities of using wood for energy through investigative activities; practice critical and systems thinking skills; weigh advantages and disadvantages of using wood for energy; and evaluate how using wood for energy affects sustainability.

METHODS

We developed a curriculum of 15 engaging activities for high school biology, environmental science, and economics teachers that explore woody biomass and develop critical thinking skills in the context of sustainability.

RESULTS

A pilot test in Santa Rosa County found that the activities increase student knowledge about energy, carbon, and woody biomass. Students enjoyed learning about local energy use. In addition, teachers appreciated the engaging lessons. The teachers suggested shortening activities to fit a class period and providing more details on activity preparation, assessment, and organization. Culminating activities may not be used, however, if teachers do not have enough time to devote to the program.

CONCLUSIONS

This adaptable and locally relevant unit can supplement science and social studies classes and enable students to investigate a current and potentially controversial issue. Revisions have made the unit more teacher-friendly. The ultimate goal of teaching about sustainability is not easily accomplished in a short unit, however, but could be the theme of a course on current issues. Materials can be downloaded from www.sfrc.ufl.edu.
SITUATION

In Leon County and across the country many school age youth suffering from what has been described as Nature Deficit Disorder, a large majority of youth spend an increasing amount of time indoors, while the time spent outdoors is on a rapid decline. Collaboration with the Leon County 4H Agent, Forestry, and the Natural Resource Agent resulted in an environmental education program during public school spring break that would teach its participants the importance of environmental stewardship.

OBJECTIVE

The objective of this camp was for its participants to learn how to enjoy being outdoors and develop an awareness and appreciation of our water systems, and wildlife habitats in Leon County.

METHOD

Youth participants performed lab experiments on the pH level, dissolved oxygen, and nitrogen levels founds in Wakulla Springs. A trip down the Wakulla River gave youth an opportunity to identify and learn about the various forms of wildlife that live make this habitat their home. The campers also took educational field trips where they learned how Sinks are formed as well as how to collect and identify macroinvertebrate and use them as water quality indicators.

RESULTS

Pre and Post evaluation were given and the beginning and end of the camp are reflected a 98% increase in overall knowledge of each subject matter area covered during the week.

CONCLUSION

By providing this fun educational program, its participants have increased their knowledge in each area covered and have greater appreciation of our environment and how to protect and preserve it.
FLORIDA EXTENSION INITIATIVE 3: 
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

THE 4-H WILDLIFE AND OUTDOOR RECREATION DAY CAMP


OBJECTIVE

1) To teach participants how to enjoy being outdoors while engaging them in “hands on” educational sessions that focus on forestry, wildlife, shooting sports and natural resources, 2) Teach participants how to become environmental stewards; respecting and protecting our environment.

METHODS

Fifty-three 4-Hers between the ages of 10-15 from Leon and Jefferson Counties participated in a weeklong environmental educational day camp. Youth were divided into 3 color-coded groups (red, yellow, and blue). Monday-Wednesday morning youth attended hands-on sessions in with forestry, conservation, and wildlife. The afternoon, youth participated in the shooting sports component. Each group participated in air rifle, shotgun (skeet) and archery. A day was devoted exclusively to Aquatic Science. Fisheries Specialist from UF allowed youth to seine for aquatic insects and plants and later identify them. The week concluded on Friday with shooting competitions in archery, air rifles and Ecochallenge.

RESULTS

As a result of the youth participating in this program, 86% of them acknowledge a better appreciation, respect and willingness to protect our environment. All 53 youth agreed to share what they learned with others in their respective communities.

CONCLUSION

This is our fifth year conducting the multi-county day camp.
FLORIDA EXTENSION INITIATIVE 3:
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

YOUTH EDUCATION ON ENVIRONMENTAL ISSUES

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Martha Monroe, SFRC
UF/IFAS PROGRAM PARTNERS/UNIT: Many, depending on topic, esp. Project Learning Tree, Project WET
EXTERNAL PROGRAM PARTNERS: Many, depending on topic, esp. Dept of Education

SITUATION

Complex, science-based environmental issues are at the heart of many discussions about community sustainability in Florida. Lack of information, misconceptions, and value differences hamper our ability to have reasonable discussions about these issues and move toward policy or behavior changes. One opportunity for Extension to help communities address such issues is to provide high quality, issue-specific, science-based educational units for high school teachers and advanced 4-H clubs. Intergenerational learning, especially through community-based action projects, has the potential to increase adult understanding about these topics as well as empower youth with the knowledge and skills to contribute to local solutions. The Next Generation Science Standards will help teachers justify addressing these topics and skills, but a substantial program of in-service training and support is needed to help educators cover current topics for which there is still community debate and uncertainty.

PROGRAM OBJECTIVES

Secondary educational units have been designed to enable learners to:

- Understand the economic, ethical, and environmental components of sustainability;
- Build systems thinking skills;
- Understand and respect various positions and perspectives on the issue and potential solutions;
- Explain and understand the issue and potential solutions;
- Develop skills in communication, group process, and problem solving to enable youth to be able to effectively engage in community issues.

Teacher in-service programs and websites have been designed to enable learners to:

- Articulate the key concepts about the issue;
- Identify potential misconceptions and confusion that their learners might have and overcome them;
- Obtain support materials to effectively use the educational units;
- Report their adaptations, successes, and insights through program evaluations.

Certificates are available for educators who participate in training workshops.

EDUCATIONAL METHODS

Three secondary units have been developed and evaluated (Should we use wood for energy? Beyond the trees: A systems approach to understanding forest health in the southeastern United States and Give Forests a Hand); a fourth is in the development phase (Southern Forests and Climate Change). The materials include 1-3 weeks of engaging activities that allow learners to explore issues from multiple perspectives, understand how these topics impact their lives, and consider strategies they can use to mitigate the problems. All materials have been extensively reviewed by content experts and educators and evaluated. Accompanying websites provide links to external resources, slide presentations developed to accompany the activities, handouts and answer keys. Give Forests a Hand has an accompanying Leader Guide. The climate change module will also have an online educators’ workshop and videos. In-person workshops have been conducted for educators to obtain materials on woody biomass and forest health, practice activities, and develop competence in using the
materials. Materials are available on http://sfrc.ufl.edu/extension/ee/index.html under Give Forest a Hand, Forest Health, and Wood for Energy. Additional programs could be merged with this one, such as Aquaculture. A proposal to NOAA is under consideration that would enable us to reach secondary teachers in underserved schools with the climate change module and NOAA data.

RESULTS AND IMPACTS

Formative and summative evaluations for each resource have been (or for climate change, are currently being) conducted. Evaluations suggest that the materials are educative – students AND educators learn more about these topics and increase their competence to discuss the issues. Student data shows a measurable increase in content knowledge. The development of skills is a function of the time period that teachers allocate to the program; when teachers enable students to conduct action projects, student problem solving and communication skills blossom. In-service workshops have also been evaluated and suggest that participants gained knowledge and anticipate using the material. Students have shown an increased awareness to multiple perspectives on the issue and understanding of why misconceptions exist.

Were these materials to be more broadly available and used, they could change the tenor of the discussions in communities by increasing the availability of knowledgeable and skilled participants. In the short term, students can sponsor surveys and community forums to discuss issues and students can share their in-class exercises with parents. In the long term, these students can become community leaders and decision makers with a better sense of what it takes to craft policy for sustainability, given the issue complexity, value differences, and varied perspectives.

FUNDING SOURCE

Program development has been supported by grants and graduate student assistantships:

- RREA funds to the UF School of Forest Resources and Conservation
- USFWS grant to develop Give Forests a Hand
- FL Forest Service grant to develop Healthy Forests Education Kit
- USDA NIFA PINEMAP grant to develop Southern Forests and Climate Change module
- National Project Learning Tree program to distribute climate change module
- Graduate student assistantships to support program development and evaluation

There is no additional funding to support on-going training and dissemination. We can’t even update the websites with new information.

NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM

- A better connection to Extension agents, empowering them to provide support to local educators
- A better system of educators training and dissemination of materials
- Closer ties between Extension and public schools
- Funding to update the websites and support educators

SUPER ISSUES

- Awareness and appreciation of food systems and the environment.
- Resource sustainability and conservation in Florida communities.
- Science, technology, engineering, and math (STEM) opportunities for youth.
HIGH PRIORITY INITIATIVES

- Initiative 1. Increasing the sustainability, profitability, and competiveness of agricultural and horticultural enterprises.
  3 Citizen awareness of food systems and the environment. Improve Floridians’ knowledge about food systems, agricultural production, environmental services, and the environment through public education.

- Initiative 2. Enhancing and protecting water quality, quantity, and supply.
  3 Public awareness of water issues.

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.
  1 Informed community decision making. Improve community decision-making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
  3 Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.

- Initiative 4. Producing and conserving traditional and alternative forms of energy.
  1 Conservation practices and efficiency improvement, by educating citizens to adopt conservation practices.
  2 Alternative energy solutions. Expand the energy landscape by teaching citizens about alternative energy sources.

- Initiative 6. Strengthening urban and rural community resources and economic development.
  2 Community capacity building. Strengthen communities by helping engage citizens in problem solving

- Initiative 7. Preparing youth to be responsible citizens and productive members of the workforce.
  1 Youth development. Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
FLORIDA EXTENSION INITIATIVE 3:  
ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY  

COORDINATING THE DEPARTMENT OF ENVIRONMENTAL PROTECTION’S (DEP)  
LEARNING IN FLORIDA’S ENVIRONMENT (LIFE) PROGRAM  
TO REACH SET GOALS THROUGH WAKULLA COUNTY 4H.

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT:  Sherri Hood*, Wakulla County Extension, Scott Jackson, Wakulla County Extension, Will Sheftall, Leon County Extension.

OBJECTIVES

To partner with and utilize current DEP LIFE curriculum and evaluation methodology in teaching water quality monitoring to middle school students in Wakulla County as 4H school enrichment. Also, to provide exposure to 4H life skills and culture to a larger population of students within Wakulla County.

METHODS

Teachers used DEP curriculum to teach and prepare students for the water quality monitoring field trips to Lake Munson, Wakulla Springs, the St. Mark’s National Wildlife Refuge and the Florida State University Marine Laboratory. Students conducted water quality tests; learned to take intertidal transects; explored the Karst features; seined for marine macroinvertebrates and fish; and made soil core and slope classifications. The 4H Agent coordinated student field trip exercises and worked with teachers to tabulate results.

RESULTS

Six science teachers’ classes in 6th through 8th grades at Riversprings Middle School participated in field experiences at three sites within Wakulla and Leon Counties. Over 140 students were engaged in the environmental education program. Based on evaluations of pre and post-tests conducted by teachers and analyzed by DEP personnel, students from all sites showed a 69% overall increase in environmental awareness, water quality impact of environmental practices and demonstrated proficiency in collecting data using a variety of scientific apparatuses.

CONCLUSIONS

This is an extremely effective partnership between DEP and 4H and could serve as a model for any county with a state park. Students may continue to use their community service and leadership skills to participate in a traditional 4H project club.
FLORIDA EXTENSION INITIATIVE 3:

ENHANCING AND CONSERVING FLORIDA’S NATURAL RESOURCES AND ENVIRONMENTAL QUALITY

ECOSYSTEM RESTORATION EDUCATION

UF/IFAS PROGRAM PRIMARY CONTACT(s)/UNIT: Lisa Krimsky, Program Extension Agent II/Sea Grant
UF/IFAS PROGRAM PARTNERS/UNIT: NA
EXTERNAL PROGRAM PARTNERS: Miami Science Museum

SITUATION

• What problem are you trying to solve? Why is this important?
Florida’s coastline extends 1,350 miles and includes four ecological areas: sandy beaches, mangroves, shallow bays, and the coral reef tract. These areas are each environmentally distinct but interconnected. Changes to any one of these habitats will impact the entire coastal ecosystem. Florida residents and visitors appreciate and use these unique coastal ecosystems. In fact, seventy-two percent of Florida’s population live or work in coastal areas and the population of our coastal counties is predicted to double to more than 26 million residents by 2060. This co-location has placed tremendous pressure on these fragile ecosystems. In order to protect these coastal ecosystems, Floridians must first understand their importance to our livelihood—socially, economically, and ecologically. The primary focus of this educational program will be to sustain or enhance south Florida’s coastal ecosystems by increasing awareness, reducing impacts, and improving restoration of these valuable resources.

• Who is the target or primary audience for your programs?
K-12

• What challenges or opportunities exist to establishing this program topic as a statewide program?
The challenges and opportunities are the same; coastal ecosystems differ depending on geographic location. However, this may also offer greater opportunities for teaching and restoration

PROGRAM OBJECTIVES

Students can participate in any of one of three program activities: classroom education, eco-art installations, and/or field restoration activities. Students will increase their understanding of the importance of our local coastal ecosystems, and help to restore coastal dune, hardwood hammock, and mangrove habitats. All student plants come from school and museum-based eco-art installations.

EDUCATIONAL METHODS

K-12 students are taught about local coastal habitats and ecosystem function and are allowed the opportunity to participate in hands-on eco-art and county-wide restoration activities.

RESULTS AND IMPACTS

Economic assessments of mangrove habitats estimate their value at approximately $18,000 per acre due to their roles in coastal storm protection and critical habitat for commercial fisheries species. There are approximately 1,500 mangroves per
acre. To date 260 K-12 students have planted 4,800 seedlings (3.2 acres of mangrove seedlings) as part of this project resulting in approximately $57,600 worth of coastal improvements since 2009. (3.2 acres x $18,000 = $57,600)

**FUNDING SOURCE**

This project has been supported by grants received by the Miami Science Museum. Project costs unknown.

**NEEDS TO MAINTAIN, IMPROVE, OR GROW PROGRAM**

The eco-art component of this program would need to be dropped and/or adapted to grow the program either statewide or to include different plants.

**SUPER ISSUES**

- Resource sustainability and conservation in Florida communities.

**HIGH PRIORITY INITIATIVES**

- Initiative 3. Enhancing and conserving Florida’s natural resources and environmental quality.

Environmental stewardship. Improve environmental quality by teaching citizens about the relevance and value of natural resources to Florida’s economy.