Proceedings with Abstracts

Blues, Bayous, and Beyond: The Nexus of Natural Resources and Stewardship

11th Biennial Conference

Association of Natural Resources Extension Professionals

April 29-May 3, 2018

Golden Nugget, Biloxi, Mississippi

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WELCOME!

We're excited to host the 11th Biennial ANREP Conference in Biloxi, Mississippi, and glad you can join us! This meeting will focus on innovative Extension educational programs in natural resources sustainability and stewardship. Conference presentations shall follow a multitude of environmental themes on climate change, economic development, fisheries, forestry, invasive species, stewardship, water quality, youth programming, and much more.

Mississippi is blessed with great natural resources: fertile soils, warm climate, and plenty of precipitation. Most of Mississippi was an inland sea some 100 million years ago. These sediments were exposed much later, some 65 million years ago. The oldest soils in the state are part of the Appalachian foothills in the northeastern most corner. The youngest soils were formed by flooding of the Mississippi River. These rich sediments are the cornerstone for the state's agriculture.

Given Mississippi's high annual rainfall, forests are the natural vegetation found across most of the state. Forests comprise 65% of the land in Mississippi, or 19.4 million acres. This includes hardwood, pine, and mixed oak-pine forest types. Most of this commercial forest is owned by non-industrial, private owners. Surface water comprises about 3% of the state area, nearly 973,000 acres. Although Mississippi has a relatively modest coastline of 44 miles, it is on the Gulf of Mexico and supports thriving tourist and fishery industries.

Combined, natural resources contribute substantially to the state economy. Forests and fisheries provide 170,000 jobs paying nearly $7.4 billion in wages, and contributing $10.8 billion in added wealth to the state. Beyond the dollars and cents, Mississippians enjoy their natural resources. See and learn why during your visit to ANREP 2018!

John Kushla, ANREP President Elect & 2018 Conference Chair

Concurrent Session A: Monday, April 30, 2018 10:30 AM - Noon

Ship Island Room A: Mentoring & Stakeholder Engagement

10:30 to 11:00 - *Onboarding, Mentoring, Oh my! What do Extension Foresters Young and Old Think that the Next Cohort Should Know?* Authors: Leslie Boby, William Hubbard, Mark Megalos, Jeff Stringer

What did you wish you had known when you became a natural resource or forestry Extension specialist or agent? Typically, Extension specialists are hired for their research-based proficiency and they have little experience with Extension work. Additionally, there are fewer positions overall in natural resource and forestry Extension than 30 years ago and when people retire, potential mentors, as well as considerable institutional knowledge and experience are lost. Many retirements are also expected within the next decade as the baby boomer generation retire, furthering this loss of knowledge. A national survey of current specialists and agents records some of these insights, and provides guidance that will be used in continued development of an "onboarding and mentoring" program specific to forestry and natural resources. This NIFA-funded project is a nationwide onboarding effort to capture and share best practices that are specific to natural resource and forestry Extension, for the next cohort of agents and specialists. Results from this survey summarizes some of the consistent themes and information that is considered important by these professionals. This presentation will review survey results and implications for developing and refining this onboarding and mentoring program.

11:00 to 11:30 - *EFO Program: Reconsidering Mentor Relationships from the Formal to the Clandestine.* Authors: Mark Megalos, William Hubbard, Leslie Boby, Jim Johnson, Janean Creighton

Extension Forestry Onboarding: In 2017 A group of extension specialists from across the country joined forces to launch a nationwide onboarding effort to share best practices for Natural Resource and forestry extension agents, specialists and professorate. NIFA and the group sought to operationalize a systematic onboarding effort for new hires, prompted largely prompted by its Number one selection in a recent strategic plan that grew out of a national extension retreat. This presentation reviews the current effort, survey results and the launch of the pilot program. A special emphasis of the presentation is the optional mentoring effort to catalyze the onboarding lessons and to reinforce retention goals.

11:30 to 12:00 - *Take your Commissioners a Watermelon: Building Relationships in your Community.* Author: Carrie Stevenson

Within a few years of employment, Extension Agents are expected to become sought-after experts; the go-to person when a new species shows up, water resources are threatened, a school needs a garden. Our universities provide excellent training and access to research specialists, so we can relay even the most tedious concepts to clientele needing practical advice. We must precisely document educational contacts, grants, economic impacts, and learning outcomes to show the value of our programming. However, if our clients and partners don't really know or trust us, our vast knowledge can be for naught. While difficult to quantify in

annual reports, building trust is invaluable. This goes beyond networking or listening sessions—it is about being there, paying attention, and caring about the lives of the people we work with and for. At first, the investment—going to a fish fry, attending a funeral, going to a trade show on a beautiful Saturday morning—may seem an unnecessary burden on the time of a new agent already working crazy Extension hours. But, if you're woven into the fabric of a community, it's not extra effort—you'll be at those events already. When agents invest time in their clientele and partners, those partners will come to your aid when budgets are threatened, you need logistical help on a project, or when seeking honest advice on community needs. This presentation will include specific experiences with relationship building and demonstrate the tangible and intangible benefits of going a step beyond the job requirements.

Ship Island Room B: Economic Development & Water Security

10:30 to 11:00 - *Economic Assessments of Local Farmers' Markets – Challenges and Successes.* Author: Ramona Madhosingh Hector

Farmers' markets are often valued in an urban area for the increased access to fresh produce or community building opportunities that they provide. However, they also make significant economic contributions to an area that can be overlooked. A series of economic impact studies were conducted for three differently sized markets in Pinellas County, FL using the Sticky Economic Evaluation Device developed by Loyola University. Faculty collaborated with the market managers and organized volunteers to administer surveys during the study period. Attendance counts and survey collections were conducted on several dates between 2015 and 2017. Factors influencing the variation in results at each market included differences in attendance, number of market days per season, and number of vendors. Interesting differences between the markets, including differences in the ratio of money spent at the market and at surrounding businesses, emerged between the larger market and the smaller markets. Estimated annual economic impacts ranged from $9 million to $34 million with over $200,000 in gross receipts per market day generated for nearby businesses and $460,000 in estimated annual sales tax revenue at the larger market. The logistical challenge of studying smaller markets is larger than anticipated, but varies widely depending on the layout and culture of the markets themselves. Practices that seemed to be of marginal importance at a large market can be much more impactful at smaller markets. Farmers' markets are important economic drivers and community decision makers should strive to implement practices that support these local enterprises.

11:00 to 11:30 - *Measuring Environmental Impacts of Alternative Cropping Systems.* Author: David Ripplinger

Crop budgets have long been used by farmers, educators, lenders, and others to estimate the revenues and costs of crop production. While traditionally they have considered non-financial, opportunity costs, environmental costs and benefits have been ignored. As part of the Crop-Sys CAP program funded by USDA, crop budgets that incorporate real, significant impacts have been developed. These budgets and their conceptual underpinnings will be discussed.

11:30 to 12:00 - *Into the Minds of Stakeholders: Using Mental Models to Enhance Program Development.* Authors: Sadie Hundemer and Martha Monroe

The Upper Floridian Aquifer (UFA) faces major risks to water quantity and quality from population growth, intensification of agriculture and silviculture, and climate change. The UF Water Institute is coordinating a project to evaluate tradeoffs and potential interventions for achieving water security. Extension programs and materials will be developed based on the results. Success in this endeavor will require the collaboration of stakeholders from agriculture, forestry, tourism, government, and science, as well as representatives from the regions that rely on the UFA. Each stakeholder has different perspectives on the water system, water issues, and potential remedies. Conceptual content cognitive mapping (3CM) is being used to capture and evaluate stakeholder mental models to help facilitate the collective development of water strategies. 3CM is a research tool that allows stakeholders to explain how they think by selecting and organizing cards that represent elements of the system. Capturing mental models in this way allows project members to view the system through the eyes of their collaborators. Metal models play an additional role in the development of extension programs and materials. Adoption of the project team's recommendations may hinge on external stakeholders' understanding of the supporting science. Mental models allow for the development of programs and materials that explain the issues and suggested interventions using frames that resonate with various stakeholder groups. This presentation will demonstrate 3CM as a tool for understanding how stakeholders perceive a situation and describe how it can be used in the design of extension programs and materials.

Ship Island Room C: Programmatic Approaches

10:30 to 11:00 - *Developing a Socio-Ecological Approach to Extension Natural Resource Programing.* Author: William Warren

A socio-ecological approach to Extension natural resource programing is advanced that builds on previously published efforts to more explicitly incorporate the human side of the human-environmental continuum. This approach draws on the origins of Extension and the Land Grant mission as well as more recent literature on adaptive governance and "bridging" (or boundary) organizations. Application of the approach is illustrated with reference to natural resource collaboratives in the western US, as well as through programing for the private landowner. The key concept is to shift our conceptions of human-environmental systems to affect better management and policy outcomes for economic and social values as well as the ecological. Such a shift requires fully conceiving humans and human society as a part of nature to overcome the often unidirectional concern that only considers the effects of humans on an assumed "external" system to be managed rather as fully natural parts of a co-adaptive and coevolving socio-ecological system. An engagement model of Extension involvement with local natural resource governance systems is emphasized along with a learning model that emphasizes the understanding of context and fundamental principles rather than technique to encourage client innovation, continued learning, and a greater capacity to adapt to changing circumstances and new contexts.

11:00 to 11:30 - *National Needs Assessment of Sustainability Extension Outreach: Implications for Natural Resources Professionals.* Authors: Roslynn Brian McCann and Ramona Madhosingh Hector

Demand for, and growth in, sustainability programming has reached unprecedented levels nationally. The previous year saw a 95% growth in the nation's solar market, and US wind power jobs saw a record breaking increase of 20%. Where does Extension find itself on the sustainability front? A national survey administered in January 2017 by the National Network for

Sustainable Living Education sought to answer this question. Specifically, our team aimed to discover what Extension is doing well, what challenges Extension educators' experience, and what emerging trends will be the focus for sustainability outreach in Extension. Designed following Dillman's Tailored Design Method, directors in all 50 states were asked to forward the survey to all Extension educators (including specialists) in their respective states. Responses were obtained from 40 states, with 1,395 useable surveys received. Although climate change impacts were ranked by Extension educators as the second biggest emerging issue for Extension, only 33% (n = 411) of respondents had even heard of the USDA Climate Hubs. As we look ahead in natural resources program delivery, results from this survey should be helpful.
In attending this presentation, participants will be able to: 1. Describe top perceived successes in Extension sustainability outreach nationally and where the gaps lie. 2. Identify Extension educator perceptions of administrative support in sustainability outreach. 3. Discover top perceived emerging sustainability issues for Extension to address.

11:30 to 12:00 - *What Everyone Ought to Know About the Western Extension Forestry Coordinating Committee?* Author: Andrew Perleberg

There was a need across the West to develop coordinated Extension Forestry efforts on a multistate basis to achieve both programmatic and administrative efficiency and to help meet the requirements of the Agricultural, Research, Extension and Education Reform Act (AREERA). This coordination has facilitated thorough identification of issues, prioritization of needed information and other resources, and improved the formulation of response for multistate collaborations and integrated projects. Examples of the Western Coordinating Committee (WCC 1003) products include a multistate investigation of forest owner perceptions of climate change and a 4-state "Ties to the Land" succession planning program. The WCC has strengthened pre-existing partnerships, advanced engagement with the US Forest Service western research stations to improve technology transfer of forest science relevant across landscapes and ownerships, and has facilitated funding opportunities. This presentation will explain our WCC experience, its organization, partnerships, and the fact-finding realities we have faced throughout the western states. Though sometimes swift and sometimes gradual, evaluation indicates participation in WCC endeavors has led to numerous positive project outcomes.

Cat Island Room: 10:30 to 12:00 Panel/Roundtable

An E-Learning Program for understanding forest carbon management. Authors: Emily Huff, Lauren Cooper, David MacFarlane, Chris Jones, Diana Rashash, Daniel Geller.

The ability of forests to sequester and store carbon is dependent on the management behaviors of millions of federal, state, local, and private forest landowners and natural resources professionals. However, these forest owners and managers face a daunting task trying to understand how to choose appropriate forest management practices that would help adapt to or even help mitigate climate change. Michigan State University Forestry Department (MSU Forestry) is working in partnership with the USDA Forest Service's Northern Institute of Applied Climate Science (NIACS) and the USDA Northern Forest Climate Hub (USDA Hub) to develop a robust e-learning program with content focused on forest carbon management. We are creating e-content and non-formal learning experiences on forest carbon management, with an emphasis on video content and self-assessment tools. The intended audience for this effort is natural resource professionals and extension agents. This approach will reach many in rural areas

who would otherwise be difficult to reach with in-person educational approaches. Success will be evaluated via a pre- and post-test survey of course trainees. We would like to present results of an initial needs assessment survey as well as draft course content for discussion and comments by ANREP members. We will also have key project members and stakeholders describe their role in creating this e-Learning program.

Horn Island Room: 10:30 to 12:00 Workshop

8:30 – 10:00 - *Systems Thinking: Constructing New Knowledge and Deconstructing Misconceptions.* Authors: Kerry Schwartz, Holly Thomas-Hilburn, and Mary Ann Stoll.

Transformative STEM education integrates systems thinking, the goal of which is the continuous improvement and refinement of our mental models. In so doing, the learners' understanding more closely reflects the complexities and interactions of the real world. By making distinctions, seeing systems, uncovering relationships, and understanding perspectives, learners are able to both construct new knowledge and to deconstruct misconceptions. They are better able to think through issues. This method encompasses all types of thinking: critical, creative, interdisciplinary, scientific, systems, and prosocial. As such, it provides a universal structure upon which all foundational knowledge can be deepened. Systems thinking helps illuminate the whole interconnected web of natural resources and the threats facing them more clearly and fully. This session will demonstrate how to utilize Derek and Laura Cabrera's systems thinking model, which provides a method for teaching people to think more deeply (Systems Thinking Made Simple, 2015). Per the Cabrera's model, systems thinking involves: 1) making distinctions, 2) identifying parts and wholes 3) uncovering relationships and 4) understanding multiple perspectives. Using set questions for each rule, we will develop a language and structure for thinking and a means of thinking about one's own thinking, or metacognition. We will make thinking tangible by activating the mind, the eyes and the hands with manipulatives and online metamapping (www.metamap.me/maps). These skills are transferable and scalable across content areas, ages, and life experiences. With a framework and process for thinking, learners are better equipped to participate in solving our most complex and intractable problems.

Concurrent Session B Monday April 30 2 – 3:30 PM

Ship Island Room A: Fisheries & Estuarine Ecosystems

2:00 – 2:30 **-** *Implementing educational programming on fisheries science and management for New Jersey.* Author: Douglas Zemeckis

For many fishing industry stakeholders, and members of the general public, issues related to fisheries science and management are not well understood. These issues can sometimes be controversial among stakeholders and they are increasingly communicated and discussed via outlets such as news articles, online message boards, social media, and word-of-mouth. However, programming has traditionally been lacking to educate fishing industry stakeholders and the general public on fisheries science and management. Such educational programming would also be valuable to educate people on the opportunities to contribute to these processes (e.g., management meetings, advocacy groups) and adopt recommended best-practices to promote responsible and sustainable harvesting practices. Therefore, a course was developed and implemented during the winter of 2017–2018 to educate New Jersey's fishing industry stakeholders and members of the general public on fisheries science and management. The eight-week course was taught jointly with guest lecturers who are experts on their respective topics

and delivered presentations and distributed educational materials focused on communicating research-based information related to topics such as stock assessment, management strategies, survey methods, fishery catch statistics, commercial and recreational fisheries of New Jersey, best practices for sustainable harvesting, and fisheries biology. Pre- and post-course evaluations were conducted to quantify knowledge gain and evaluate potential changes in attitudes or behavior. This course serves as a valuable model for developing similar educational programs about sustainable and responsible stewardship of fishery resources in both marine and freshwater ecosystems, thereby helping to meet Extension's goals of sustaining and promoting natural resource stewardship.

2:30 – 3:00 - *Regional Florida Artificial Reef Workshops - Planning for the Future of Fisheries*
Authors: Holly Abeels, Angela Collins, Joy Hazell, L. Scott Jackson, Laura Tiu

Artificial reefs contribute significantly to local economies, providing recreational opportunities for anglers and divers, and generating at least $3.1 billion of economic activity in Florida. Artificial reefs are also used as mitigation tools in areas that have suffered environmental perturbations or habitat degradation. Florida Sea Grant and University of Florida IFAS Extension have contributed to Florida's artificial reefs by building community support and supporting science and technology. They aim to ensure artificial reef deployment and monitoring are informed by the best available science. In cooperation with the Florida Fish and Wildlife Conservation Commission's Artificial Reef Program they have organized regional workshops where stakeholders can participate in discussions about Florida's artificial reefs and learn the latest science and research. These workshops are designed to bring together stakeholders involved in all aspects of artificial reef research and deployment. One-day workshops were held across the state in 2016 and 2017 and provided an open forum to highlight local efforts while also providing information regarding new science and overall policy at the state and federal levels. These regional workshops brought together approximately 170 stakeholders. Evaluations indicated that almost all participants learned new information that was directly applicable to their job. Regional workshops are an efficient method for communication and provide a conduit for information exchange at a local level that informs best practices within Florida. This is critical for continued evolution of artificial reef programs that best address the needs of stakeholders and reef species.

3:00-3:30 - *Developing Strategies for Long-Term Management of Tidal Forested Wetland Decimated by EAB.* Author: Jonathan Kays

Ash trees are the single dominant tree species of many tidal freshwater forested wetlands on the U.S. Atlantic coast, including those of Chesapeake Bay. Along the U.S. Atlantic coast, there are 141,000 acres of ash-dominated tidal forest, with more than half occurring in the three Chesapeake Bay states of Maryland, Delaware, and Virginia. These wetlands are critically important for the services they provide, which include storm surge protection and shoreline stabilization, water quality improvement via nutrient and sediment removal, and habitat for economically valuable fish and wildlife and rare plants and animals. Extension programs have been critical to educating citizens about impact and strategies for EAB on timber resources and urban forests, but the potential impact on forested tidal wetlands is just being realized. In spring of 2015 a large tidal forested wetland in Maryland died from EAB, demonstrating the dramatic ecological changes that would occur to the hummock & hollow topography. University of

Maryland Extension partnered with land trusts, state agencies and others to organize a workshop in March 2017 to educate owners and managers of tidal wetlands around the Chesapeake Bay about the potential impacts. The outreach effort is expanding to engage landowners, managers, and recreational users that use forested wetlands to help identify future mortality. Grant funding is being sought to treat selected ash trees to provide a supply of seed for regeneration, conduct underplanting of other species, and identify "lingering" ash resistant to EAB. This presentation will report on the progress of this critical and developing research and extension effort.

Ship Island Room B: Fire Ecosystems

2:00 – 2:30 **-** *Prescribed Fire on Private Lands in Mississippi—Let's Try Something Different* Author: Glenn Hughes

Prescribed fire is important to pine management on private lands, particularly where wildlife management is a focus and/or longleaf pine is the species being managed. Federal and state agencies have programs that provide funding for prescribed burns, but these funds often go unspent. One of the main reasons is that fewer foresters are conducting prescribed burns due to the liability incurred with smoke and fire, and the expense of burn insurance. In short, we are losing the ability to use prescribed fire on private lands across south Mississippi. This presentation discusses a recent initiative to help landowners conduct prescribed burns on their own lands by purchasing and providing equipment needed to conduct a prescribed burn. The Prescribed Burn Initiative involves 2 phases. First, a series of workshops are scheduled regarding prescribed fire, including the hands-on use of equipment such as drip torches. Each workshop addresses the key components of having 1) a certified burn manager supervise the burn, 2) a written and notarized burn plan prior to burning, and 3) a burn permit issued by the MS Forestry Commission. After completing the workshop, participants will be able to check out and use prescribed burn equipment beginning in January, 2018. Results will be presented on the use of this equipment by private landowners, and lessons learned in this process.

2:30 – 3:00 **-** *The Role of Extension and the Modern Wildfire Situation.* Author: Christopher Jones

The Western wildfire season of 2017 burned millions of acres across the Northwest, and smoke stretched across the Great Plains. 6,000 homes were destroyed and 42 people died in California. Meteorologists explained: "After above-average winter rain and snowfall, the Western U.S. has been relatively dry this summer, but extremely hot. A large ridge of high pressure has been parked over the West for months, causing the area to bake" (Washington Post; Sept 2017). The modern wildfire situation can be largely attributed to three factors: 20th century fire suppression policies, the increase of human settlements in the wildland urban interface, and the global warming trend since the latter part of the 20th century. Considering the Wildfire Behavior Triangle, it is important to understand that the modern condition of both fuels (forest and man-made) and weather have combined to result in what is now called the "Age of Megafires" (Hessberg 2016). Western wildfires have gotten to such an environmental point that 20th century technological advances that made wildfire suppression so successful for so long have been overwhelmed. As proponed by the Fire Adapted Communities Network, a change in the thought paradigm of wildfire has become necessary: "To live better with fire, we need to adapt to fire." Cooperative Extension has many state Forestry programs of varying sizes that play a role in helping communities to adapt to fire. How can we leverage and apply each other's

knowledge, and the knowledge and resources of partners, to effectively address the modern wildfire situation?

3:00 – 3:30 **-** *Living With Fire: Wildfire Threat Reduction for Nevada Homeowners*. Authors: Sonya Sistare and Ed Smith

Living With Fire (LWF) is an interagency program coordinated and implemented by University of Nevada Cooperative Extension (UNCE) that teaches vulnerable residents how to live more safely in wildfire-prone areas. Research results demonstrate that implementing pre-fire threat-reduction practices (e.g., creating defensible space, replacing combustible roofs, etc.) significantly improves a dwelling's survivability during wildfire. However, prior to initiation of the LWF Program, there was no organized effort to teach and promote these practices to at-risk Nevadans. Consequently, it was unlikely that homeowners would prepare themselves or their homes for the increasing threat of wildfire. LWF is an innovative program that: 1) generates consensus between Nevada's federal, state and local firefighting agencies regarding recommended pre-fire activities, 2) delivers a consistent message from Nevada's firefighting agencies and UNCE to target audiences, and 3) integrates natural resource management and fire mitigation expertise with marketing expertise to effectively deliver recommended pre-fire activities to target audiences. During the 18 years that LWF has been in operation, more than 100 workshops have been taught and over 60 peer-reviewed publications, curricula materials, and audio-visual products have been developed. In 2016, LWF disseminated 23,000 copies of publications, had 20,000 online visits to specific publications, received 16,700 visits to LWF websites, and collaborated with 173 entities. Also in 2016, the LWF Program responded to Cooperative Extension and other agency requests for materials and support from 11 states and Australia. Program evaluation results have consistently shown that the LWF Program has been effective in achieving implementation of pre-fire activities.

Ship Island Room C: Community Engagement

2:00 – 2:30 **-** *Conservation through Community Leadership: Empowering Community Leaders to Manage our Shared Natural Resources.* Authors: Kara Salazar, Lenny Farlee, Liz Jackson.

Purdue Extension and IL IN Sea Grant's Conservation through Community Leadership (CCL) Program is designed for public agency staff, nongovernmental organizations, and those serving on boards and commissions with emphasis on natural resources management, conservation, agriculture and land use. The program is conducted as a natural resources focused community action planning program over a series of six sessions. Community groups identify issues of concern and a program track of either land use planning at a watershed scale or invasive species management via an initial scoping session and needs assessments. The result is a local or regional action plan and strategies for implementation projects for use with watershed plans, comprehensive plan updates, invasive species council guidelines and plan commission recommendations. Through the meetings, participants: increase their understanding of assessing ecosystem health and natural resource management; apply decision-support tools to make decisions and take actions on ecosystem health; and form diverse community partnerships to create and implement action plans. Unique programmatic features include community readiness assessments to begin the process of connecting stakeholders to the action planning process, identifying issues of importance and measuring where stakeholder groups are in relationship to addressing and enacting change on issues of interest. Additionally, the program employs the PESTLE (political, economic, social, technological, legal and environmental) framework to

guide the analysis of issues and selection of appropriate implementation strategies. This presentation will provide an overview of the program content and facilitation processes, including lessons learned and evaluation from five pilot communities.

2:30 – 3:00 **-** *Improving Urban Forest Resilience with Arbor Day Extension Events*. Authors: Shannon Carnevale, Anne Yasalonis, Julie Schelb, M.J. Carnevale.

The Winter Haven Arbor Day Celebration is a collaboration between UF/IFAS Extension Polk County and the City of Winter Haven's Natural Resources Division. Together, the two organizations have hosted three Florida Arbor Day events complete with native giveaway trees, educational demonstrations for planting and pruning, and residential yard-specific tree recommendations. What makes this program unique is the use of tree-inventory data to determine which areas of the city are lacking in species or structure diversity. Residents in these low-diversity areas were targeted for event advertising. Additionally, giveaway tree species were specifically chosen to improve the species and structural diversity of the urban forest in these low-diversity communities. The City of Winter Haven's urban forest primarily consists of Quercus virginiana and laurifolia reaching the end of their viable lifespans. The Florida Arbor Day celebration was designed to improve the sustainability and resilience of Winter Haven's urban forest by re-introducing several native tree species to residential areas.
At the educational stations, participants learned how to plant and care for their new tree. There was a station dedicated to describing each of the available species and Extension faculty, staff, and volunteers helped participants chose the best tree for their yard, given its size and location within the city. In this presentation, participants will learn how giveaway species were prioritized and selected each year, funding strategies for the event, and lessons learned regarding the successes (and challenges) in targeting specific neighborhoods for a community-wide event.

3:00 – 3:30 **-** *Engaging citizen action to improve the Indian River Lagoon.* Authors: Martha Monroe and Lily Maynard

The Indian River Lagoon is one of the most biodiverse estuaries in the Northern Hemisphere. This shallow, tidal, narrow waterway stretches 156 miles and over 1 million people live in its watershed. Despite a focus on water quality improvement in the lagoon, extensive blooms of phytoplankton resulted in habitat decline and raised awareness of significant challenges to ecosystem health in 2011 and 2012. The most critical water quality problems require citizen engagement to reduce nutrient runoff from lawns and streets and maintain septic tanks. Education programs and awareness campaigns have been implemented along the lagoon to engage communities in reducing these threats. The Indian River Lagoon National Estuary Program (IRLNEP) staff believe that consistent messages to encourage a smaller set of actions may result in reshaping social norms and lead to change.With the IRLNEP, we designed a survey for residents in the five counties along the lagoon to measure community members' beliefs, attitudes, and behaviors related to the health of the lagoon. This presentation will present survey results describing current participation in lagoon-friendly behaviors. We will also report on some of the determinants of environmental behavior, such as the influences of environmental identity, personal experience at the lagoon and membership in conservation organizations. These results will form a baseline of knowledge and behaviors and suggest where additional educational investments and Extension programs might be useful. We will also explore how the Program might select the actions to promote.

Cat Island Room: 2:00 – 3:30 Panel/Roundtable

The National Extension Energy Initiative: Achievements and Next Steps. Authors: David Ripplinger and Patricia Townsend.

The National Extension Energy Initiative (NEEI) provides Extension educators professional development opportunities through sharing experiences and information, learning from successes and challenges, and building new partnerships for energy education from all program areas. Learn about what NEEI has been doing and join an open discussion about the future of Cooperative Extension Energy programming in the United States.

Horn Island Room: 2:00 – 3:30 Workshop

Teaching Climate Change: Strategies for Success. Author: Jennifer Hubbard-Sanchez

This interactive workshop will bring together individuals interested in teaching about climate change, with a goal of participants sharing information and obstacles to climate change environmental education (CCEE) and leaving with new contacts, resources, and best practices for success. This model challenges tradition by presenting the audience with CCEE topics and allowing them to teach each other best practices for successful CCEE. Beginning with a review of basic climate science, the workshop will cover concepts including: defining climate change causes; human impacts on the climate system; carbon footprint; how we know what we know (proxy data); impacts and projections of climate change. The workshop will rely on experienced participants to share their feedback on methods, activities, and resources they've used to teach these concepts. The workshop will then teach, in an interactive manner, best practices for communicating climate change to diverse audiences and will cover how to make CCEE culturally relevant and place-based; being armed with counter arguments to common misconceptions and skepticism; how to frame the issue within current political contexts; and preventing hopelessness. Participants will be asked to share the unique challenges they face in CCEE and methods used to overcome them. Overall, participants will leave the workshop able to explain climate science, as well as common myths and how to debunk them. They will be more comfortable with the resources available to them, as well as with the ability to face common challenges experienced by climate change environmental educators.

Concurrent Session C: Monday April 30 4:00 – 5:30 PM

Ship Island Room A: Programmatic Approaches

4:00 – 4:30 **-** *Landowner decision-making around reforestation after wildfires.* Authors: Susan Kocher, Lynn Huntsinger and Lulu Waks.

The California Forest Practices Act does not require reforestation on private land after high severity fire or bark beetle outbreaks kills most or all trees on the property. Family forest owners may not have an in depth understanding of forest management, or the capital, expertise or the time needed to conduct reforestation on their own while also removing dead trees and rebuilding homes lost to fires. To better understand how landowners plan for reforestation, we conducted in-person interviews in summer 2017 with 29 landowners that had their forest burned by the same large wildfire three years earlier. They were all offered reforestation assistance through a local non-profit that received a grant from the California Department of Forestry and Fire Protection (CalFire). Our goal was to understand how forest landowners think about

replanting trees after a severe wildfire and how they experience barriers to their reforestation goals as well as assistance programs by local, state and federal agencies. A majority of landowners reported that they would not have undertaken any reforestation efforts without the assistance program. Those that may have been able to access state grant programs on their own appreciated having a local intermediary organization to coordinate throughout the burn area. We conclude that current state and federal reforestation assistance programs are not well prepared to aide in reforestation during the current era of large scale forest disturbances and would benefit from assistance by local organizations to coordinate amongst neighboring landowners all affected by the same disturbance.

4:30 – 5:00 - *Benefits of Multi-state & Regional Programming: The Case Study of the Southern Regional Extension Forestry Office.* Authors: William Hubbard and Dan Geller

The Cooperative Extension System in the United States is a vast and complex network of educators who hold various subject matter and geographic responsibilities. The traditional cooperative model is rounded out at the national level, with fiscal and programming direction support through the USDA office. University-based state specialists, often housed on the states' Land Grant campus, provide support and programming assistance when and where needed to county-based educators. Another level, the national level, through the auspices of the USDA National Institute of Food and Agriculture (NIFA), rounds out the traditional 'cooperative' model with fiscal and programming direction support. While budget constraints, innovation, opportunity, and other factors have resulted in changes to this model, the basic national-state-county agent interaction has been in existence for over 100 years. What about the need for, interest in, and potential impact of a regional (multi-state) entity in this model? One unique aspect of the Extension System in the South is that it has a Regional Extension Forester position who serves all thirteen 1862 Universities and the USDA Forest Service – Southern Region. This presentation will highlight some direct and indirect benefits to states and counties due to regional programming through the perspective of someone who has served in this capacity for 25 years. Bill Hubbard, Regional Extension Forester will provide some highlights of these past two and a half decades along with opportunities for input to and involvement with regional level activities.

5:00 – 5:30 - J*ust Can't Wait to (Study) Leave: An Alternative Professional Development Opportunity.* Authors: Chad Cook and Brad Withrow-Robinson.

A study leave is a short and flexible way for Extension faculty to delve into an idea, learn from a place, or collaborate with colleagues. On study leave, educators can visit a host institution for several weeks to spend time in the field with researchers and educators working on topics of interest, and share their own experiences through invited lectures or presentations. Even a brief leave can provide a valuable professional development opportunity. This is relevant because professional development is a critical component of an Extension educator's career. While there are many opportunities, ranging from online webinars to professional conferences, most are limited in scope. Sabbaticals are the traditional academic mechanism for a deeper and more meaningful growth experience, but are unavailable to many Extension educators. Extension faculty are often constrained by expectations of off-campus jobs, or lack sabbatical privileges altogether, a situation likely to increase as more states move away from tenured faculty positions in favor of annually renewed positions. Extension needs to have alternatives that reflect this reality. In this presentation, we will share our experiences with study leaves, and how Extension

and ANREP might better support them as a viable and available professional development opportunity. We recognize that this is not a typical conference topic, but feel this discussion is timely and highly relevant to our organization and its membership.

Ship Island Room B: Forest Health & Stewardship

4:00 – 4:30 **-** *From the ground up: building a regional forest health Extension program.*
Authors: David Coyle and William Hubbard

Forestry has a major economic, social, and ecological impact in the southeastern U.S., yet the capacity to conduct forest health extension varies among states. As such, there is a need for a consistent regional forest health program, particularly in light of recent region-wide issues such as the emerald ash borer. In 2015 we partnered with the USDA Forest Service to create a forest health program for county Extension agents in the southeastern region, with priorities being consistent dissemination of information, enhanced training opportunities for county Extension agents, and improved online and printed materials. Our intent was to work with and complement existing forest health Extension programs and personnel to provide support or leadership, depending on the needs of the individual state. Since its inception, the Southern Forest Health Outreach and Education Program has provided information, continuing education, and in-person workshops pertaining to forest insects, fungi, and plants, both native and invasive. Improved communication to professionals and the general public has been a focus, including the use of targeted social media efforts. This talk will cover the pros and cons of a regional program, including successes and challenges encountered during the first two years. Methods for effective communication will be discussed for professionals and the general public. Regional Extension programs have myriad benefits, and hope this program can serve as a template for programs in other disciplines and in other parts of the U.S.

4:30 – 5:00 **-** *Growing Awareness and Active Stewardship to Improve Forest Regeneration.*
Authors: Leslie Horner, Allyson Muth, Jim Finley.

Forest inventories in Pennsylvania have shown a lack of adequate regeneration, resulting from 1) fewer harvests or natural disturbances that would create necessary light conditions, 2) more invasive plants across the landscape, and 3) deer impacts to forests from chronic, preferential browsing of desired tree seedlings. In order to foster successful forest regeneration, active management of our woods must occur. As forest land is divided and the number of landowners continues to grow, the challenge of engaging landowners to address concerns like inadequate regeneration will be perpetuated. Commonly, landowners express uncertainty about "where to start" in stewardship of their woods. Also not uncommon is that many landowners assume that forests do not need active management. Lack of awareness of a need and feeling uncertain or overwhelmed are barriers to adopting forest management practices that can be lessened with peer learning and demonstration. Our project team is building on existing peer networks to foster learning relationships—especially with "beginning" landowners—to increase awareness of the need to actively manage for successful regeneration. Working with Woodland Owners Associations and landowners who have active forest stewardship experience, we are: 1) training a network of engaged landowners to lead peer learning through the demonstration of a regeneration assessment tool; and 2) conduct outreach to beginning forest landowners and helping these landowners connect to existing resources for further education and assistance, including NRCS Forestry EQIP practices relating to regeneration and woodland health and function.

5:00 – 5:30 - *Wood Utilization; Pathway to Healthy Forests and Sustainable Communities.* Authors: Patricia Layton, Susan Guynn, Bill Hubbard

The time has come to begin asking for wood products in order to utilize sustainable forests. Harvesting our forests can keep them healthy and provide economic opportunities for landowners. Meanwhile, innovative new wood products and building systems are coming into the marketplace that will allow designers, engineers and builders to expand wood products used in buildings. Nationally more than 70% of commercial buildings that could be built with wood are built with other materials such as steel or masonry. It is estimated that steel and concrete are responsible for approximately 8% of all greenhouse gas emissions. Sustainable communities in our rural areas depend on both the economic return from harvesting timber as well as having sawmill and other wood dependent industries operating to provide jobs, taxes, and other revenues. By promoting the use of locally grown products in our states, we have the potential to impact industry development and increase landowner income from growing trees. A Regional Wood Utilization Summit was convened in the Spring 2016 and featured speakers described the current state-of-the-art in wood buildings. Breakout groups focused on specific problems related to increasing wood markets such as building codes. Professional moderators guided the groups toward identifying the key challenges and action items for addressing those items. Key ideas for further refinement and final action items were collected. The final project resulted in a website, ASKFORWOOD.com which combines many of the items that were identified as needed during the workshops.

Ship Island Room C: Invasive Species

4:00 – 4:30 - *Air Potato Management in Coastal Georgia.* Authors: Jessica Warren and Mark McClellan.

Air potato vine is an invasive vine that is native to Southeast Asia. Air potato has been one of the most damaging invasive species in Florida, choking out native vegetation and covering natural areas. As a county on the Georgia/Florida line, Camden County is on the front lines of new invasive species moving north. Camden County Extension and the Georgia Forestry Commission have teamed up in an early detection/rapid response effort to control or eradicate the air potato infestation in Camden County using biological, chemical, and mechanical control methods in an integrated pest management (IPM) strategy. The biological treatment used had never been utilized in the state of Georgia prior to this project. Biological controls were acquired through work with the Florida Department of Agriculture after appropriate federal permits were acquired. After three years of implementing the IPM strategy significant progress is being achieved against this noxious pest.

4:30 – 5:00 - *Air Potato Biological Control Extension Program: A Success Story.* Authors: Kenneth Gioeli, Carey Minteer, Min Rayamahji, Chris Kerr, William Overholt, Eric Rohrig.

A program is connecting Floridians managing invasive air potato (Dioscorea bulbifera) with a biological control agent: the air potato leaf beetle (Lilioceris cheni). Researchers with the USDA ARS Invasive Plant Research Laboratory in Fort Lauderdale demonstrated that L. cheni is a viable biological control. A team of scientists with UF/IFAS, USDA-ARS and the Florida Department of Agriculture and Consumer Division of Plant Industry partnered to conduct research on L. cheni. In addition to the research team, an extension agent with the UF/IFAS St Lucie County Extension was invited to develop an Extension program to bring focus to outreach efforts for this biological control agent. As a result of this Extension program, outreach efforts

produced research-based information and targeted project resources to meet program clientele needs. Since the project's inception, there have been 360,052 visitors using content on the air potato biological control project website. YouTube videos, brochures, posters and other Extension deliverables were developed. This Extension program has resulted in a high level of satisfaction with 95% (196/207) of surveyed program participants expressing their level of satisfaction to others. Between June 2016 – August 2017, 81,528 adult insects were released by the UF/IFAS team on 840 sites to manage invasive air potato.

5:00 – 5:30 **-** *Beach Invasion: Sea Grant Assisting with Invasive Species Management along the Coast.* Author: Rick O'Connor.

Nonnative invasive species have been creating environmental and economic hardships for communities for many years. Across the country, over $100 million dollars are spent annually controlling them. Scientists understand that the most effective method of managing invasives, both in terms of eradication and costs, is to strike when the species first arrives within the community, or before it does. Beach Vitex (*Vitex rotundifolia*) is new to the state of Florida and found in coastal counties in the western panhandle. Sea Grant provided an education campaign to alert property owners about the potential impacts of this vine and how to manage it. Fifty-four locations were found and reported in Escambia and Santa Rosa counties, in addition one in Franklin County. Fifty-one (94%) of those records have been removed or treated. They have also been reported on the northeast coast of the state. The plant is now listed as a Category I invasive with both the Florida Exotic Pest Plant Council and the University of Florida Aquatic and Invasive Plant Center because of the work and recording keeping conducted by extension. Lionfish (*Pterois volitans*) is an invasive fish first reported in Florida waters but now established along the eastern seaboard, Caribbean, and the Gulf of Mexico. Sea Grant is working with community partners to provide education and control programs to manage this fish. The Lionfish Removal and Awareness Day educates 5,000 residents and removes around 5,000 lionfish from Pensacola waters annually. An additional 5,000 fish are removed through a commercial products program.

Cat Island Room: Community Engagement

4:00 – 4:30 **-** *Community Gardens as Classrooms.* Author: Christian Stephenson

Community gardens provide a range of benefits to communities including promoting food security and increasing biodiversity in urban settings. In addition to this, community gardens provide a wealth of opportunities to instruct youth and adults in topics related to home horticulture, agriculture, and natural resources. Community garden programs in Hancock County include the Bay St. Louis community garden, which is directed at both increasing food security and education. Education programs are directed at adults and youth. Weekly programs are held to instruct volunteers and others in topics related to home vegetable and fruit production as well as topics related to sustainability and conservation in an urban setting. Youth programs are held on a monthly basis and instruct 4-H members in gardening, wildlife, and nutrition. An additional community garden program is ongoing in cooperation with the Hancock County youth drug court. In addition to instruction in gardening, participants also receive instruction in a variety of life skills including developing a budget and nutrition. The community gardens provide a practical and hands-on setting for education and allow the participants to see the on-going benefits of their activities.

4:30 – 5:00 **-** *Changing the Culture of Fire through Sound Science and Innovative Programming.* Authors: Carrie Berger and Daniel Leavell.

The Fire Science Core Curriculum was designed by a team of forestry and fire educators at Oregon State University to teach the basics of fire to non-fire professional members of the community and landowners, and to those just beginning a path to professional fire science. The curriculum contains five modules that bolster an understanding of basic fire ecology, fire behavior, fire management and fire prevention. Last year, Oregon experienced one of the worst wildfire seasons on record. Wildfires burning just outside the city of Portland and smoke settling in parts of the state for months elicited fear, confusion, and even anger in the community. In response, Forestry & Natural Resources Extension took a call to action and developed a comprehensive, consistent, and cohesive statewide Fire Program using the Fire Science Core Curriculum as the foundation. The Fire Program works to change the culture of fire in Oregon – and elsewhere, so that people understand and respect fire, not fear fire and take action towards reducing the risk of catastrophic wildfires in their communities.

5:00 – 5:30 **–** *Climate and Weather Tools to Increase Forest and Agricultural Productivity and Resilience.* Authors: Michael Gavazzi, Steve McNulty, and Sarah Weiner

Technological advances provide benefits to the working lands sector (i.e., forest, range and agriculture), but the number of available tools can be overwhelming, or at inappropriate spatial and temporal scales for decision making. The USDA Southeast Regional Climate Hub (SERCH) works to simplify the use of climate and climate adaptation science in daily to long term decision-making through tools, trainings, and other resources. SERCH delivers carefully vetted resources in user-friendly formats designed for Extension agents and land managers. This presentation will give an overview of tools and resources available to enable climate-informed decision-making and keep working lands productive and resilient.

Horn Island Room: Ignite Session 1

4:00 – 4:10 **-** *Exploring the Florida Panhandle's Natural Resources through Water Schools.* Authors: Ray Bodrey, E. Lovestrand, R. O'Connor, S. Jackson, C. Verlinde, C. Stevenson, L. Tiu, S.Dunning, J. Bliss, J. Mcconnell, and W. Sheftall

Northwest District County Faculty of the University of Florida IFAS Extension and Florida Sea Grant developed an acclaimed natural resource educational program, known as the "Panhandle Outdoors Live Water Schools". The program is accomplished through presentations, along with traditional excursions to explore and learn about the Florida Panhandle's signature terrestrial and aquatic ecosystems. County faculty from across the district partner to plan, implement and evaluate this invaluable program. The Apalachicola River & Bay Water School and St. Joseph Bay Water School events focused on conservation lands and aquatic habitats that are vulnerable to issues that threaten their ecological integrity. The Apalachicola River is part of a system that begins in the foothills of the Appalachian Mountains in North Georgia and includes ~900 miles of waterways, spanning ~20,000 square miles of the Apalachicola, Chattahoochee, Flint watersheds. Although Apalachicola Bay is known for its oyster production, it is also home to one of the most diverse estuaries in the Northern Hemisphere. The St. Joseph Bay ecosystem has one of the richest concentrations of marine grasses along the northern Gulf Coast. It supports an amazing diversity of birds, fish, aquatic invertebrates such as bay scallops, terrapins and the area includes nesting beaches for sea turtles. The Water Schools provided a mix of classroom presentations, field tours, and unique paddling and snorkeling experiences. Participants learned

from experts on topics such as, erosion, water quality and quantity issues, as well as the natural flora and fauna of both the terrestrial and aquatic ecosystems.

4:10 – 4:20 - *Incorporating Noxious Weeds and Invasive Species Lessons into Pesticide Trainings.* Authors: Gary Wyatt and Julie Weisenhorn

Each year our Extension Pesticide Safety and Environmental Education team partners with the Minnesota Department of Agriculture to offer pesticide certification classes to professional pesticide applicators in turf/ornamental and agriculture. Lessons are created to be taught two consecutive years. These programs are very well attended. Palmer Amaranth was detected in southwest Minnesota in the fall of 2016. There has been a misunderstanding or confusion among landowners and homeowners about the difference between Minnesota Noxious Weeds and Invasive Species. There are two main Minnesota agencies responsible for each of these designations. Our team thought it would be a good time to discuss the definitions, agency responsibilities, professional obligations and landowner obligations of Noxious Weeds and Invasive Species. Our team developed the teaching module for this lesson plus a fact sheet that shows both the Minnesota Noxious Weeds and the Minnesota invasive species. There is no other fact sheet that includes both of these lists on the same fact sheet. Side by side columns are printed on the right hand side to document which plant species are Noxious Weeds or Invasive Species or both. Over 2,300 commercial turf/ornamental and agriculture professionals have heard this lesson. We have received positive evaluations from professional and landowner clientele that this lesson and fact sheet is very helpful in understanding the definitions, differences and similarities between Minnesota Noxious Weeds and Invasive Species. This innovative program can be replicated in other states in advancing knowledge and changing behaviors of professionals and landowners.

4:20 – 4:30 - *Building Citizen Interest in Early Detection and Rapid Response for Invasive Species.* Author: Dan Fagerlie

Stewardship of natural resources is key to preserving or improving their integrity and sustainability. One of the first lines of defense of these natural ecosystems is early detection and rapid response (EDRR) in identifying and control of new nonnative invasive species before they become widely established with irreversible consequences. Extension outreach education can build a network of educated citizens and land managers whom provide the needed early detection and even control of priority invasive species. Learn practical and tested tools to enable your program to be in the lead in providing the education to make a difference; a difference that can protect the environment while teaching effective identification and control to an involved and motivated citizenry. Samples of workshops created, educational outreach materials developed, and evaluation tools will be shared with participants to give ideas and resources to create your own effective outreach programming.

4:30 – 4:40 - *Mixing it Up: Tweaking Forest Management to Meet New Market Demands in North Mississippi.* Authors: John Willis, Jason S. Gordon, Andrew B. Self, John B. Auel.

Changing market conditions are one of the biggest risks in timber management. In the southeastern United States, demand for pulp was largely responsible for the adoption of sustainable forestry and eventual development of intensive pine management. However, declining demand for pulp and the associated reduction in the logging force, has made the traditional model of production forestry less profitable and in some parts of the region logistically challenging. In response to these trends, the Mississippi State Forestry Extension Faculty have begun offering a new short course focused on managing multi-species stands. The course focuses on educating non-industrial private landowners and natural resource professionals

on the basics of converting pine plantations into multi-species stands. Benefits to forest landowners adopting this approach include: reduced regeneration costs, improved wildlife habitat, increased resilience to disturbance, and access to multiple forest product markets. We believe this alternative approach to forest management is better suited for areas where demand for pulp is expected to remain low.

4:40 – 4:50 - *Partnering in Appalachian Ohio to Expand Extension's Reach to Woodland Owners.* Authors: David Aspley, Jarel Bartig, and Cotton Randall.

Sixty-three percent of Ohio's 8.1 million acres of forest Appalachian Ohio, yet this region has been historically underrepresented at outreach efforts conducted by extension and other agencies. Currently Ohio has one Forestry FTE in the region. Partnerships have greatly increased OSU Extension's capacity to provide research based, relevant forestry educational programming for adults and youth in the region. In 2012 OSU Extension initiated a new programming effort "A Day in the Woods" with partners at the Vinton Furnace State Forest, home to a research and demonstration forest. OSU Extension coordinates the collaborative planning, marketing and delivery of programs each year with the primary goal of enhancing educational efforts for woodland owners and enthusiasts in the region. The 12 principal partners provide funding, logistical support, facilities, transportation, materials, and subject matter specialists. Since 2012 "A Day in the Woods" has offered 50 day-long programs with more than 2,000 attendees mostly from Appalachian counties in Ohio. Collectively, these attendees own or manage more than 100,000 acres of woodland. These programs have been resourced by more than 75 subject matter specialists from 20+ institutions. Evaluations of participants indicate that the level of satisfaction programs is very high (4.71; Likert scale 1-5) and average increase in knowledge is 1.56 (scale of 1-5). This strong partnership is spilling over into other initiatives including but not limited to Collaborative Oak Management, Call Before You Cut, a shared stewardship pilot project, invasive species management, oak story map project and a number of natural resources based youth initiatives.

4:50 – 5:00: *A Demonstration and Comparison of Two Methods for Multi-Sector Contribution Analysis using IMPLAN.* Authors: James Henderson, Rajan Parajuli, Omkar Joshi, and Shaun Tanger.

Extension is often tasked with conducting economic contribution analyses of forestry and other natural resource industries at the state or county level. IMPLAN software and data are commonly used to quantify indirect effects (i.e., purchases from supporting industries) and induced effects (i.e., employee household spending) to all other sectors of the economy that result from economic activity originated by the sectors of interest (i.e., forestry and other natural resource industries). However, adjustments have to be made to avoid overstating the results of the analysis (i.e., controlling for own indirect and induced effects upon the sectors of interest). There are two approaches for conducting economic contribution analyses using IMPLAN; one is internal to the software and the other is external adjustments of the input values. Results from both approaches will be demonstrated and the pros and cons of each method will be discussed. This presentation will be beneficial to practitioners that are tasked with conducting economic contribution analyses and to those that use or provide these results to Extension clientele.

5:00 – 5:30 - *Making Lemonade When Timber Markets Are Down.* Authors: John Kushla, Adam Rhonke, Randy Rousseau, Brady Self, Adam Tullos, John Willis

The housing crisis of 2007-2008 precipitated a decline in timber prices within the state and across the nation. Since then, product prices have improved for hardwood, but not so much for pine. Moreover, three years ago, a major paper mill closed in northern Alabama. Its

procurement area included much of northern Mississippi. Consequently, prices for all pine products have remained depressed. In response to these major market shifts, Extension Forestry began offering a new short course two years ago to forest landowners in northern Mississippi. This course was entitled Alternative Sources of Forest Income. This course was taught across northern Mississippi to encourage forest landowners to reconsider how they may generate revenue on their family forests. Alternative Sources of Forest Income included management practices from agroforestry, specialty forest products, natural resource enterprises, Christmas tree farming, and managing for utility poles. To date, this course has been offered 5 times, covering 18 counties across northern Mississippi. With pine timber prices very low, presenters emphasized the need for forest landowners to diversify operations toward local markets (firewood, pine straw, Christmas trees); recreational leases by separating deer hunting, turkey hunting, and fishing; or changing management practices toward very high value products like utility poles. A total of 95 people owning or managing 201,139 acres of forest have attended these classes. Participants valued the information they received at $404,000. One participant commented, “I enjoyed this course! I will enroll in additional courses with Mississippi State Extension.”

Poster Session Deer Island Room 6:00 – 7:30 PM

Lights, Camera, BMPs! Using videos to educate stakeholders about watershed restoration practices. Authors: Michele Bakacs and David Smela

Starting in 2012, Rutgers Cooperative Extension of Middlesex County (RCE) has worked with local partners to help implement a watershed restoration and protection plan in the Manalapan Brook Watershed in central New Jersey. The goal of this state funded project is to implement best management practices (BMPs) needed to reduce rainwater runoff, sediment, and nutrients as identified in the watershed plan. RCE's role has focused on education and outreach (E&O) with the first phase spent developing educational videos for each structural BMP so other towns and residents can learn from the work. Thus far three videos have been developed; the project overview, floating wetland islands, and lake shoreline restoration. A fourth video on naturalizing stormwater detention basins is underway. The videos focus on BMP planning, implementation, and maintenance. The videos, viewed online 1,179 times, have been used to teach volunteers including Master Gardeners, and Environmental Stewards, have been featured at county and green fairs, and played 44 times on public access television. A survey conducted with a selection of viewers indicated that the videos helped them understand the importance of water resource protection as well as specific actions they could take at home to improve water quality (n= 35, 4.5 rating, Likert scale out of 5= strongly agree). The videos are available at https://freeholdsoil.org/conservation-projects/projects/. Next steps for the E&O portion will focus on hands-on workshops for residents to learn what they can do on their own properties as well as educational tours to visit the recently installed BMPs.

Evaluation of the Contributions of Florida Sea Grant in the Impacts of Innovation of the University of Florida. Author: Victor Blanco

UF ranks within the top 20 more innovative universities in US with more than 200 patents granted per year. This indicator is used as part of the UF/IFAS District and Sea Grant Reporting systems. However, there is a lack of information of the impact of Florida Sea Grant contributions to the UF innovation accomplishments, and how this supports companies based on university research and extension. A passive method for assessing the adoption of innovation approach in the FSG impact is performed applying surveys to Sea Grant staff and interviews with UF Office of Technology and Licensing (OTL). The goal is to evaluate the state of the art, knowledge and progress on innovation and patent as Intellectual Property (IP) issues within Sea Grant as an indicator of the organization's achievements and impacts on UF. Results of a total of 20 surveys were applied and collected from Sea Grant staff in August 2017 and informal interview with the UF-OTL. FSG have no patents granted historically in UF. 58% manifested knowledge of what a patent is for and how it works; 39% said that "Maybe" have designed/created a device/product/procedure that might be patented during the implementation of a marine research or extension program. 95% have never applied for a patent, 42% would like to know more about Patents as a way of IP protection, and 74% think that Maybe Patents and IP could be a good idea for a WAG group/subgroup. This results show a low awareness/knowledge about the importance or impact of innovation on the daily basis of FSG work, a medium interest in exploring patentable innovation as an impact/accomplishment tool for FSG, and a great opportunity to show impacts of FSG in State' I+D. It is proposed to implement a Florida Sea

Grant Innovation Initiative (FSGII) that would promote training and organizational strengthening in patentable innovation.

Fire Science Exchanges: The National Network of Fifteen Exchanges Facilitates the Flow of Fire Science to Stakeholders. Authors: Leslie Boby, Alan Long, David Godwin, and Janean Creighton

The 15 member consortia of the Fire Science Exchange Network (FSEN) work to translate relevant wildland fire science that can support management activities and decisions across different ecoregions of the US. Each exchange is a regional program for fire science delivery, funded by the federal Joint Fire Science Program (JFSP). The Fire Exchanges are directed through partnerships among universities, the U.S. Forest Service and relevant fire science or management oriented organizations. The FSEN, which was started in 2010 are growing fire science translation programs that work with a wide variety of regional partners (e.g. agencies, NGOs, prescribed fire councils) to develop programs and activities that connect natural resource managers with new wildland fire science. Individual FSEN websites, presentations, newsletters, fact sheets, webinars and field tours have reached tens of thousands of national stakeholders. Each individual Exchange continues to seek new partnerships, develop innovative resources, and increase opportunities for uniting fire science and natural resource management in their regions. The fire exchanges have become "go-to" sources for relevant, accurate fire science information. Find your local Exchange at: http://www.firescience.gov/JFSP_exchanges.cfm

Implementation and Management of a Successful Electronic Waste Disposal Program. Authors: Phillip Carter, Karnita Golson-Garner, Allyson Shabel, and Roosevelt Robinson

Electronic waste or e-waste is a term for electronic products that have become unwanted, non-working or obsolete, and have essentially reached the end of their useful life. Because technology advances at such a high rate, many electronic devices become trash after a few short years. E-waste is the inevitable by-product of a technological revolution. Driven primarily by faster, smaller and cheaper microchip technology, society is experiencing an evolution in the capability of electronic appliances and personal electronics. For all its benefits, innovation brings with it the byproduct of rapid obsolescence. According to the EPA, nationally, an estimated 5 to 7 million tons of computers, televisions, stereos, cell phones, electronic appliances and toys, and other electronic gadgets become obsolete every year. According to various reports, electronics comprise approximately 1 - 4 percent of the municipal solid waste stream. The electronic waste problem will continue to grow at an accelerated rate. It is a crisis of not quantity alone but also a crisis born from toxics ingredients, posing a threat to the occupational health as well as the environment. Rapid technology change, low initial cost, high obsolescence rate have resulted in a fast growing problem around the globe. Electronic products, especially cathode ray tubes (CRTs) often contain hazardous and toxic materials that pose environmental risks if they are land filled or incinerated. Consequently, we need more appropriate disposal programs in place to counter this growing waste problem and its ability to have such a negative impact on our natural resources and human health. Having a good understanding of implementation and management of an e-waste disposal program is very important to program success.

Sustainable Vegetable Production Education for Small- Farm Families. Author: Franklin Chukwuma and Margeria Smith

Alcorn State University sustainable vegetable production education project worked with small-scale vegetable producers to enhance the production and profitability of their vegetable crops while reducing the use of high-risk pesticides. The project utilized ten hand-on training sessions in 2014 and 2015 to educated small and limited-resource farmers on activities as it relates to sustainable vegetable production practices, good farm financial management and alternative marketing strategies of their farming operations. The trainings were conducted at Alcorn State University demonstration centers located in Mound Bayou, Preston, Marks, and Lorman Mississippi. A total of six hundred and fifty-three (653) farmers and agriculture professionals received hands-on training exercises. Pre-training survey indicated that 70% of the farmers do not keep records of their farming operations; 80% produce and sell locally and 15% are engaged in some form of sustainable agricultural practices. The survey also revealed that the average age of the participating farmer is 45 years old. The farm size ranged from less than 3 acres (5%), up to 10 acres (40%), 11-25 acres (35%) and more than 25 acres (20%) and majority of the participants (84%) reported that they receive just a fraction of their annual income from their farming operation. Retrospective post surveys were utilized to determine the effectiveness of the trainings. Thus, the overall participant knowledge was increased in all areas of instruction.

Mississippi Oyster Gardening Program. Author: Emma Cochran

The Mississippi Oyster Gardening Program is designed to promote oyster restoration on the Mississippi Gulf Coast. Through the program, volunteers with access to a pier are provided hanging gardens to grow their oysters. At the conclusion of each season, oysters are collected and planted onto restoration reefs off the Mississippi Coast. Each volunteer will end the season having grown around 1,000 oysters and having a direct impact on the ecological health of the Mississippi Sound. Education is a major role of the program, and is achieved through a number of different avenues. Through the gardener recruitment process, presentations about the program and benefits of oyster gardening are given to environmental and community groups along the coast. Word of mouth is particularly important with recruitment, so the more visibility the program has within the community, the more successful it is. There are also schools who are involved in the program, and have access to their own gardens. This gives students a hands on opportunity to learn about oyster restoration and ecology. The largest obstacle the Mississippi Oyster Gardening Program has faced is the impacts of tropical storms and hurricanes. Oysters are unable to survive if water salinity drops too low, which has proven to be a problem after large storms move through the region.

Tying Education to Research: Analysis of Educational Programs for Oregon Woodland Owners Authors: Janean Creighton, Carrie Berger, and James E. Johnson

Five issues have been identified by the Oregon Board of Forestry, the Oregon Department of Forestry Partnership for Forestry Education, and state wide landowner associations as being top priority issues for Oregon woodland owner education: climate change, wildfire, ecosystem services, forest legacy, and forest health. Issues deemed important by the state have implications with regards to policy and resource availability available for landowners to meet the goals of providing the public goods that flow from private forests. Any disconnect

between the goals of the state and those of private woodland owners could impact the availability of such resources, and thus the landowner's capacity to manage their land effectively. We performed a content analysis of all available literature focused on family woodland owners in Oregon State from 2000 to 2016 to determine the extent to which the five priority areas are addressed in the research. We followed the content analysis with an on-line survey to examine the degree to which forestry and natural resource extension and outreach educators are addressing the five issues in their educational programming. This study provides information to determine the following: Are the five priority issues identified by the state currently being addressed in the educational opportunities provided to family woodland owners in Oregon, and are these five issues also considered a priority for those providing the education, and indirectly by the landowners themselves? Results will provide support for current family woodland owner educational programming, and inform effective future programs and opportunities.

Delphi Expert Opinion Survey to Assess Threats to Oaks in the Eastern United States. Authors: Ellen Crocker, Anna O. Conrad, Xiaoshu Li, Billy Thomas, Thomas Ochuodho, and C. Dana Nelson

Oaks are important fixtures of many eastern United States forests, providing both ecological and economic benefits. While regeneration is a major issue impacting oaks currently, biotic (e.g. pests and pathogens) and abiotic (e.g. abnormal weather and climate change) stressors, may also threaten oaks in this region. The goal of our Delphi expert opinion survey is to identify the most significant threats (biotic and abiotic) to oaks in the eastern United States (as defined by the eastern and southern regions of the U.S. Forest Service), and to gauge the potential impact of these threats on oaks. To accomplish this, we initiated a three-part Delphi expert opinion survey. The iterative Delphi approach is useful for evaluating consensus (or lack thereof) among experts on a specific topic. In the course of this survey series, we asked experts to identify current and future biotic and abiotic threats to oaks, and then based on expert opinions, gauged the current and potential impact of these threats by asking a series of questions concerning, for example, their spatial and temporal manifestation. Data collected as part of this Delphi survey series will be used to support subsequent analyses aimed at assessing the economic impact of these threats, and may be useful for prioritizing the management of these threats within the eastern United States.

Extension's Role in Facilitating Stakeholder Strategic Planning Efforts. Authors: Marina Denny and Jason Gordon

Extension adds value to community partners and stakeholders by providing evidence-based, technical content that translates to applicable skills, behavior change, and hopefully improved social, economic, or environmental conditions. An often overlooked resource that Extension also could provide is that of group facilitation to help achieve positive change (Cyr, 2008), specifically for organizations seeking to invest in strategic planning, goal prioritization, or even large-scale needs assessments. While facilitation is not a direct transfer of knowledge or technology, it offers other benefits to both the receiving organization and Extension. These include saving the organization money; allowing everyone to participate; providing more structure and focus for participants; offering better execution of the entire planning process; creating accountability to act on the recommendations and/or plan; and reaffirming Extension's credibility as a reliable, non-biased source of information and expertise (Fiske, 1991). The

Mississippi Forestry Association (MFA) requested Extension's assistance to facilitate a strategic planning session at their annual meeting in 2014. MFA's purpose for the session was to bring together the general MFA membership and committee members to contribute their thoughts on moving forward with certain action items in the MFA 2014-2019 Strategic Plan. This presentation will describe the facilitation methodology employed for this session, expound on its benefits and limitations, and discuss the MFA's perception of the value of the process. Recommendations also will be made for Extension personnel seeking to improve their core facilitation skills and/or use facilitation as a means to strengthen existing networks or establish credibility with new stakeholder groups.

Impacts of the Watershed Stewards Academies. Authors: Jennifer Dindinger and Eric Buehl, Amanda Rockler, Jackie Takacs, and Kelsey Brooks

The Watershed Stewards Academy (WSA) is a train-the-trainer program developed to build an army of citizen stewards capable of identifying stormwater pollution sources and solutions. To become Certified, Stewards must complete an intensive, research-based, hands-on training, and implement a community stormwater project. Once trained, Stewards work with their communities to assess watersheds, educate other community members, reduce pollutants, and take action. To date, Watershed Stewards Academies graduated 54 new Master Watershed Stewards as well as provided assistance to previous program graduates with their community outreach and restoration activities. Their combined efforts of class, capstone, and community projects resulted in the completion of 86 new projects totaling 19,080 square feet of BMPs treating 80,840 square feet of impervious surfaces. In all, they planted 8,696 native plants, educated 1,746 individuals, and engaged 741 volunteers to complete projects including bioretention areas, a micro-bioretention facility, rain gardens, a 1,300 gallon cistern, rain barrels, stormwater planter boxes, community assessments, stream surveys, a green roof demonstration, impervious surface conversion, and native tree, shrub, and wildflower plantings. In 2017, certified Master Stewards were surveyed about their experiences with the program and what work they have completed in the community since becoming certified. The poster will show the results of the survey and how those results are used to improve the program.

Addressing Contaminants of Emerging Concern (CECs) through the SerPIE-ASEMP for Undergraduates. Authors: Karnita Garner, Paul Okweye, Allyson Shabel, Phillip Carter, Roosevelt Robinson, Samuel Dennis, Sampson Hopkinson, Maria Leite-Browning, Marcus Garner, and Richard Browning

The Alabama Cooperative Extension System (ACES) and Alabama Agricultural and Mechanical University (AAMU) hosted the first Synergistic Efforts to Reduce Pharmaceuticals in the Environment (SerPIE) Agricultural Science and Extension Mentorship Program (ASEMP) in the summer of 2015. The six-week mentorship program was designed to orient underrepresented students towards careers in science and Extension that focus on emerging issues, like pharmaceuticals in the environment (PIE). SerPIE_ASEMP was offered June 15 through July 24, 2015, and consisted of a nationwide search, targeting undergraduate STEM majors with a minimum GPA of 3.0/4.0. Six students were selected and placed with mentors from diverse backgrounds. The students learned first-hand, the responsibilities of serving the community-at-large and the importance of combating issues like, PIE. They were engaged in classroom and laboratory exercises and participated in field and site visits, workshops, and in-

service learning projects. The program culminated with formal presentations summarizing the mentees' experiential learning experience. Overall, they gained a better understanding of the impacts that PPCPs have on animal, human and environmental health and the best management practices necessary to minimize the risk posed by these hazardous chemicals. Evaluation of the mentees revealed significant knowledge gains concerning PPCP issues (88%) and increased interest in Extension and science careers (92%) (n=6). SerPIE-ASEMP II is scheduled for the summer of 2019.

Volunteer Algae Monitoring Program (VAMP) in the Indian River Lagoon Estuary (Florida)
Authors: Kenneth Gioeli, Haywood D. Laughinghouse IV, Lisa Krimsky, and Edward Skvarch

In summer 2016, Florida Treasure Coast communities in Martin, St Lucie and Indian River counties were impacted by news stories of harmful algae blooms (HAB's) in the waters of the Indian River Lagoon estuary. This news was exacerbated by residents demanding cessation of fresh water releases into this estuary from Lake Okeechobee. Public health authorities in Martin County issued recommendations for people to avoid exposure to cyanobacterial HAB's in the Indian River Lagoon. This news resulted in dramatic impacts on businesses, residents and visitors in these communities as the news spread worldwide. These episodes demonstrate the importance of having informed citizens with an understanding of the problems and threats. Studies have shown the value of using citizen scientists to aid in HAB monitoring programs. UF/IFAS research and extension faculty devised the Volunteer Algae Monitoring Program (VAMP) to address the need to obtain long-term algae and water quality data and to engage local citizens in these efforts. UF/IFAS Florida Master Naturalist volunteers were selected to adopt a waypoint in the estuary and received training and supplies to conduct water quality testing and algae collection on a monthly basis. These algae samples are surveyed by the Laughinghouse Lab at the UF/IFAS Ft Lauderdale Research and Education Center and reports are submitted to the UF/IFAS St Lucie County Extension where local decision-makers assess the algae-related issues impacting the Indian River Lagoon. Local volunteers increased data and also real-time local information while engaging the community and bringing science into homes.

Talking Poplar: Analyzing the Impact of Poplar-focused Regional and National Meetings
Authors: Catherine Gowan, Patricia Townsend, and Kevin Zobrist

For the past six years, Advanced Hardwood Biofuels Northwest (AHB), a multi-institution, multidisciplinary research consortium, has been exploring how to create a poplar tree-based biofuels industry in the Pacific Northwest. Part of the answer may be recognizing and promoting the ecosystem services of poplar; poplar trees are especially well-suited to removing or using unwanted chemicals and nutrients from the soil and water. The AHB Extension team has been making strides towards creating a network of potential and current growers of poplars who are interested in the environmental benefits of the crop. Three meetings of diverse stakeholders resulted from this effort: a poplar marketing meeting (2015), the Poplar-Willow Forum (2016), and the TREES (Toward Renewable Energy and Ecosystem Services) summit (2017). All three meetings provided information about developing a poplar-based industry, bringing in experts on remediation, toxicology, wastewater management, poplar markets, and biofuels. Additionally, the meetings served as opportunities for often disparate stakeholders to connect and workshop ideas. In the last year of the AHB project, the Extension team is evaluating the impact of these meetings through surveys and interviews, to determine the lasting

impressions of participants and any important outcomes, such as new partnerships or opportunities. The poster will highlight the evaluation methodology and preliminary results.

The Woodland Stick - Impacts of a Forestry Information and Tree Measurements Field Tool
Authors: Lauren Grand, Alicia Jones, and Francisca Belart

The Woodland Stick is a forestry field tool for woodland owners and managers. This tool provides fundamental forestry facts and figures that can be used when making woodland management decisions in the field. It can also be used to measure the height and diameter of trees. The Woodland Stick was first developed in 1966 by the Soil Conservation Service to combine the Biltmore Stick with soil and tree productivity information. Since then, the Oregon State University Forestry and Natural Resources Extension Program has adapted the stick to meet the needs of their local landowner community. In 2016, it underwent its third revision to add forest health, canopy class, and thinning information. The Woodland Stick is currently the focus of two cornerstone Extension programs: Cruise Fell Buck and Scale; and the timber harvesting section of the Master Woodland Manager Volunteer program. During these two programs, landowners and volunteers use the stick to learn how to lay out and measure a circular inventory plot using the measurement, spacing, thinning, health, and canopy information on the stick. Then they use their measurements to calculate merchantable volume of the timber. The Woodland Stick has been used as an educational and measurement tool by these programs and other universities for many years, but little information is known about how it is used after the completion of these courses. To learn more about the impact of the Woodland Stick, we have developed a survey to identify how and how often participants are using this tool.

Empowering citizens to engage resource managers. Authors: Angela Gupta and Beth Kallestad

Woodland landowners, volunteers and resource managers have asked the University of Minnesota Extension for information and education about how to engage in larger management and policy level decisions on invasive species issues, in addition to knowledge about how to manage invasive species. Extension will meet the demand for this information by developing advanced training for woodland owners, Master Naturalists, lakeshore property owners and others concerned about terrestrial and Aquatic Invasive Species (AIS). The training will build skills, confidence and knowledge to engage decision-makers (e.g., resource managers and elected officials) in productive conversations that can impact decision-making about invasive species. This project is seen as a first step in an ongoing series of advanced training to further build community capacity to engage with resource managers, elected officials and other members of communities on issues that affect natural resources. The poster will focus on the collaborative effort of Extension natural resource and civic engagement professionals. Project objectives are to transfer knowledge, empower confidence and competence in program participants to meaningfully engage decisions makers at many geographic and organizational levels about invasive species issues. This project is multi-state and being developed for easy transferability via a flipped classroom, online learning and normative approach to education. Funding for the project comes from a grant through the Renewable Resource Extension Act (RREA) Focus Funds.

Bringing People into the Picture for a Biorefinery Feasibility Study. Author: Noelle Hart, Catherine Gowan, Nora Haider, Patricia Townsend, and Kevin Zobrist

As part of Advanced Hardwood Biofuels Northwest (AHB), Washington State University (WSU) Extension is working alongside academic and industry partners to lay the foundation for a poplar-based bioeconomy in the Pacific Northwest. Through six years of research, AHB generated knowledge about how to grow and harvest poplar, how to convert poplar chips into chemicals and fuels, and how to train the bioenergy workforce. AHB researchers conducted life-cycle and techno-economic assessments to explore sustainability at the Pacific Northwest scale. Based on AHB's experiences and discussions with investors, policy makers, and stakeholders, the necessary next step toward realizing a poplar-based bioeconomy would be to establish a commercially-viable, small-scale biorefinery supplied by local poplar feedstock. To this end, researchers from University of Washington (AHB's lead organization) are conducting a techno-economic feasibility study for a multi-county area in southwestern Washington. A biorefinery could be co-located with an existing power plant, and feedstock could come from poplar grown for wastewater management or flood control, as well as hardwood sawmill residues. WSU Extension plans to complement this study by interviewing relevant local experts and community leaders to explore the social dimensions of the region. It is important to understand the cultural context, practical implications, potential conflicts, and policy constraints in order to help determine whether a poplar-based bioeconomy is likely to provide opportunities for rural development and community engagement in the study area. This poster will share the project's progress and preliminary insights from conversations within the community.

Developing a Sustainable Extension Program - Lessons Learned from the Florida Master Naturalist Program. Author: Shelly Johnson

Educating and motivating the public to understand, support and participate in conservation efforts and education is becoming increasingly important, especially at regional scales. Challenges associated with developing, implementing, evaluating, and providing continued financial support for regional programs that reach large audiences are substantial. This presentation details strategies that have proven successful for the Florida Master Naturalist Program (FMNP), a statewide extension program that includes multiple courses offered by a network of more than 150 professional educators representing dozens of organizations and over 60 training teams throughout Florida. The FMNP is curriculum-based and includes 3 core courses (Coastal, Freshwater, and Uplands Systems) and 5 courses on special topics. All courses include classroom and experiential learning. The FMNP curriculum is supported by educational materials, program evaluation tools, and a fee-based structure that makes the program self-sustaining. Registration support and all instructional materials are provided without cost and 30% of the tuition fee is distributed to the Instructor organization to offset costs associated with providing FMNP courses. During 2001-17, the FMNP issued 13,000 course certificates to 7500 persons, 2200 of which have completed all 3 core courses. This presentation explains FMNP strategies that will be useful for individuals and organizations interested in developing regional extension programs and to provide evidence of the programmatic success of the FMNP as obtained through evaluative procedures. Additional information about the FMNP is available at www.MasterNaturalist.org.

Expanding the Dark Skies to Improve Sea Turtle Nesting Habitat in NW Florida
Authors: Erik Lovestrand, Lawrence Scott Jackson, Ray Bodrey, and Karen Shudes

Artificial lighting is an issue for sea turtles along many Florida beaches. Nesting females avoid brightly lit beaches and hatchlings disorient away from the water toward bright lights where they often perish. Working with coastal residents to change their "lighting-mindset" and provide assistance with turtle-friendly lighting is an important conservation strategy for endangered and threatened marine turtles in Florida. Response: Funding became available in 2016 through the Deepwater Horizon Natural Resources Damage Assessment fund. UF/IFAS/Florida Sea Grant Faculty in Bay, Franklin and Gulf Counties acquired a grant to assist beachfront property owners with turtle-friendly lighting retrofits in the multi-county area. Project staff includes three turtle lighting specialists to work directly with homeowners and businesses. A Project Manager coordinates field staff, reporting, and project deliverables. Results: Lighting retrofit needs were identified near existing conservation lands to expand these already darker zones. Survey work was conducted by the International Dark Skies Association. Over the 3-county area 345 lighting records were included in the project. Staff made contact attempts for all of the owners/property managers to educate regarding the need and to offer lighting assistance. Lighting supplies are being purchased as willing owners are identified by the return of a good-faith pledge. Pledges indicate a willingness to install the lights and to maintain them for a period of 10 years. Data regarding energy and cost savings for clientele will be tallied and behavior change is being documented. There has be an average success rate of 32% with owners agreeing to participate to-date.

Conserving Habitat in the Degrading Florida Beaches: A Homeowner Survey. Authors: Martha Monroe and Melissa K Hill

Coastal armoring, sea level rise, development, and erosion on the coast of Florida are steadily reducing available sea turtle nesting habitat. Approximately 5,000 single family homeowners live within a mile of a protected stretch of sandy nesting beaches and represent an important audience to engage in conservation actions to protect habitat for nesting sea turtles. Conservation easements (CE) are one potential avenue of creating long-term protection from development, and could promote areas of natural coastline changes that might enable sea turtles to continue nesting. If educators better understood property owners' opinions and attitudes on crucial coastal issues and the key indicators that could forecast CE potential, they could more effectively target willing audiences with information and resources. This poster reports on a survey (n=373) that used the Theory of Planned Behavior (Ajzen 1985) and environmental identity (Stets and Biga 2003) as theoretical frameworks to measure willingness to participate in a coastal CE to protect their land's conservation values for sea turtles. 425 people returned surveys (33% response rate). Approximately 65% of respondents did not know who does the sea turtle monitoring of their beach. Potential concerns and barriers to coastal CEs included: misconceptions regarding the voluntary nature of CEs; concerns regarding coastal armoring; and the perpetual length of a CE. Approximately 45.5% of respondents were interested in obtaining additional information about easements and 29.9% of respondents held interest to establish a CE on their property. This poster will highlight key findings and recommendations for coastal conservation communication with property owners.

4-H Nature Poetry Contest Inspires New Skills. Authors: Martha Monroe and Marni Ward

The Florida 4-H Nature Poetry Contest was resurrected in 2017 from a 30-year absence, thanks to a parent who remembered participating as a youth. Leaning on a local poet for expertise, we assembled a set of criteria, advertised the opportunity, and judged the 20 entries in our pilot season. This poster will describe the logistics of the contest, observations about the poems, and some winning entries. Offering an opportunity for youth to submit poems engages them in observing and appreciating their environment, and practicing communicating their ideas. It has been a valuable complement to other 4-H contests, such as the Forest Ecology and Marine Ecology that primarily test identification skills. Tips for conducting your own poetry contest at the county or state level will be shared.

California Fivespined Ips Range Expansion and Out-break in the Pacific Northwest. Author: Todd Murray

In 2010, the California Fivespined Ips (CFI) (Ips paraconfusus) was recorded for the first time in Washington State. Over the next two years, an outbreak developed in the Columbia River Gorge and still persists. WSU Extension in collaboration with Washington State Department of Natural Resources, USDA FS Forest Health and Oregon State University Extension developed research and extension programs to: 1) document the range of CFI in context of interspecific competitors, describe phenology of CFI, and develop effective management recommendations and outreach to assist landowners/managers for reducing the impact of the new bark beetle outbreak. Between 2010 and 2015, pheromone traps specific for attracting CFI and Ips pini were deployed in 35 locations in 22 Washington State counties. CFI has been detected in seven counties and has a new documented range extending into the southern Puget Sound Region and Columbia River Gorge in Washington State. Three flight periods were documented for the areas of high CFI populations. A Western Forestry Leadership Coalition LSR grant was awarded to the region to address emerging forest health issues. Effective CFI management strategies were identified and disseminated throughout the affected communities. Since 2010, four extension publications, thirteen news articles, four popular press articles, 22 workshops, field days and demonstrations have been delivered to 1,200 landowners and land managers. Ninety-seven percent of the workshop participants managed slash differently when thinning ponderosa pines. Since 2014, 77 landowners treated 597 acres for fuel reduction and removal of 39 hazard trees as a result of the projects effort.

Beaver River Watershed Tour and Pesticide Training Author: Mark Nelson

The Beaver River is the life blood of Beaver County. It is used as a fishery, a recreation area and is the main source of irrigation water for farmers in Beaver County. Through monitoring of the Beaver River a variety of problems ranging from high rates of sediment movement to high amounts of phosphorus have been identified. I found that one of the best ways for farmers to adopt new practices is to show them how these practices have worked for their neighbors. By putting together an annual watershed tour, many more farmers signed up for this funding and have been able to implement best management practices in the watershed. I also found that by conducting the Beaver River watershed tour and pesticide training on the same day, farmers could receive continuing education pesticide credits that are needed in order for the farmers to keep current private pesticide licenses. Each year participants receive credits in pesticide use, safety and law. Holding the joint meeting accomplishes the goals of the watershed

tour and provides continuing education credits for those needing to maintain a pesticide license. Since combining the watershed tour with the pesticide training we have been able to increase the attendance at the program. Addressing subjects that are important to the farmers also helps increase attendance at the programs. Some of the subjects we have covered in the tour and training include: use of drones in agriculture, sprayer calibration, range grass selection, weed control, manure management, and stream bank restoration.

Arkansas Discovery Farms: Row Crop Production. Author: Lee Riley, Mike Daniels, and Andrew Sharpley

The Arkansas Discovery Farms is a program developed to monitor and evaluating water quality of runoff from various agricultural production systems. Arkansas Discovery Farms' goal is to educate and bridge the knowledge gap among farmers, natural resource managers, and other partners about the environmental benefits and effects of agriculture on water quality. The program assesses the performance of conservation practices (CP) related to water conservation, specifically how those CPs reduce nutrient and sediment loss in runoff. There are approximately 13 cooperating farms in the Arkansas Discovery Farms program. The Dabbs farm in Stuttgart is 1,500 acre farm that produces rice, soybean and corn in rotation. The Dabbs farm is somewhat unique in that it utilizes only surface water for irrigation and collects all runoff into an irrigation reservoir via a tail-water recovery system. Water use and quality is being monitored on the Dabbs farm on four fields including rice grown on zero-grade, rice grown on unleveled ground (control), and rice and corn grown on precision-leveled fields. Runoff water quality data will be presented.

Attitudes and Preferences for Residential Stormwater Best Management Practices (BMPs) Authors: Amanda Rockler, Victoria Chanse, Paul Leinham, Hubert Montas, Adel Shirmohammadi, and Binbin Peng

Local municipalities are experimenting with various incentive programs to encourage citizens to implement small scale stormwater best management practices (BMPs) on their properties, but awareness and knowledge levels of these practices is relatively low. In order to address this, we developed a survey tool to evaluate challenges and opportunities by assessing respondents' attitudes and preferences. This poster will highlight the survey outcomes, including baseline awareness levels, as well as attitude and willingness to adopt these small scale BMPs.

East Orange, NJ, Sustainable Food Alliance: Growing from the Ground Up. Authors: Amy Rowe and Jan Zientek

The US Department of Agriculture has identified East Orange, NJ, as a food desert due to low income and low access to a supermarket. 21.5% of all households in the city are without vehicles and are more than one-half mile from a grocery store (USDA, 2016). The City of East Orange has partnered with Rutgers Cooperative Extension, the local Young Men's Christian Association (YMCA), and the East Orange Veterans Affairs (VA) Hospital to form a Sustainable Food Alliance. This Alliance is providing fresh produce to city residents through a new farmer's market, community gardens, and education and outreach at the local level via workshops and classes. Rutgers Cooperative Extension provided technical expertise to the group as a whole, taught sustainable urban agriculture techniques to community gardeners, and also trained local military veterans in green job skills while they were employed at the farmer's market. Extension

staff also provided hands-on cooking demonstrations and nutrition seminars at the market so that customers would know how to use the produce offered there. The East Orange Farmer's Market commenced in 2017 with 2 farmers and 5 other vendors. The market will expand in 2018 with more vendors and produce from the City's own gardens. Future plans include a mobile version of the farmer's market so that senior citizens and other homebound residents will be able to access fresh produce. The Sustainable Food Alliance is looking to expand with participation by the Board of Education and local restaurants.

Yavapai County Native and Naturalized Plants: A Database for Plant Enthusiasts. Authors: Jeff Schalau and Sue Smith

Yavapai County Native and Naturalized Plants (YCNNP, http://cals.arizona.edu/yavapaiplants) is a web-based plant database designed to assist everyday people in identifying native plants of Arizona's Central Highlands Transition Zone. The website uses non-technical language instead of botanical terms, and features photographs showing plants at various times of year to capture seasonal differences in appearance. The YCNNP search function provides users a variety of searchable fields. Known data field information is entered and results return a series of thumbnail pictures to help narrow the search. Once a thumbnail is selected a variety of photos of that species are displayed allowing users to match the plant they saw in the field with the photo. Detailed descriptions of each plant are also included. In September 2017, the YCNNP database included 786 plants (13 cacti, 507 forbs, 127 grasses, 65 shrubs, 65 trees, 6 succulents, and 3 vines). Yavapai County Master Gardener volunteer and native plant enthusiast, Sue Smith, is a retired web programmer and leads the project. Thirteen other Master Gardener volunteers and professionals have contributed photographs and populated the plant descriptions. At its launch in 2010, the YCNNP website had 75 plants and over 100 photos. The website is used by multiple educational institutions, agencies, and non-profit organizations and received 103,905 pageviews in 2016 (from Google Analytics). Yavapai County Master Gardeners continue adding plant photos and descriptions to the YCNNP database. Several requests for use of YCNNP photos are received each year. These are granted if the intended use is for educational purposes.

Using Master Garden Volunteers to Help Native Bee Populations. Author: Eddie Smith

While honeybees are most often associated with pollination, North America is home to more than four thousand species of native bees that affect food production and preserve ecosystems. Native bees tend to target specific plant species because of their long evolutionary history with native plants. If the native bees that pollinate specific plants disappear, we lose those plants, too. The Pearl River County Extension Service Master Gardeners constructed over 80 bee houses and put them on their properties. 40 bee houses were made for the Civic Woman's Club in Picayune and a presentation was given on the importance of native bees. To create the bee houses, the Master Gardeners drilled 5/16th inch holes into soft pine wood boards. The Master Gardeners were targeting the Blue Orchard bees. Blue Orchard bees pollinate many different types of plants, and one species favors blueberries. Other species of Blue Orchard bees are in high demand in certain areas of the country to help pollinate crops such as apples, pears, almonds, and cherries. Blue Orchard bees are easy to attract, are not aggressive, and do not require special hives because they nest in tunnels left in dead wood by other insects. Holes drilled into dead wood will suffice and can open up new habitats for bees to raise their young in

a cleaner, safer environment. Each year the Master Gardeners give a report on the activity taking place in their bee houses.

Community-based climate and sustainability initiatives - a review of best practice. Authors: Caitriana Steele and Paul Gutierrez

The last 20 years has seen the growth of community-based sustainability initiatives driven either by top-down policies proposed by local governments or businesses, or by grassroots niche innovations. More recently there has been efforts to increase community climate literacy. The Climate Masters Program pioneered by University of Oregon's Climate Leadership Initiative (CLI) is one such example. Climate Masters (CM) are educational programs designed to increase public understanding of climate change, engage citizens in reducing their carbon footprint, build the market for climate friendly products, and build public support for climate policies. The CM model trains citizen volunteers in climate change, sustainability and carbon footprints (10 week class) in return for 30 hours of their time in educating others in their community about reducing energy and transport expenses, and greenhouse gas emissions. One of our main objectives in this review is to ascertain whether CM is a feasible communication approach for communities in the SW. The CM model is based on Master Gardeners (MG), but there are fundamental differences between CM and MG. MG was conceived in response to high public demand about plant problems. In contrast, CM seeks to modify or change behavior. Here, we compare the CM model to other local sustainability and/or climate initiatives to determine which approaches are more successful in changing behaviors at the local level - turning knowledge into action.

A New Extension Program with a Focus on Agricultural and Community-Based Recycling. Author: Mary Love Tagert

This presentation will outline a new Mississippi State Extension program that takes an ongoing project and adds additional content to form a new program focused on waste management and recycling. The recycling industry supports approximately 5,000 jobs in the state of Mississippi and helps keep waste products out of landfills. Agriculture is Mississippi's number one industry, so there is a need to manage waste produced from agricultural activities and to recycle products, when possible. One module of this program is titled 'Hosting an Agricultural Pesticide Disposal Day in Your County' and describes what is needed to host an agricultural chemical amnesty day. Other modules focus on community-based recycling (drop-off and curbside) and cover the benefits of recycling, grant opportunities for waste management and recycling, how to initiate community-based recycling, best practices in recycling, and more. While there are challenges to implementing recycling in rural areas, there are an increasing number of communities in Mississippi that are showing an interest in curbside recycling, and this program provides knowledge to help them get started. The modules are targeted for different stakeholder groups and can be specialist- or agent-delivered.

The Georgia Master Composter Program: Increasing Small Scale Waste Reduction. Author: Amanda Tedrow

The Georgia Master Composter Program was created in 2011 to address the growing demand for composting education across the state of Georgia. A partnership between University of Georgia Extension and the Athens-Clarke County Solid Waste Department, the program is

both an adult environmental education course and an Extension volunteer program. Participants partake in a nine-week course that includes lectures by professors and experts, hands-on learning and field trips. Through partnering with statewide organizations, program coordinators provide participants with the most current and scientifically accurate composting information. Upon completing the course, Master Composters share their composting knowledge with others by volunteering in the community. They commit to doing 40 hours of volunteer service within the first year and 20 hours each year thereafter to retain their certification. Participants have widened the efforts of UGA Extension, fulfilling composting education requests and fostering relationships with a range of community groups. More than 80 participants have graduated since the program's creation. Each year, these Master Composters volunteer 500-700 hours to their community and reach 1,000 individuals through food scrap reduction and composting education. This session will provide an overview of the Georgia Master Composter Program, including course curriculum and materials, program partnerships, student final projects, and examples of volunteer opportunities. By gaining an understanding of the program from the coordinator's perspective, session participants will learn the basics of starting a Master Composter Program in their own community or engaging with an existing program.

Community Resilience Index: Steps in Coastal Resilience. Author: Jody Thompson and Tracie Sempier

Preparing for and recovering from hurricanes is a way of life along the Gulf of Mexico. In 2017 alone, two major hurricanes and a tropical storm struck the U.S. Gulf Coast, causing a yet to be determined amount of damage and loss of life. In 2005, hurricanes Katrina and Rita devastated a swath of the Gulf Coast from Alabama to Texas, creating a total estimate of $183.7 billion in damages and loses (NOAA, 2017). Introduced in 2010, the Community Resilience Index has been utilized by over 50 communities along the Gulf of Mexico to determine their resilience to natural hazards like tropical cyclones. Developed as a tool for community leaders to determine their current state of resilience and assist in identifying areas for improvement, the demand for facilitator-lead workshops has far outstripped the funding available for instructor lead workshops. This poster details how in-person, instructor-lead workshops to train facilitators has been successfully transitioned to an on-demand web-based training environment to meet the needs of would-be facilitators and of the communities they serve in a way that can be a model for other Extension programming. NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2017). https://www.ncdc.noaa.gov/billions/

Mineral Supplementation Program Development and Education for Hawaii Rangelands. Authors: Mark Thorne, John P. Hewlett, Glen K. Fukumoto, and Melelani A. Oshiro

Mineral supplementation is necessary to correct for deficiencies in forages consumed by livestock. Because of Hawaii's highly variable forage environments, deficiencies in minerals can be markedly different between islands, ranches, and even pastures. In general, they have led to an industry-wide depressed calving percentage, increased incidence of disease and other health issues, and reduced animal longevity. Most ranches in Hawaii use commercial pre-mixed mineral products, but these are inadequate at meeting the highly variable mineral issues. Though not widely adopted, individual free-choice mineral supplementation has been around since the 1950's. Practitioners tout its benefits, including increased performance and lower costs. This project investigated the feasibility of individual free-choice mineral supplementation in Hawaii

with the data used to educate producers on common mineral deficiencies across the state and develop a decision support tool to assist development of operation-specific mineral programs. Two separate, year-long trials were used to collect data on relative palatability and herd performance between a commercial pre-mix mineral ration and individual mineral components offered cafeteria-style to range cattle. The trials were conducted in cooperation with five ranches utilizing cow/calf herds grazing different rangeland ecosystems. A series of three field day programs were developed to provide information on the importance of mineral supplementation, facilitate development of operation-specific mineral programs, and encourage adoption of designed programing. Between each annual field day program webinars were developed to facilitate engagement and adoption of supplementation programing.

Water Quality Education and Outreach Improves Coastal Communities. Author: Jessica Warren

In 2014, the Camden County Extension Agriculture and Natural Resources (ANR) program developed a strong emphasis on water quality education and outreach. As a coastal county with a large expanse of salt marsh and estuaries, the health of our aquatic ecosystems is very important to the health of our community and economy. Camden County Extension holds multiple volunteer river cleanups annually to remove litter from our communities and waterways that can affect the health and safety of our citizens, tourists, and natural assets. The ANR agent also serves as a local trainer, coordinator, and board member for the Georgia Adopt-A-Stream program. The agent offers multiple certification and re-certification workshops in bacterial and chemical water monitoring each year and works with three local teachers and their classes, who monitor regularly. In addition to cleanup and monitoring efforts, the ANR agent partners with a local Department of Natural Resources (DNR) biologist to hold volunteer days to remove island apple snails, an aquatic invasive species that severely impacts the ecology and health of the waterbodies that it invades.

Forest Landowner Preferences for Online Delivery of Extension Information. Authors: Kevin Zobrist and Catherine Gowan

Online delivery has become one of the primary methods for Extension to disseminate information to the public. We surveyed forest landowners in northwest Washington three times over a ten year period: 2007, 2014, and 2017. Interest in online delivery only grew slightly over the past ten years, and interest in print media also grow such that it is still preferred over online delivery. We found that the online Extension resources most used by landowners were websites and email newsletters, while social media and online courses were rarely used. We also found that our websites and email newsletters do generate impacts, including both knowledge and behavior change. Simple, text-based, low-bandwidth newsletters contained within the body of an email were far preferred over graphic design layouts and PDF attachments. These results can guide Extension professionals in finding the most efficient and effective ways to deliver online content and measure its impact.

Ship Island Room A: Forestry

8:30 – 9:00 **-** *The Hardwood Plantation Management Workshop: Strategy and Lessons Learned.* Authors: Brady Self and Randall Rousseau.

Outreach efforts for hardwood management have historically focused on maintenance of existing stands and the natural regeneration methodology necessary to promote future stands. This paradigm has shifted with the advent of hardwood plantation establishment in the Delta and other regions of Mississippi. Currently, hardwood plantations have been established on over 500,000 acres across the state. The Hardwood Plantation Management workshop is designed to offer participating landowners site-specific recommendations for management of these stands. The workshop is held on an interested landowner's property and prescription of silvicultural methods deemed appropriate to that specific property are provided. Course enrollment is limited to 15 with attendee participation encouraged. Participants then pose management questions specific to their individual properties. Course enrollment is limited to 15 and silvicultural issues are discussed at multiple stops designed to illustrate a variety of opportunities where landowners could potentially employ current management recommendations. To date, this course has been offered 11 times at unique locations and has had an attendance of 144. Future workshops are planned, some with the potential for establishment of demonstration areas to offer participants visual examples of a variety of practices available in the management of this stand type.

9:00 – 9:30 **-** *Genetics and Forest Landowners: Teaching, Learning, and Care Results for Everyone.* Author: Randall Rousseau

Communicating pine forest genetics and pine tree improvement to forest landowners can be difficult when approached through traditional classroom methods. While the intrigued landowners are willing to sit and listen, many quickly loose interest when scientific terminology is too frequently part of the lecture. However, most forest landowners are very proud of their land and the trees that they are growing. To take advantage of this, we offered to Mississippi forest landowners various pine genetic types that were provided by ArborGen and the International Forest Company as enticement to work with us to develop a better understanding of how these trees would perform on their land. Mississippi State researchers design the plots, marked each planting spot, and where there to assist in the planting. The landowner provided the land, paid for the cost of planting as well as the care of the plots. To date, a total of 14 sites were installed throughout Mississippi in 2015 and 2016. Mississippi State researchers will measure each site on an annual basis for the first five years, with intermittent measurements taken until rotation age. The data is summarized and sent to each landowner. Field tours highlighting some sites has already taken place, allowing other landowners a quick comparison of the various genetic types and stirring interest among others that are involved in replanting. Researchers are learning the concerns that small landowners have about their forest stands as well as the costs and returns from their stands. A more open dialogue has emerged and continued to grow between researcher and landowner and hopefully providing a benefit to both.

9:30 – 10:00 **-***Woodland Owners and Forest Industry Perceptions of White Oak Supply in Kentucky.* Authors: William Thomas, Chad Niman, Matthew T. Springer, Laura Lhotka, Thomas Ochuodho.

Extension professionals frequently work with audiences that have varying perceptions of the same natural resource concern. Gaining a deeper understanding of different audience perceptions on a given topic can facilitate extension professionals' ability to effectively address

the natural resource concern. Given the increasing demand for white oak timber and the difficulty in regenerating white oak, there is a growing concern for the long-term supply. To address this natural resource concern, a modified SWOT-AHP (Strengths, Weaknesses, Opportunities, and Threats - Analytical Hierarchy Process) methodological approach was utilized to understand the priorities and perceptions of the Kentucky Woodland Owners Association (KWOA; n=34) and the Kentucky Forest Industries Association (KFIA; n=23) on white oak supply. Each group identified the top five issues within each category. Using pair-wise comparisons, participants ranked issues within categories against each other as well as ranking overall categories against each other. KWOA perceived threats facing white oak supply as most important while KFIA viewed opportunities to expand white oak supply as most important. KWOA and KFIA weighted limited landowner knowledge as their top weaknesses and threats respectively and both agreed on the need for improved harvesting practices. Both groups viewed increasing forest management and incentive programs as the best opportunity to address long-term white oak supply. Understanding and identifying shared natural resource concerns can facilitate partnerships and programs to mutually address these issues. In addition, the methodology used in the study can be replicated to help identify and prioritize other natural resource concerns.

Ship Island Room B: Professional Development & Stakeholder Engagement

8:30 – 9:00 **-** *Enhancing Success of County-Level Forestry Programming by Providing Graduate-Level Distance Education to County Agents.* Authors: Dennis Hazel and Robert Bardon

The need for forestry programming is great in North Carolina. There are over 469,000 forest landowners and forestry is a major economic driver in North Carolina, with $29.4 billion contributed to its economy in 2013 alone. Forestry is a secondary responsibility for North Carolina Cooperative Extension (NCCE) agents, who rarely have formal forestry training. In a recent needs-assessment it was revealed that NCCE agents are conducting a minimal level of forestry programing, often referring clients to professionals for answers. This minimal level of programming has nominal benefit to the client and is likely due to a deficiency in agents' forestry knowledge, coupled with a high demand for their time. All of this underscores the need for a strong training program, one that is conscious of an agent's time, but is meaningful and brings agents to a level of comfort in working in forestry. To improve agents' knowledge in forestry NCCE Forestry faculty have developed a distance-education graduate course. This course provides an opportunity for agents to dive deeper into the materials then what is offered through traditional agent trainings. The course has evolved over the past three years into an asynchronous course that agents can take at their pace and on their time over. Within the scope of this presentation, the authors will address the challenges faced in developing and delivering the course and the results of a post course survey that assessed the utility of the course in terms of helping agents in conducting forestry programming.

9:00 – 9:30 **-** *Online Learning to Increase Stakeholder Understanding of and Engagement in Freshwater Management.* Authors: Bindu Bhakta, Jo A. Latimore, Erick Elgin, Paige Filice, Terry Gibb, Gwyn Shelle, Lois Wolfson, and Jane Herbert.

Freshwater management can be a highly local issue. In Michigan, decision making for inland lake management lies largely with local governments and stakeholders. Optimal decision-making requires that all parties understand lake ecology, management options, and legal and social frameworks. To address this need, we created the six-week online Michigan State University Extension "Introduction to Lakes" program. This engaging, cohort-based course is

delivered with instructional technology and designed for individuals with no prior online learning experience. The course includes video lectures, interactive activities, discussion forums moderated by content experts to encourage and encourages interaction between participants, weekly unit quizzes, and Ask An Expert webinar. Ninety-seven people participated in the first offering (2015), and 136 participated in 2016, with participants representing seven different states. Learners included lakefront property owners, educators, lake management professionals, local government officials, and staff from state management agencies and non-profit organizations. Assessment data demonstrates significant satisfaction with the content (88%) and online format (84%) as well as improvement in understanding of course topics. Eighty-five percent of participants intend to apply their learning to local lake management efforts, and 97% would recommend the course to a friend or colleague. 2015/2016 participant follow-up impact data, lessons learned, and next steps will be discussed to detail how "Introduction to Lakes" is empowering communities to protect their freshwater resources, and how this course format can serve as a model for freshwater science and management communication in other states.

9:30 – 10:00 **-** *Impacts of New FOR/NR Agent Training Pilot in NC - Preliminary Results*
Authors: Colby Lambert, Mark Megalos, Dennis Hazel, and Robert Bardon,

NC State Extension Forestry launched an innovative agent training that followed top identified needs from a 2016 new agent survey of forestry needs, interests and programming strengths. In early 2017, the area forestry agent and specialists conducted three district wide agent trainings focusing on university and agency resources, program set up, and field exercises. 27 agents participated in the trainings where 92% of the agents reported they can use the knowledge and skills gained to impact their clientele. This presentation will review the survey results, agent training program, training evaluations, and agent programming efforts. This effort will continue this year with improvements and insights from pilot year evaluations. Suggestions for expansion of the program regionally and national and follow-up to an online course designed for agents are discussed

Ship Island Room C: Environmental & Forest Health
8:30 – 9:00 **-** *The SerPIE - One Health Initative: Safeguarding Alabama's environment from pharmaceutical wastes.* Author: Allyson Shabel, K. Garner, P. Okweye, P. Carter, R. Robinson, S. Dennis, M. Leite-Browning, S. Hopkinson, and R. Browning.

The SerPIE Program (Phase I & Phase II), developed under the auspices of the Alabama Cooperative Extension System's Urban Affairs and New Nontraditional Programs Unit, is a multidisciplinary outreach program that encourages citizens to adopt pharmaceutical best management practices (BMPs). Its objective is to improve literacy concerning local environmental health issues by offering resources that enable citizens to safeguard their homes and the environment from pharmaceuticals and personal care products. SerPIE aims to advance knowledge and accentuate the benefits of using safe, effective methods to dispose of expired, unused, and unwanted PPCPs. Initiated in 2012, the successful impacts of Phase I of SerPIE's statewide educational outreach activities, (8,859 traceable and 660,998 non-traceable contacts) include increased adoption of pharmaceutical BMPs and a reduction in the amount of PPCPs fated for the environment. Phase II, termed SerPIE-One Health, offers a unique opportunity to deliver outreach using a threefold approach, incorporating the human, animal and environmental aspect in its community education and outreach opportunities to implement strategies to reduce the presence of pharmaceutical waste in the home and environment.

9:00 – 9:30 **-** *Silviculture for Forest Health and the Great Lakes Silviculture Library.* Authors: Eli Sagor, Marcella Windmuller-Campione, Matt Russell, and Kris Tiles.

Like their peers in the rest of the country, Lake States foresters face a number of forest health challenges, many exacerbated by a changing climate. Every silviculture treatment is, in its way, an experiment. Many are designed to address these forest health challenges. In the right instructional setting case studies describing the outcomes of real-world silviculture treatments can be excellent teaching tools, yet there are few opportunities for resource managers to efficiently exchange the results of these treatments. New technologies and Extension instructional platforms can bridge this communication gap in ways that support and add value to Extension forestry programs by leveraging peer exchange and local knowledge. We are using the new Great Lakes Silviculture Library in exactly this way to support Extension forestry programming for family forest owners and professional resource managers in Minnesota and Wisconsin. Our work, funded by an RREA Focus Funds grant, focuses on publishing innovative silvicultural case studies addressing six priority forest health threats: emerald ash borer, oak wilt, competing and invasive vegetation, dwarf mistletoe, eastern larch beetle, and deer browse. Case studies are reviewed and edited by Extension faculty to ensure relevance and quality. They include data, text, photographs, links, contact information, and other content. The forest health focus has given Extension educators new, real-world content to support instruction around these vexing silvicultural issues. The free, user-generated online library format has been enthusiastically embraced by the local resource manager community. We see it as a highly replicable model across the country.

9:30 – 10:00 **-** *Evaluating Vegetative Windbreaks Related to Avian Flu in Minnesota.* Authors: Gary Wyatt, Sally Noll, and Diomy Zamora.

In the spring of 2015, more than 9 million birds in Minnesota's primarily commercial poultry flocks died or were euthanized to prevent the spread of the avian influenza disease. The state verified 108 outbreaks among chicken, turkey and mixed-poultry flocks in 23 counties. Researchers and Extension from the University of Minnesota have collaborated to assess research priorities for addressing avian influenza and to identify research/Extension projects that directly address the causes of avian influenza, the reasons some fowl are more susceptible, and the prevention measures that can be taken. We are evaluating vegetative windbreaks planted at turkey barn facilities to determine if these structures can prevent the transmission of avian respiratory viruses. We will be sharing our results and recommendations with turkey growers. Our research objective is to prevent disease transmission using vegetative windbreaks. The research team has conducted a literature review of vegetative windbreaks as it relates to turkey disease control. Surveys have been conducted among turkey farmers (with and without windbreaks) and Soil and Water Conservation District / Natural Resources Conservation Service (SWCD/NRCS) staff to determine the benefits and challenges of windbreaks near turkey barns; setback distances; and tree and shrub species. Mammals and birds are being monitored at selected turkey barns by trail cams. Educational fact sheets, videos and teaching modules will be created to inform farmers and the industry of the best management practices for use of windbreaks near turkey barns. The current results of this research project will be reviewed at this session.

Cat Island Room: Panel/Roundtable

8:30 – 10:00 - *Unveiling the New 2018-2022 RREA Strategic Plan for Enhanced Extension Programming.* Authors: George Ruyle, Barbara Hutchinson, Kris Tiles, Mark Thorne, Eric Norland, and Jim Dobrowolski.

In the fall of 2016, the Rangelands Partnership, with the University of Arizona as the lead institution, was awarded a grant to review and update the 2012-2016 Renewable Resources Extension Act (RREA) Strategic Plan. The process for creating the new plan included

establishing a Steering Committee with regional representation in both rangeland and forestry Extension, and conducting a national survey of rangeland and forestry Extension personnel. The main purpose of the survey was to identify critical and emerging issues faced, in particular, by private forest and rangeland owners/managers. Our panel session at ANREP will provide the opportunity to formally present the 2018-2022 strategic plan, review the results of the national survey, and engage key audiences in discussions on implementation strategies for the nine critical issues highlighted in the plan and identified through the survey. The panel will include a mix of presentations on why and how the plan was developed, an overview of the nine issues, insight into RREA funding, and trends in Extension program delivery, pedagogy, evaluation, and technology use, as well as federal and institutional perspectives on implementing and using the plan. Particular attention will be given to assessing impacts of enhanced Extension programming made possible by RREA support, and the usefulness of the strategic plan as a guide for addressing the needs of stakeholder groups.

Horn Island Room: Workshop

8:30 – 10:00 *Fire-Resistant Landscaping: Building Homeowner & Community Resilience to Wildfires*. Authors: Holly Campbell, Sharon Fox Gamble, and Jennifer Fawcett.

Every year, US wildfires threaten human lives, communities, structures and landscapes. In recent decades, wildfire severity has increased, leading to more acres burned and greater suppression costs. Increased Wildland Urban Interface (WUI) development has greatly accelerated wildfire risk to people and homes in these areas. Fortunately, there are ways to protect residents and homes in wildfire-prone areas. The national Firewise program outlines landscaping, construction, and emergency recommendations that can be used to protect residents and their homes from wildfire. As trusted educators in their communities, Extension personnel working in horticulture, as Master Gardener educators, and in wildfire-prone areas can play an especially important role in teaching homeowners about Firewise landscaping. The goal of this workshop is to introduce Extension personnel to the principles underlying Firewise landscaping, including an overview of design guidelines, fire-resistant landscaping materials, plant recommendations, maintenance requirements, and more. Through audience participation and an interactive group exercise, participants will first learn about and then design a Firewise landscape that is both beautiful and fire safe. Participants will be encouraged to share their wildfire experiences and ways Firewise landscaping outreach and education could be beneficial in their communities. Region-specific plant lists and design recommendations will be available to meet the educational programming needs of different US regions. Additionally, presenters will suggest programming and volunteer activity recommendations and will provide several educational Firewise resources. This workshop supports a project currently underway to develop a fire-resistant landscaping module for the Master Gardener program and accompanying online Extension training.

Concurrent Session E: Tuesday May 1 10:30 AM - Noon

Ship Island Room A: Community Engagement

10:30 – 11:00 **-** *Guided Walks: Providing Education on the Rare Coastal Dune Lakes of Florida* Author: Laura Tiu

Walton County Florida is home to a series of 15 Coastal Dune Lakes that are critically imperiled due to their extreme rarity. Many residents and nearly all of the 3.6 million visitors are unaware of the unique ecology, recreational opportunities, conservation efforts and regulations surrounding these rare jewels. In an effort to be considered a green destination and a pioneer in

sustainable environmental practices, Walton County has developed special regulations regarding living and playing on the coastal dune lakes. In an effort to provide information to locals and visitors, the UF/IFAS Sea Grant Agent developed and conducted a guided Coastal Dune Lake nature trail walk in spring and fall of 2016. Extension agents use a variety of methods to effect change; knowledge gained, attitude, and behavior. Guided walks offer the chance to learn about the ecology of the dune lakes, including the local flora and fauna, by experiencing it firsthand. Additionally, issues such as the balance between development and conservation can be discussed. In 2016, a total of 77 people participated in the spring or fall Coastal Dune Lake Interpretive Tour with 57 completing an evaluation. One hundred percent of the participants were satisfied or very satisfied with the overall quality of the tour, and quality and subject matter knowledge of the instructors. In the future, a large majority of the attendees plan to help protect the dune lakes, teach others about the lakes, commit to learning more about the dune lakes and plan to visit other dune lakes.

11:00 – 11:30 **-** *Science Hour: Expanding Science Literacy for the Whole Community.* Authors: Carrie Stevenson and Rick O'Connor.

In an increasingly technical world where information is constantly available at our fingertips, it seems ironic that science literacy is decreasing. Due to the internet, those with little legitimate scientific background or research can be put on equal footing with the greatest scientific minds of our time. Important ecological and science-based issues are in the news daily, and we felt it was important to reach out to the public and share what we know in a user-friendly, fact-based manner. From this desire, "Science Hour" was born. A collaborative effort between two Extension agents and a county colleague, these free monthly seminars were opportunities for the public to explore how various national topics such as climate change, water quality, bat populations and green infrastructure impact Northwest Florida. Over a 4-month period, 114 citizens (most new to Extension programming), attended the seminars. 100% of participants surveyed indicated they learned something new from the programming, with 77% rating it as having learned "a lot." 57% of those participating planned to change their behavior in some concrete way, including: reducing water use, considering solar panels, installing a bat house, planting wildflowers, and volunteering for a citizen science water quality project.
Attendees return repeatedly to these programs and are active participants in the open question and answer sessions that conclude each session. Based on a very long list of suggestions, we have begun planning for next year's series of seminars and speakers.

11:30 – 12:00 **-** *Teacher's Conservation Workshops: Bringing The Outdoors Into The Classroom*
Author: Butch Bailey

Teacher's Conservation Workshops are intensive, week-long workshops designed to give school teachers hands-on, outdoor experience with all aspects of forestry and conservation. Instruction is approximately a 30/70 ratio of classroom time / "forest" time over six days in the summer. Participants receive 5.0 continuing education credits and Project Learning Tree certification.

Ship Island Room B: Invasive Species

10:30 – 11:00 **-** *Multi-faceted Approach to Invasive Species Awareness and Management.*
Authors: Julie McConnell and L. Scott Jackson

Objective: Increase awareness among Bay County residents and visitors regarding invasive species including their impact on local ecosystems and fiscal burden to Floridians. Provide tools needed to recognize, report, and remove invasive species from natural areas.
Methods: Several methods were used to promote awareness including classroom sessions, office

and field consultations, newsletter articles, field-trips, and Ecofina Water School. The authors also developed multi-media presentations using Microsoft PowerPoint for a 6-week educational enrichment class covering invasive species including terrestrial and aquatic species for plants and animals delivered to enrolled audience. Results: Fifteen participants in the 6-week class were evaluated using pre/post-tests and exhibited a knowledge gain of 26.1% and increased use of the IveGot1 app to report invasive species to EddMaps. Twelve Ecofina Water School participants reported a 23.1% increase in awareness as measured in post-evaluation survey. Our efforts have had some measure of success as we strive to become the point of contact for the community interested in controlling invasive species. The agents have partnered with USDA using biological control of air potato vine and with FWC on herbicide control of the aquatic weed Giant Salvinia. Conclusion: Agents will continue to provide educational opportunities through classes, print and social media, and consultations to increase awareness and offer prevention and management options for invasive species. Future plans include additional sessions of the 6-week course and developing programs for municipal workers to help identify emerging problem areas.

11:00 – 11:30 **-** *Partnering to Prevent Invasive Species from Aquariums and Water Gardens in Michigan.* Authors: Paige Filice and Jo Latimore

Non-native aquatic plants and animals introduced through trade pose a significant ecological and economic threat to Michigan. To address this, we developed an outreach campaign with the Michigan Department of Agriculture and Rural Development (MDARD). The Reduce Invasive Pet and PLant Escapes (RIPPLE) campaign began in 2015 and was Michigan's first attempt at educating pet and water garden retailers on aquatic invasive species issues. To address this challenge we combined outreach with research, with the hopes of creating an effective campaign aligned with retailer knowledge. The goal of RIPPLE is to establish and foster mutual understanding, promote public involvement, and influence the behaviors, attitudes and actions of consumers and retailers in the pond and pet store industry. Outreach materials were produced with input from influential retailers and MDARD and include two short videos and print materials for retail display. Through in-person visits and trainings retailers learn appropriate messaging and consumer recommendations. Retailer knowledge and attitudes about invasive species had not been studied in Michigan so we distributed a mail survey to all independently owned pet and garden retailers. Our goal was to assess their knowledge of aquatic invasive species, current behavior, attitudes regarding their responsibility and willingness to participate in education programs like RIPPLE. We will work with our partners, including MDARD, to use the findings from this study to inform future outreach to retailers and consumers.

11:30 – 12:00 **-** *Expanding capacity for aquatic invasive species detection, education, and outreach in Minnesota.* Authors: Megan Weber, Daniel Larkin, Patrick Mulcahy

The University of Minnesota recently launched AIS Detectors, a new extension program aimed at developing a trained network of volunteers capable of expanding aquatic invasive species (AIS) detection, education, research, and outreach capacity across the state. New learning tools and technologies, such as the flipped classroom and 3D printing, were incorporated into the volunteer training, which produced 121 certified AIS Detectors in 2017. Evaluations indicated participants found the flipped classroom teaching style to be an effective way to learn and 3D models a useful identification training tool. Program staff have worked in close coordination with Minnesota Department of Natural Resources and local AIS coordinators to ensure this statewide program operates alongside existing state and local programs to increase capacity without duplicating effort. Through such collaborations, program staff have identified new techniques and ideas for how volunteers can integrate into the work and mission of these

state and local organizations. Early reporting indicates that volunteers have contributed over 1,400 hours of service in the field of AIS during the 2017 field season in a variety of service categories including citizen science, education/outreach, program support, and stewardship. This presentation will discuss program development, reviews of the training tools and technology, an evaluation of the first year in operation, lessons learned, and changes and updates incorporated into the 2018 season.

Ship Island Room C: Economic Development & Public Engagement

10:30 – 11:00 **-** *Economic Opportunities for Forest Landowners (US) for Ecosystem Services Provided on Privately-owned Lands and Waters.* Author: Adam Tullos and Daryl Jones.

Landowners were found to diversify incomes from forests and other lands in US through fee-access outdoor recreation, including hunting, angling, wildlife watching, and other nature-based activities (Jones et al. 2005). The Natural Resource Enterprises (NRE) Program at Mississippi State University educates private landowners, resource agencies, and local communities about recreational enterprises, conservation, and integration of these activities with sustainable forestry and other land uses through educational workshops. Since 2005, the NRE Program has conducted 100 landowner workshops in 12 US states and Sweden and trained in excess of 4,000 participants in outdoor recreational business development and associated conservation practices. Survey results revealed that our programming has initiated over 1,200 new outdoor recreational businesses on an estimated 1.1 million hectares of forest and agricultural lands, generating nearly $17 million in incomes while fostering natural resource conservation on family-owned forests and farms in the US. Given economic incentives, US landowners are more inclined to conduct conservation practices on private lands, thereby enhancing wildlife habitats, water quality and quantity, biologically diverse landscapes, and conservation of natural resources on the land base. NRE development on rural US lands benefits landowners and local communities economically and provides incentives for ecosystem services supported by sustainable forests.

11:00 – 11:30 **-** *A standard economic contribution analysis framework of forestry and forest products for Extension application.* Authors: Shaun Tanger, William Hubbard, Leslie Boby, and Stewart West.

Advocates of the forestry and forest products industry (FPI) often use economic contribution or economic impact analyses that define the importance of forestry and forest products to a state or local economy. These analyses often express the contribution or impact of forestry and FPI to an economy in terms of total sales, jobs, value-added, and wages and salaries (Day 2015). Documenting these varying economic indicators and changes in these metrics over time is crucial to the FPI with regards to public policy and private sector decisions. Further, such information is valuable to state forestry agencies, university forestry and wood products programs, and forestry and forest products advocacy organizations as they seek funding or support for laws that are supportive of forestry and the industry. Advocates of forestry, particularly at the county level, rely upon Extension for information to empower them to communicate the importance of forestry and forest products manufacturing to state and county level government officials. Forestry Extension faculty across the country are often tasked with disseminating the economic benefits of forestry and the forest products sector to relevant audiences. While many may have the capacity to develop Extension programs and publications on the economic benefits of forestry at the state level, not every program has the resources to analyze and produce county level data. Upon completion, our project will provide an easily

replicable economic contribution analysis with a standardized framework for Extension application that can be used to explain the value of forests and FPI to county economies.

11:30 – 12:00 **-** *Public Perceptions of Risk, Vulnerabilities, and Opportunities Associated with Gulf Coast Urban Forests.* Authors: Arnold Brodbeck and Jason Gordon.

By 2020, the Alabama- Mississippi Gulf Coast population is projected to increase by 75% to 1.3 million residents. This rate of urbanization impacts urban forest ecosystems which in turn influence local resilience regarding, e.g., thermal comfort, energy use, air quality, carbon storage, wildlife habitat, health benefits, property values, and commercial benefits. Urban forests also act as natural storm buffers by reducing wind speeds, improving water quality, and mitigating storm water. This presentation will address the combined research findings and outreach project outcomes related to three issues: (1) understanding public values, attitudes and concerns towards coastal urban forests; (2) describing public engagement efforts to conduct citizen-led tree inventories; and (3) using tree canopy data as a baseline for informed urban forest management and policy. To this end, we identified resident needs and concerns about urban trees and storm mitigation from key informant interviews and a mail survey across the study area. Next, we implemented four bottom-up, volunteer-based urban tree inventories. Inventory projects included several trainings and workshops for which we gathered evaluation data. Research outcomes indicated lower than expected hazard tree concerns, increasing homeowner insurance challenges and concerns for sustainable urban tree management. Evaluations of the outreach component demonstrated a significant increase in knowledge and positive attitudes about trees, urban forest management, and level of self-efficacy regarding project participants' ability to contribute to community forest well-being. The presentation concludes with implications for public participation in urban tree management along the Gulf Coast.

Cat Island Room: Panel/Roundtable:

10:30 – 12:00 *Lesson's Learned from Extension's Involvement in 4 Large USDA NIFA AFRI CAP's.* Authors: William Hubbard, Michael Jacobson, Eric Taylor, Leslie Boby, Robert Bardon, Patricia Townsend, Mark Megalos, and Kevin Zobrist.

In 2011 and 2012 USDA NIFA advertised the most unprecedented competitive grant RFP's in the history of its agency. These were among the largest and broadest in scope, covering large geographic and disciplinary areas, and ranging from $15 million to $45 million for five-year projects. Two of these RFP areas were on climate change and bioenergy. Several Extension forestry and natural resource specialists across the country actively engaged with their research and teaching counterparts to submit proposals. Several became active leaders when their proposed projects were funded. What followed was an opportunity to engage in large-scale multi-disciplinary planning and implementation projects. Extension worked closely with various teams and stakeholders to identify the issues and audiences, create long-range program plans, implement the programs, and evaluate the impacts. Through the AFRI CAPs, Extension specialists also had the opportunity to work more directly with the university research community in a true research dissemination model much like that which led to the creation of the land-grant university research-extension system over 100 years ago. This presentation will offer Extension specialists from four recently completed NIFA AFRI CAP programs the opportunity to provide insight into lessons learned and insight into the future. Participants will hear from the following initiatives: Southeastern Partnership for Integrated Biomass Supply Systems (SE-IBSS), Pine Integrated Network: Education, Mitigation, and Adaptation Project (PINEMAP), Advanced Hardwood Biofuels Northwest (AHB), and the Northeast Woody/Warm-Season Biomass Consortium (NewBio). Participants will be offered the opportunity to respond and interact with their impressions of these projects.

Horn Island Room: Workshop

10:30 – 12:00 - *Changing Behavior for Public Good: Social Marketing 101 and the Outreach Program Audit Tool.* Authors: Jennifer Dindinger and Amanda Rockler.

Studies show that being knowledgeable and/or concerned about environmental issues does not always lead to action. (Kollmus, A. & Agyeman, J. 2002). Social marketing is "a process that applies marketing principles and techniques to influence target audience behaviors that benefit society as well as the target audience," (Lee and Kotler, 4th ed.). University of Maryland Sea Grant Extension agents with experience in evaluating programs for increased effectiveness will lead a workshop in which participants will learn the steps for creating robust behavior change campaigns and work in groups to build campaigns around mock case studies. In the latter half of the workshop, participants will run a mock outreach program through a rapid assessment called the Outreach Program Audit Tool (developed in partnership with Chesapeake Bay Trust) to identify elements of the program that align with social marketing principles and elements that could be modified to better achieve behavior change objectives. The experts will also assist participants with identifying appropriate ways to evaluate education programs to ensure they can demonstrate success, even if behavioral objectives are not desired or feasible. For example, is there justification for establishing a foundation of awareness or should the program just focus on behavior change? Is there a need for education, or behavior change, or both? Is it just that a policy needs to be in place to achieve implementation? The concluding discussion and "office hours" format following the audit exercise will help participants understand how to modify their outreach programs if desired.

Concurrent Session G: Wednesday May 2, 2018 8:30 – 10:00 AM

Ship Island Room A: Energy & Hazard Reduction

8:30 – 9:00 **-** *The Future of Residential Wood Energy: Trends, Technology, and Issues*. Author: Jonathan Kays

Wood is the fastest growing residential heat fuel in the United States and accounts for 75% of the residential renewable energy produced, yet it is often overlooked in the renewable energy arena. Residential user have figured out that heating with wood and/or pellets has significant benefits, even with low fossil fuel prices. However, most wood stoves are older (pre-EPA certified-1988) and very polluting, leading to prohibitions in some communities. Some states/cities are enacting incentive programs to replace older polluting stoves and encourage pellet stoves. Many users lack understanding of proper seasoning of firewood, stove operation, installation and maintenance. Major advances in wood and pellet stove technology reduce emissions as well as user error, but proper seasoning of firewood, installation and maintenance are still challenging. Pellet stoves now offer an efficient, automatically-operated product that requires inexpensive venting. Since 2010, University of Maryland Extension has partnered with the Maryland Wood Energy Coalition to provide research and extension programs resulting in regulatory changes, state wood stove incentive, and improved user practices. Research on outdoor wood boilers now provides best practices to reduce the emissions of existing outdoor wood boilers. New EPA wood stove regulations to reduce emissions were enacted in 2015 and will strengthened in 2020, which may dramatically impact residential wood stove users and the industry. This presentation will discuss lessons learned and insights into the future of residential wood energy. Wood energy resources are available at: www.extension.umd.edu/woodland.

9:00 – 9:30 **-** *Clean Energy Projects with Low Income Audiences: Minnesota Examples.* Authors: Joel Haskard and Lisa Pawlisch.

Lissa and Joel will discuss Minnesota's Connecting Low-Income Communities to Efficiency and Renewable Sources (CLICERS) initiative. CLICERS has two major goals over the next two and a half years: 1) to identify pathways out of energy poverty for low-income Minnesota households; and 2) increase access to solar energy by low-income communities. This presentation will dive into the opportunities and challenges of this project, focusing on components that could potentially be replicated by Extension colleagues in other states.

9:30 – 10:00 - Reducing Hazardous Fuels with Simple Biochar Kilns. Author: Darren McAvoy

USU Forestry Extension leads a project focused on using simple biochar kilns to reduce hazardous wildland fuels in Utah. Open-top metal kilns are inexpensive and can be handled by four people or an ATV/pickup truck. Dry branches and small logs (less than 6-8" in diameter) are stacked in the box, the pile is lit from the top, and as the material burns down, more wood is added until the kiln is nearly full of biochar, then the kiln is quenched with water.
The initial workshop included a diverse audience of Master Gardeners, arborists, wildland fuels specialists, city infrastructure managers, and forest landowners and managers. Evaluation results from the initial workshop indicate that 80% of the participants were interested in biochar production for its soil amendment properties while 49% of the audience was interested in biochar production as a hazardous fuels disposal method; these results indicate that some were interested in both. Since the workshop, the kilns have been deployed on an aspen and Douglas-fir thinning site, and a Russian olive removal site. Research has demonstrated that open pile burning can damage the soil and cause considerable air pollution, however by containing the fire in kilns, these damages can be mitigated. One added benefit of this approach is a reduced chance of a fire escaping and growing into a wildfire. The resulting biochar can be distributed on the forest soil for forest restoration, or a fraction of it can be collected and applied to agricultural soils.

Ship Island Room B: Water Quality

8:30 – 9:00 **-** *Source and concentration of nutrients from waterfront properties along the Indian River Lagoon.* Authors: Lisa Krimsky and Holly Abeels

Development along the Indian River Lagoon (IRL) in East Central Florida has resulted in significant degradation in water quality over time. These impacts have culminated in fish kills and large scale algae blooms. In urban environments, numerous sources of nutrients have contributed to increased nutrient loads in surface waters including stormwater, organic materials, and urban fertilizer. Nitrogen and phosphorus pollution from urban fertilizer use has been addressed at the state, county, and municipality level. Yet the success of these efforts are rarely evaluated. This project seeks to validate these efforts through a citizen engagement study designed to assess the source and concentration of nutrients from surface water associated with waterfront homes with or without Florida Friendly Landscaping™. Surface water samples from these waterfront homes will be collected from homeowners and Master Gardener volunteers during the wet and dry season and analyzed for concentrations of nitrogen forms and nitrogen and oxygen isotopes of nitrate. The sampling is designed to compare nutrient concentrations in runoff from differing landscape designs, compare the nitrogen isotopic signature to that of known nitrogen sources in surface waters, and evaluate the impact of the fertilizer ordinance blackout that is in effect during the wet season (June 1st-September 30th). At least seven Extension agents in the region will incorporate study results into existing educational

programming. Sampling will start in November 2017 and continue through July 2018 or until all samples are collected.

9:00 – 9:30 **-** *Community Water Wise Award Program, Hillsborough, Pasco and Pinellas Counties, FL.* Authors: Lynn Barber, Whitney Elmore, Jim Moll, and Brian Niemann.

The annual Community Water Wise Awards program was created to recognize individuals/businesses committed to conserving water resources and protecting the environment by using Florida-Friendly Landscaping™ (FFL) principles. These principles include: right plant right place, water efficiently, fertilize appropriately, mulch, attract wildlife, manage yard pests responsibly, recycle, reduce stormwater runoff and protect the waterfront. Program is promoted locally/regionally in newspapers, radio, websites and email to workshop attendees. Homeowners, businesses, non-profit organizations, community associations can view photos/videos of past winners and complete an on-line entry form. On-site landscape evaluations are scheduled with entrants and Extension professionals which provides landscape advice and an educational opportunity promoting the water conservation. The highest scoring landscape in each category, businesses, homeowners and homeowner association, is the winner which receives a handmade mosaic stepping stone or a plaque option for businesses. Public awareness is heightened as winners are acknowledged by city councils or county commissioners, increasing the award visibility, further promoting water wise programs and the FFL principles to the public and city/county administration. Hundreds of thousands of residents attend these meetings, view televised presentations, read website and newspaper articles about the award winners. Behavioral changes associated with this program have been identified by landscape changes implemented and impacts on water conservation as identified through county/city water consumption record reviews. This program has been replicated in other FL counties and is ripe for statewide/national application.

9:30 – 10:00 **-** *An Example of Long-term County Support of Water Quality Monitoring.* Author: Diana Rashash

Onslow County NC is a rather unique county, in that it is located along the coast and is its own watershed. No outside water enters the county. This has historically left the county with the response of "it's your problem, you fix it" when they request waterway assistance. In 1995, the collapse of a swine waste lagoon sent roughly 25 million gallons of waste down the New River – the main river of the county. Bad press and rumors for several years afterward about the condition of the river prompted the Onslow County Board of Commissioners (BOC) to ask Extension what it would take to establish a water monitoring program. As a result, the Onslow Water Quality Monitoring Program was created. The program has been in existence for 17 years. Currently, there are 28 surface water sites that are sampled roughly every two weeks. This presentation will discuss the creation of the program, issues faced, and some of the benefits. For example, one sample site was below the outfall from a package treatment plant. Removal of the discharge led to a readily observable improvement in water quality. This information was shared with the local wastewater authority, which then shared the results with their members. They also now contact us about other changes they are making to the treatment system. Periodic program updates are provided to the BOC. These are televised live, as well as made available for online viewing. This makes a great opportunity to educate the public.

Ship Island Room C: Underserved Audiences

8:30 – 9:00 **-** *Choctaw Agriculture Professionals Program for Students (CAPPS).* Author: Jim McAdory

The Choctaw Agriculture Professional Program for Students, or (CAPPS) was developed through a partnership between MBCI Extension Agent, and Choctaw Central High School. This program's mission is to address the gap between Native American high school student's awareness of agriculture and natural resource related careers and educational pathways. CAPPS uses a hands on approach, and personal mentoring by natural resource professionals, so CAPPS participants can see, and interact withe these professionals in their current position, as well understand why these professionals chose their career. CAPPS was created specifically for Choctaw juniors and seniors that have scored 20 or above on the ACT, thus targeting CCHS's highest achieving students, and likely college prospects. CAPPS was developed in 2016, thus far, educating approximately 40 students, and introducing them to more than 20 professional ANR career choices, professional, and MSU enrollment requirements. CCHS has sanctioned CAPPS as an annual school program.

9:00 – 9:30 **-** *Women Have the Final Word: Why and How to Create Women-Centered Programming.* Authors: Mary Tyrrell, Angela S. Gupta, Katherine Hollins, and Cassidy Dellorto- Blackwell

Women comprise a large and growing portion of U.S. woodland owners. Between 2006 and 2013, the percentage of family woodland ownerships with women as the primary decision-maker increased from 11% to 22%, covering 44 million acres of forest land (Butler et al. 2016a, Butler et al. 2016b). In addition, 58% of the ownerships have at least one woman listed as a sole, primary, or secondary owner (Butler et al. 2017). Although research indicates women show greater environmental concern than men (Mohai, 1992), women are less likely to participate in stewardship and conservation activities on their land (Butler, et al. 2017). Female landowners are not being well-served by existing programs and outreach efforts, but how do we meet their needs and engage with them in a way that drives action? This presentation builds on existing research and experiential knowledge of forestry professionals advancing women-centered landowner engagement and programming, showcasing lessons learned from a fall-2017 workshop with natural resource professionals who are leaders in developing and delivering women-oriented programs. Weaving together empirical research and practical experience, this presentation highlights key strategies and resources for engaging women landowners in management and conservation activities and institutionalizing best practices for outreach and education programs that are inclusive of this growing and underserved population of landowners.

9:30 – 10:00 **-** *Needs and Concerns of Latino Agriculture Workers in Maintaining Poplar Tree Farms.* Authors: Patricia Townsend and Catherine Gowan

Food and fiber production is highly dependent on a vibrant agriculture workforce. Many of these workers are from the Latino community. Their access to Extension resources may be limited for a variety of reasons including language barriers and lack of awareness. As part of the Advanced Hardwood Biofuels Northwest (AHB) project, we conducted three focus groups with Latino agriculture workers with experience planting and maintaining poplar trees. The aim of the AHB project is to develop the foundation for an environmentally, economically, and socially sustainable biofuels and bio-based chemicals industry using poplar feedstock. Social sustainability of an industry includes ensuring the well-being of the workforce. During the focus groups, we asked the workers about poplars and their experience in maintaining and planting the trees. We have found that there are varying levels of knowledge amongst agricultural workers about poplar trees and the reasons for growing them. We also found that agricultural workers have a variety of motivations for working with trees specifically, but there was a consensus that

planting and maintaining tree farms was desirable work due to the shade, the environmental benefits the trees provide, and the relative lack of chemical inputs. Many participants mentioned the importance of mentors on the crew, to pass on knowledge and technique. Results from this work will help engage agriculture workers in the importance of their work to create more sustainable energy solutions.

Cat Island Room: Panel/Roundtable
8:30 – 10:00 *Green Infrastructure: Engaging communities from vision to implementation.* Authors: Mary Bohling, Julia Noordyk, and John Bilotta.

Green infrastructure is increasingly being recognized for its contribution not only to environmental quality, but also to placemaking, economic values, and healthy communities. However, community leaders may not have a good understanding of the various green infrastructure techniques and how they may impact their communities. Join Sea Grant panelists as we discuss green infrastructure projects from several different state programs including Michigan, Minnesota and Wisconsin. Topics covered will include outreach activities such as facilitating regional green infrastructure visioning, community workshops, code audits, stormwater and green infrastructure policy and planning for municipal and local governmental units and developing a national Sea Grant strategic vision for community responses to flooding and stormwater management, all with the purpose of mainstreaming the use of green infrastructure and tackling barriers that prevent adoption by communities. Session participants will be engaged in discussions about how to further enhance connections with a broader Extension staff.

Horn Island Room: Workshop
Building Skills for Difficult and Controversial Community Situations. Authors: Nicole Strong and Valerie Elder

Increasingly Extension agents are being brought into multi-stakeholder groups to help with difficult problems that require consideration of both science and social values. Wild horse management, water rights, wildfires and forest management, flood mitigation, living with wildlife are just a few examples of complex problems that require sound facilitation and leadership if solutions are to be sought. Alas many of us in Extension feel far more comfortable in our content expert role and can struggle when it comes to facilitating community conflict. Poor process can erode trust among stakeholders and impede progress. Relying on Extension's foundation of making best available science understandable, and utilizing active listening, facilitation and meeting management skills, and developing an ability to recognize conflict as a necessary part of group process can help communities move from a place of polarization to finding common ground and solutions. This 90 minute interactive workshop will help you practice skills you can use in difficult scenarios and will provide opportunities for you to work with your peers to troubleshoot current issues you might be experiencing at home.

*Participants will be asked to complete a pre-workshop reading assignment.

Concurrent Session I: Wednesday May 2 2:00 – 3:30 PM

Ship Island Room A: Water Resources
2:00 - 2:30 **-** *Water Wise - Catching and Conserving the Southwest's Most Precious Resource*

Author: Mark Apel

For the last 22 years, the University of Arizona Cooperative Extension's Water Wise Program (https://waterwise.arizona.edu/) has been teaching residents and businesses in southeastern Arizona how to conserve water and save money. The resulting local culture of conservation around the Southwest's most precious resource rounds out the concept of sustainability that takes into account the environmental, economic and social benefits of conserving water. This presentation will highlight the drivers behind the program in southeastern Arizona, partnerships, as well as the educational components of the Water Wise program, including workshops, school and youth programs, community outreach, social media, water awareness month, audits, consultations, and rainwater harvesting. We will also discuss the challenges of quantifying water conservation effects and how the use of qualitative data can be used to extrapolate reach and impact. Water Wise sets the stage for ways that Cooperative Extension nationwide can address and adapt to the new normal of climate change and its impacts.

2:30 – 3:00 - *NEW Master Water Program Piloted in Florida - Past, Present and Future.*
Authors: Lara Milligan and Abbey Tyrna.

Concern over water made a splash among Florida residents in 2016. A statewide survey found water-related issues climbed from number three to number two on the list of concerns made by Floridians. A multi-session Extension program focused on water resources was created to address water concerns. The Florida Waters Stewardship Program (FWSP), modeled after other "Master" Extension programs, was piloted in 2016. Results from two-county pilots showed large gains in knowledge and measurable benefits to the community. Pre-post surveys, written reflections, 6-month follow-up surveys, and unstructured participant interviews were used to gauge potential changes in knowledge and behavior. Results from averaged pre-post surveys showed greater than 40 percent (n=32) increase in knowledge for nine of the 13 water topics tracked. Written reflections recorded during the last session point to the network of like-minded people as one of the most influential aspects of the programs (69%, n=19). Follow-up surveys from one pilot showed 67% (n=12) of participants are being more conscious consumers, using less water and reducing plastic consumption. Some success stories that came from the unstructured interviews included program graduates taking on leading roles within the community to author and distribute a children's book on the water cycle, become a writer and co-host of a local environmental radio show, and increased community involvement. FWSP successfully trained and educated interested Floridians to become stewards of their local water resources through expert presentations, field tours, at-home online explorations, and hands-on activities. National applications, lessons learned and program details will be shared.

3:00 – 3:30 - *The Carolina Rain Garden Initiative: Tools for Residential Rain Garden Implementation.* Author: Kim Morganello

The Carolina Rain Garden Initiative (CRGI) was launched by Clemson Cooperative Extension in 2016 to provide guidance on residential-scale rain garden implementation. As part of CRGI, diverse tools were created and adapted. All tools are housed at the CRGI website at clemson.edu/raingarden. One such tool, the "Virtual Rain Garden," is a seventeen video tutorial providing step-by-step information on rain garden construction. Each video is no longer than 3 minutes and covers topics ranging from soil assessment, siting, plant selection, mulch and more. Residents can showcase their rain garden with another CRGI tool, the "South Carolina Rain Garden Tracker." In a few short minutes, residents can provide basic information about their rain garden and in return, receive a free rain gauge. A listing of demonstration rain gardens in

community spaces throughout South Carolina is included in the CRGI. Demonstration rain gardens provide residents an opportunity to gain a better understanding of rain garden aesthetics and components. Furthermore, a listing of pertinent workshops is also included, highlighting in-person training opportunities. The 2016, Clemson Extension "Guide to Rain Gardens in South Carolina" is housed electronically at the CRGI website and can be downloaded for free. The CRGI provides a range of resources, allowing users the opportunity to tailor their learning experience. By making information on rain gardens more readily available, more rain gardens in South Carolina may be installed and the objective of the CRGI realized. This session will share information on the CRGI including resources developed, preliminary results and next steps.

Ship Island Room B: Engaging Volunteers

2:00 – 2:30 **-** *Heard In the Woods: Mediated Learning from What Program Participants Have To Say - The "Peers and Pros - 360" Method.* Author: Sanford Smith

A novel approach to organizing landowner/teacher/public educational tours and presentations was developed using peer to peer interaction and mediated learning by natural resource extension educators. Though often underestimated by educators, effective teaching methods can be as important as the content presented in extension programs. The Peers and Pros – 360 mediated teaching method uses opinion or knowledge statements as discussion starters and components during the program. The statements, which are pre-printed and randomly distributed among participants, represent commonly overheard remarks made by members of past audiences. The first objective of this method is to make the activity interactive and one where learning begins by participants sharing their knowledge and experiences. Every effort is made to encourage participation and not embarrass participants on what they don't know about forests and forestry. A given amount of time is allowed for open learning and sharing among participants about the statements. Educators then share their own professional thoughts and opinions, often referring to prepared talking points, about the knowledge statements and participants' remarks. This is the second or "mediated" objective. The Peers and Pros – 360 method was used while conducting numerous forest tours, educational talks, and a webinar. It was rated highly effective by audience participants and appreciated by natural resource professionals alike. Increased learning on the part of participants and educators, and heightened interaction were just two of the positive results.

2:30 – 3:00 **-** *Training Master Gardener volunteers to answer reforestation questions after bark beetle outbreak.* Authors: Susan Kocher and Scott Oneto.

California, and the Sierra Nevada in particular, experienced unprecedented tree die off in 2016, on both private and public lands, totaling 102 million dead trees, as a result of excess forest density and four years of drought. Current assistance programs, through state and county based tree mortality task forces, focuses on assisting larger landowners and local jurisdictions to remove and dispose of hazard trees. However there had been little effort to assist owners of smaller parcels on how or if to revegetate after tree die off. We found that UCCE Master Gardener Volunteers were receiving many calls from the public on what to replant after tree mortality. However, they were not trained and did not have the resources to answer these questions. With a $10,000 rapid response grant from the University of California, we developed a program to help volunteers develop the knowledge to extend planting advice to the public. The Train the Trainer toolkit was presented during three all day workshops which trained 225 Master Gardener volunteers on forest/tree regrowth following heavy tree mortality, tree debris removal/treatment and site preparation, species adaptability for specific locations, seed zone considerations, planting basics/ nursery stock, planting mixes and densities, reducing competing

vegetation, and land owner assistance programs currently available. We produced brochures, powerpoint templates, recorded presentations by experts, FAQ panels, and social media to support volunteers. The overall message was that there is hope for native tree species and that we should replant them.

3:00 – 3:30 **-** *Sustainability Education in the Workplace.* Author: Ramon Madhosingh Hector

Pinellas County's Comprehensive plan states that it "will incorporate its sustainability commitment into new employee orientation, and will … require all management staff to train in sustainable and efficient operations for incorporation into daily office operations." Branded as Green Pinellas, a two pronged sustainability education approach using a new employee pledge and an educational column in the Pinellas Employee Newsletter (PEN) was designed to fulfill this objective. The pledge program, a partnership with the county's Human Resources department, was originally administered in a paper format to new hires at orientation. As part of the rebranding efforts, the pledge program was digitalized to increase employee participation, improve response rates, and support sustainability. New hires are targeted in multiple ways to ensure familiarity with the Green Pinellas program – welcome/invitation email, reminder email, and follow-up surveys. Extension columns in the PEN provide additional information on a variety of sustainability topics and programs that complement the pledge. In 2016-2017, all new employees with an email address were contacted (n=286) with 48% (n=137) completing the employee pledge. Fifty-four percent (54%, n=25) of follow-up respondents (N=46) agreed that the pledge was an effective tool to promote green office practices. Digitizing the employee pledge program streamlined the process, increased its sustainability footprint, and improved participation rates. This program could be replicated in other offices and demonstrates the benefits of a strong internal partnership to increase sustainability education in an office environment.

Ship Island Room C: Youth Programming

2:00 – 2:30 **-** *AmeriCorps Master Naturalists Improve Youth Environmental Education*
Authors: Shila Dunning, Laura Tiu, Brooke Saari.
Objectives: Most Florida residents live near the beach. Coastal ecosystems contain fragile habitats. Development has created habitat loss and degradation. Seasonal storms damaged the estuaries and dune system, requiring restoration. Local school districts emphasized the need for programs with activities that provide investigative and problem solving experiences related to science and mathematics. Methods: With school-age youth as the audience and their classrooms serving as plant nurseries, Extension implemented "Grasses in Classes" and "Dunes in Schools". Nearly 10,000 students were educated on ecology and horticulture. Each grew and installed Saltmarsh Cordgrass and/or Sea Oats, restoring critical ecosystems. As the curriculum became established schools, it became necessary to transfer coordination to a partner organization. A local non-profit offered AmeriCorps participants and other personnel. However, many individuals lacked the knowledge to instruct. Extension offered a solution: the Florida Master Naturalist Program (FMNP). Results: Fifty-one individuals completed the Coastal and Environmental Interpretation Modules. Graduates are required to create and deliver an education tool. AmeriCorps developed a seven-lesson curriculum that included classroom, hands-on and on-line activities. Efforts to improve the interpretive skills of the AmeriCorps volunteers through the FMNP built the self-confidence of the adults while enhancing the learning of the youth. Conclusions: Today, "Grasses in Classes" and "Dunes in Schools" continues as a staple in 27 schools, with over 2,600 students participating annually. Pre- and post-test surveys have yielded an average 25% knowledge gain. The children have been able to follow the development of the ecosystem, which has enforced the concepts of environmental stewardship.

2:30 – 3:00 - *Merit Badge in a Day: Forestry and Pulp and Paper.* Authors: Stephen Dicke and Randy Rousseau

Since 2012, an annual winter weekend camping event called "Forestry Day" has successfully hosted over 150 scouts and adults each year. At each camp a merit badge training was offered 9 am - 2 pm to Boy Scouts. The training agenda was 4-5 stops and Scouts rotated every 45 minutes. The Forestry merit badge was taught in even numbered years and Pulp and Paper was taught in odd years. Webelos and Arrow of Light Scouts attended "In the Woods" badge training. Recommendations on how to break the merit badge requirements into 45 minute teachable units, the number of foresters and other instructors needed, and handouts, materials and equipment needed. Outcomes will be reported. The Sustainable Forestry Initiative MS Implementation Committee has sponsored this "Forestry Day" for four years.

3:00 – 3:30 - *Expanding Natural Resource Literacy Through Library Summer Reading Programs* Authors: Christian Stephenson and Tim Ray

Library systems throughout the United States host summer reading programs for youth and adults in their communities. These programs are intended to promote literacy and maintain engagement in learning through the summer months. For the State of Mississippi in 2015, 42,854 youth registered for participation in these programs which had a total attendance of 155,536. These programs operate on a unified theme, with programs offered related to that statewide theme. Collaboration with these programs offers a valuable opportunity to introduce natural resource and agriculture programs to a broad spectrum of youth and adults. The 2017 theme "Build a Better World" allowed adaption of programming related to soil conservation and sustainability. Additional programs have included topics in home vegetable production, biodiversity, wildlife conservation, and general science literacy. In Hancock and Harrison counties in 2017, these programs were presented to more than 150 youth and adults. Participation in library summer reading programs has been ongoing for four years, with sponsorship for materials used provided through library foundations. The yearly format of these programs allows youth participants to be introduced to a variety of natural resource topics in an engaging way.

Cat Island Room: Panel/Roundtable

2:00 – 3:30 - *Sorting out citizen science meanings, motives, and messages.* Authors: Georgia Peterson, Bindu Bhakta, Julie Crick, Phyllis Higman, Jo Latimore, Yu Man Lee, and Mike Schira

Citizen science programs are excellent opportunities for public engagement in natural resource and sustainability issues, which are typically complex and challenging to resolve. Participants can ask questions, collect information, and apply results within their communities, while gaining a deeper understanding of the complexity and uncertainty involved in socioecological systems. Cooperative Extension has embraced citizen science approaches across multiple sectors (e.g., youth/4-H, nutrition, Master Gardener, natural resources). How do we determine the scope or boundaries of citizen science leadership within Extension? What are appropriate ways to approach or coordinate this style of engagement among external partners or within certain political climates? What are some effective ways to measure long-term impacts of citizen science on individuals and communities? This roundtable discussion session is designed to invite conversation about successful ways natural resource-based Extension programs navigate this popular area of interest. Educators and specialists from Michigan State University Extension will open the discussion with their own success stories related to the "Clean Boats, Clean Waters Program," "Eyes on the Forest," and the "Vernal Pool Patrol." Session participants will be

invited to share their own stories. The session will conclude with a collection of strategies that can help others successfully navigate their own citizen science programming.

Horn Island Room: Workshop

2:00 – 3:30 - *The Watershed Game - revised for meeting nitrogen and pollutants from America's landscapes.* Authors: John Bilotta and Cynthia Hagley

The Watershed Game has been a tool for Extension Educators from land-grant and sea-grant institutions for now more than ten years. In 2017-18, a comprehensive evaluation of its uses and impacts revealed the positive impacts it has had for many communities. More significantly, it opened the door to advances in the Watershed Game that include new support mechanisms for its more than 250 users across the country and the beginning of a framework to create new nitrogen pollution and climate adaptation versions. This presentation will highlight these advances and continue to support use by Extension and through Extension programs nationwide.

Concurrent Session J Wednesday May 2 4:00 – 5:30 PM

Ship Island Room A: Water Quality

4:00 – 4:30 **-** *Delivering Nonpoint Source Pollution and Urban Water Quality Education with E-learning.* Author: Susan Haddock

This presentation's purpose is to demonstrate an e-learning platform delivery of urban water quality educational programs that are inspiring and engaging to urban residents, property managers, landscape professionals and other agencies. The presentation will recap the program's key points, challenges of developing and managing an e-learning platform, and program outcomes. This alternative method which instructs participants on improved landscape management practices based on current water quality issues, and provides an avenue for professionals to obtain continuing education units toward license and certification renewal will be briefly demonstrated. The program's availability through eXtension, allows access wherever internet access is available and on multiple platforms. The training modules are self-paced with directed learning paths. Participants progress through four training modules in a logical step-wise process: 1) Nonpoint Source Pollution and Stormwater Runoff, 2) Mitigating Urban Stormwater Runoff, 3) Landscape Best Management Practices, and 4) Fertilizer in Urban Landscapes. Courses are designed with embedded external content, interactive games, and the ability to track work flow and measure outcomes. The presentation will show that incorporating problem-based learning and experiential learning encourages participant interaction, reinforces learning points and promotes knowledge retention. Assessing evaluations, and participant progress and comments provide educators with critical feedback with respect to course review and updates. Reporting and impact appraisals are improved by incorporating evaluation tools. Valuable statistical information may be collected to further program development and reporting to University and governmental stakeholders.

4:30 – 5:00 **-** *Collaborating to Successfully Address Stormwater Issues.* Author: Bob Simmons

According to the Washington State of Ecology (WDOE), stormwater runoff is the largest source of contaminants to Puget Sound and its contributing rivers and streams, degrading water quality and healthy habitats. WDOE estimates that on an average day, more than 100,000 pounds of toxic chemicals enter Puget Sound via stormwater runoff that flows off yards, driveways, roads, and parking lots. This includes pollutants such as petroleum products, pesticides and fertilizers, sediment, heavy metals, and nutrients. Rain gardens capture, cleanse,

and minimize stormwater runoff at the site – before it gets to the stormwater conveyance system. WSU research shows that many stormwater contaminants are treated in rain gardens by the plant-root systems and specialized bioretention soil mixes. Rain gardens then provide an opportunity for clean water to infiltrate. On Washington's Olympic Peninsula, working relationships were established with a range of organizations to develop, fund, and implement projects in key locations to address stormwater issues. Partners include Jefferson County Public Works and Environmental Health, the Cities of Port Angeles and Port Townsend, local schools, WSU Master Gardeners, WSU 4-H Afterschool Program, the Port of Port Townsend, community volunteers, and the Jefferson County Marine Resources Committee. The program engaged individuals and communities in stewardship actions that reduced the amount of stormwater based contaminants reaching surface waters. Activities included public workshops, 14 demonstration rain garden installations, technical assistance, community event and media outreach, and specialized training for volunteers. This presentation will highlight the educational materials developed, strategies used, and impacts achieved.

5:00 – 5:30 **-** *Rainwater Harvesting: Program Evaluation to Understand Real World Attitudes, Perceptions, and User Application of the Practice.* Author: Kim Morganello

Rainwater harvesting is a best management practice which provides the opportunity for the temporary storage, application and infiltration of stormwater runoff in the landscape, thus reducing runoff volume and associated pollution. Clemson University Cooperative Extension uses the practice of rainwater harvesting as a tool to engage audiences and encourage water conservation and watershed stewardship. Evaluations from Clemson Extension rainwater harvesting programming in the Charleston region of South Carolina, including lectures, workshops and rain barrel sales, offer an opportunity to analyze effective education strategies and explore user attitudes, perceptions and application methods. Evaluation data from 2013-2016 rainwater harvesting programming included over 350 individual responses from those who engaged in pertinent educational opportunities. Results of the evaluation provide information on motivators of practice adoption, current application and maintenance practices, and resource and information gaps on the topic. As part of this presentation, effective outreach approaches and resulting developed educational resources will be highlighted to assist practitioners and educators in providing guidance to client groups on increasing the practice and effectiveness of rainwater harvesting.

Ship Island Room B: Citizen Engagement

4:00 – 4:30 **–** *Tracking Climate Change: The Oregon Season Tracker Citizen Science Program.* Authors: Bradford Withrow-Robinson, Jody Einerson, Maggie Livesay, and Mark Schulze

Oregon Season Tracker (OST) links natural resource managers, educators, researchers and others in the community to the science they use through collaborative citizen science. OST volunteers gather scientific data on precipitation and plant phenology at their home, woodland, farm, ranch or school to share with other observers and research partners. OST is a joint program of OSU Extension and the HJ Andrews Experimental Forest Long Term Ecological Research (LTER) Program, along with two national organizations. Our objectives are to help gather data from a much larger part of the Oregon landscape than otherwise possible and, to open new channels of communication between the public and climate researchers studying the interaction of weather, climate and local ecosystems, to the benefit of participants knowledge and understanding. We have demonstrated Extension's ability to attract and train citizen scientists to participate in observing and reporting data. We have developed tools and capacity needed for an effective volunteer program: recruitment, online hybrid volunteer training and educational communication tools (website and newsletters) to support volunteers in their

activities. While we focused on northwestern Oregon initially, we are now expanding the program to other regions of the state, and expanding communication activities among researchers and citizen scientists. Our tools and experience are very applicable to similar programs in other states. Program evaluation suggests that the OST volunteer experience contributes to participants' gaining new knowledge about weather and climate science, affects communication with collaborating researchers, and is inspiring changes in their behavior.

4:30 – 5:00 - *The Georgia Master Composter Program: Increasing Small Scale Waste Reduction.* Author: Amanda Tedrow

The Georgia Master Composter Program was created in 2011 to address the growing demand for composting education across the state of Georgia. A partnership between University of Georgia Extension and the Athens-Clarke County Solid Waste Department, the program is both an adult environmental education course and an Extension volunteer program. Participants partake in a nine-week course that includes lectures by professors and experts, hands-on learning and field trips. Through partnering with statewide organizations, program coordinators provide participants with the most current and scientifically accurate composting information. Upon completing the course, Master Composters share their composting knowledge with others by volunteering in the community. They commit to doing 40 hours of volunteer service within the first year and 20 hours each year thereafter to retain their certification. Participants have widened the efforts of UGA Extension, fulfilling composting education requests and fostering relationships with a range of community groups. More than 80 participants have graduated since the program's creation. Each year, these Master Composters volunteer 500-700 hours to their community and reach 1,000 individuals through food scrap reduction and composting education. This session will provide an overview of the Georgia Master Composter Program, including course curriculum and materials, program partnerships, student final projects, and examples of volunteer opportunities. By gaining an understanding of the program from the coordinator's perspective, session participants will learn the basics of starting a Master Composter Program in their own community or engaging with an existing program.

5:00 – 5:30 -*Creating Wildfire-Safe Communities through the Master Gardener Program.* Author: Holly Campbell

Wildfire severity has increased in recent decades nationwide, threatening ever more lives, structures, and landscapes. Increased Wildland Urban Interface (WUI) development has greatly accelerated wildfire risk to people and homes living in these areas. Fortunately, there are available resources to support these efforts. The national Firewise program provides recommendations for making homes and other structures and landscapes fire-safe. Many communities nationwide follow Firewise recommendations, yet every year more homes are lost to wildfires. Efforts are becoming increasingly necessary to expand the reach of this vetted program. The established and successful Master Gardener (MG) program disseminates gardening information and provides leadership to communities nationwide, annually volunteering thousands of hours. The MG program can provide a reliable pathway for disseminating fire-safe landscaping information to the public. Several MG groups, especially in Western US states, have provided Firewise programming and resources to their communities and a few states offer advanced MG training on Firewise. However, many states with known wildfire susceptibility lack a formal MG fire-resistant landscaping module. This presentation will provide an overview of a new project underway to develop a MG fire-resistant landscaping module and accompanying Extension personnel training for the Southeastern US. The speaker will cover different aspects of the module, including Firewise-recommended landscape designs and maintenance as well as fire-resistant plant lists and example MG volunteer activities. The

presentation will also detail the online Agent training and evaluation process. Though this project is being developed for the SE, it can be replicated in other regions of the country.

Ship Island Room C: Citizen Engagement

4:00 – 4:30 **-** *The Herbicide Property Tool from the National Pesticide Information Center.* Authors: Kaci Buhl, Brittany Hanson, Alicia Leytem, and Sean Ross

A new web app contains physical/chemical properties of herbicides, and groundwater ubiquity scores. The Herbicide Property Tool (HPT) was developed at the National Pesticide Information Center at Oregon State University, through a cooperative agreement with the US EPA. The web-based platform includes over 200 herbicidal active ingredients, and references documenting their solubilities, binding affinities, half-lives in different soil types, and more. Animations and fact sheets define the meaning behind the numbers. Customize the table view and print results. Values were collected from EPA risk assessments whenever available, and relative groundwater risk was calculated in three soil types for each herbicide, when sufficient data were available. The speaker will demonstrate how to use the tool in teaching, research, and extension activities. http://npic.orst.edu/HPT

4:30 – 5:00 **-** *Developing Land Stewardship Programming for Online Users*
Authors: John Rizza and Jennifer Cook

The Colorado State University (CSU) Online Land Steward Program is specifically designed to help small acreage landowners and managers understand and implement stewardship on the land. Nationally, privately owned land is increasingly being split into small parcels of less than 100 acres. These ecologically sensitive lands face pressure from development, insects, diseases, invasive plants, soil erosion, and a variety of other issues. Yet, there are limited resources available to landowners who want to mitigate these pressures. The program will develop and advance public education and technical assistance opportunities to improve conservation efforts and promote healthy and sustainable private lands. Proper stewardship promotes conservation, improves yields, amplifies savings in input costs, increases biodiversity, and develops tourism and recreational opportunities. The curriculum was developed to increase the knowledge of the importance of proper stewardship and support the implementation of stewardship practices on the land. Landowners learn about the benefits of land stewardship, receive practical, hands-on instruction, and are given knowledge to accurately and effectively implement stewardship practices. The program is being developed as an online certificate course that will meet the diverse needs of the participants and covers a variety of topics including, soil, water, plants, and animals. CSU Extension is utilizing its diverse partnerships to provide landowners with the technical information they need to make informed decisions that will protect the resources on private lands. Developing partnerships with local agencies and organizations is a key to promote the program and ensure the availability of stewardship opportunities in the future.

5:00 – 5:30 **-** *TreeSnap: a citizen science tool to help our forests.* Authors: Ellen Crocker, Bradford J. Condon Abdullah Almsaeed, Albert G. Abbott, and C. Dana Nelson

We created TreeSnap, a mobile app available for iOS and Android that connects interested citizens with tree breeding programs to help fight forest threats through both awareness and research. TreeSnap integrates the outreach and education efforts of different tree breeding groups. The mobile app combines reporting for multiple tree species in a single place with an intuitive and convenient interface, while the web database provides an easy way for scientists to analyze the collected data. Our goal is that scientists will gain data on trees to use in research programs while the public will become more engaged in and informed about forest

health. Currently, restoration tree breeding programs each have their own portals and requirements for submitting potential trees for inclusion in breeding programs. TreeSnap provides a more unified gateway for members of the public to submit information to scientists. The app is designed to easily incorporate more trees as we build new collaborations. Similarly, each tree submission type is customizable, which allows us to ask different questions for each tree, providing the relevant information to scientific partners. TreeSnap prompts users to take photos of trees and answer questions specified by each tree-breeding program while collecting GPS coordinates. Meanwhile, the web app allows participants to view, track, and edit their submissions, and will serve as a learning resource. For scientists, the web app provides a single location for tracking and curating submissions, contacting participants with questions, and working collaboratively to visit and sample trees of interest.

Cat Island Room: Landowner Audiences

4:00 – 4:30 **-** *OSU Land Steward Program: Improving Natural Resource Management through Multi-disciplinary Landowner Education.* Authors: Rachel Werling and Max Bennett

Landowners in the wildland-urban interface (WUI) have a significant collective influence on natural resources issues ranging from wildfire to invasive weeds, yet many WUI owners are new and inexperienced. The award-winning Land Steward (LS) program stimulates WUI owners to adopt best management practices by teaching them about land management in a holistic, multi-disciplinary way and guiding them through a planning and technical assistance process. Over the 11-session course participants are introduced to locally appropriate best management practices for woodland, wildlife habitat, pasture and riparian system management, fire hazard reduction, soil health, noxious weeds, and more. It bridges the divide of many natural resource fields with a multi-disciplinary approach to the complex management realities of land ownership. Instruction is provided by professionals who serve as disciplinary experts working alongside experienced landowners who host the classes and serve as peer instructors and advisers. During the program, participants create and implement a management plan for their property with technical assistance provided through cooperating agencies, and site visits provided by LS mentors. The program prioritizes building connections among land owners themselves, with peer-to-peer mentoring and with local agencies, creating a supportive environment for management success. The place-based model is adaptable to any region. The program has reached ~300 landowners representing ~8,000 acres. In follow-up surveys (2009-2017) 86% of respondents stated that they had initiated and completed one or more natural resource-related projects on their property as a direct result of the training, and 74% indicated that the training helped them implement previously planned projects

4:30 – 5:00 **-** *Longleaf Pine Restoration—Extension Has Several Roles to Play.* Author: Glenn Hughes

The longleaf pine ecosystem is one of the most diverse forest types in the U.S., due primarily to the extensive herbaceous understory. From European settlement to the mid-1990's, longleaf pine acreage declined some 97% but is now trending upward. Private, non-industrial forest landowners are often intrigued by longleaf pine, but most forestry schools in the South spend little time on this species. As a result, landowners and foresters are often unfamiliar with this species and what it takes to succeed with longleaf. This presentation provides an overview of longleaf pine and examines various ways that Extension, in cooperation with other stakeholders, can help landowners, foresters, and others make sound decisions when restoring longleaf. It also addresses the importance of Extension as an advocate for the private landowner, as many longleaf-related committees are heavily staffed with representation from NGOs, federal agencies, and state agencies.

4:30 – 5:00 **-** *Extension at Home: Bringing "The Woods in Your Backyard" to New Audiences*
Authors: Andrew Kling and Jonathan S. Kays

Since 2006, the University of Maryland Extension's Woodland Stewardship Education (WSE) program and partners have presented workshops called "The Woods in Your Backyard" to thousands of landowners. The workshops are designed to help small-acreage owners create new and enhance existing woodland habitats. "The Woods in Your Backyard" format is now the basis for a facilitated online twelve-week non-credit Extension course. Starting in 2016, WSE offers the course twice yearly for 25 participants per session. Traditional classroom-style reading assignments are paired with 17 hands-on activities that get landowners out onto their property. Quizzes reinforce essential concepts and themes. Videos developed by WSE illustrate important techniques. Participants develop a "stewardship journal" to help them focus their thoughts about ecosystem management, to set goals, and to track their progress. Participants are guided by their own learning and by case studies to identify objectives, select and implement projects, and track their progress. Through its first three sessions, the course has reached 75 participants, from New York to Arkansas, managing more than 600 acres. About 70% own under 10 acres, but the approach is also valued by larger acreage owners. Each participant receives printed materials and access to online resources at the WSE website (www.extension.umd.edu/woodland) to help continue the course's objectives beyond the course. The current completion rate is less than 50%, similar to results from other online courses. This presentation will share the results of participant follow-up surveys, lessons learned, marketing considerations, and examine the advantages and disadvantages of distance learning compared to face-to-face workshops.

Horn Island Room: Ignite Session 2
4:00 – 4:10 *CIVIC: A Florida Program to Help Communities Wrestle with Thorny Issues.*
Authors: M. Jennison Kipp Searcy, Holly A. Abeels, Katherine K. Allen, Alicia A. Bradigan-Betancourt, Harry J. Crissy, Ramona C. Madhosingh-Hector, Lara B. Milligan, Martha C. Monroe, Linda M. Seals, and Mike S. Spranger.

A new Extension program is being developed in Florida in support of two broad initiatives that ultimately 1) enhance and conserve natural resources and 2) strengthen urban and rural communities. The program, Community Voices, Informed Choices (CIVIC) provides professional development, resources, and support to agents who work to build community capacity for problem solving. Our initial activities are in the realms of water and poverty. Affordable housing and sea level rise are not far behind. Many traditional Extension programs are suitable for helping residents become more aware, gather information, and better understand local problems. For some complex challenges, however, solutions are closely tied to worldview and are fraught with mistrust, controversy, and competing facts. The process of moving forward to common ground involves deliberative discussion that enables participants to understand the similarities and differences in values that lead to conflicting beliefs. Acknowledging value differences can help opposing factions begin to hear each other. CIVIC will provide information and training opportunities to hone agents' skills in moderating group discussions and developing local programs that help groups proactively identify and work toward solutions. This presentation will describe several county programs that demonstrate aspects of CIVIC, the in-service training that has introduced and expanded interest in the program, and the components of our evaluation that should be able to track county-level improvements in community capacity. Materials from the Kettering Foundation's National Issues Forum will demonstrate how they have used this process on a national level to provide input to congressional debates.

4:10 – 4:20 - *Onsite Wastewater Homeowner Programs: An Educational Success.* Authors: Terry Gibb and Bindu Bhakta

Michigan has 4.2 million homes (29%) on onsite wastewater treatment (septic) systems. With many communities seeing double digit increases in new home construction, many of these are in rural areas adding to the growing septic system use. At the same time, through one county's point of sale monitoring program, it is estimated that at least 10% of these onsite septic systems are in some level of failure. Michigan State University Extension (MSUE) began partnering with a local county Health Department at the request of residents to develop a program to educate new homeowners on the use and maintenance of septic systems to reduce potential failures and protect property values and the environment. As this program expanded into neighboring counties, MSUE wanted to evaluate the impact of the program content for participant's knowledge gains and behavior changes. Beginning in 2014, a follow up email survey was administered to all registered program participants to see what actual behavior changes occurred based on knowledge gains and planned changes from the immediate post program evaluation. With three years of data, the follow up survey data is showing that these programs are having the intended impact on participant behavior changes, and are in fact, surpassing normal results for positive change. This presentation will outline program content, partnerships developed, program expansion to reach more diverse audiences and impacts realized in a number of targeted areas.

4:20 – 4:30 - *The Climate Learning Network: A Virtual National Network of Extension Professionals.* Authors: Daniel Geller and William Hubbard

The Climate Learning Network (CLN) was started as a regional pilot project in 2015 with funding from The eXtension Foundation and the USDA Office of the Chief Economist (OCE). The goal of the CLN is to promote Climate Literacy for Extension Professionals and provide support to the USDA Regional Climate Hubs in their work with Cooperative Extension. The project quickly grew from an Eastern US, regional project to a National Project. To serve all the Climate Hubs with limited resources the CLN has employed innovative technologies including Competency Based Literacy Training and Webinar Based eLearning Deployment (WebBED) to develop training for Extension Professionals. This Ignite Session will discuss the tools and methods used to rapidly deliver useful, scientifically based information about Climate Change Adaptation on the farm and in the forest. It will provide background on the WebBED process and show examples of this technology in Extension Training programs. It will also explain the Design of Competencies (DECOMP) process used to identify the competencies for this program in a rapid development session using experts in the climate science and adaptation fields.

4:30 – 4:40 - *Clean Boats, Clean Waters Creating Program Sustainability.* Author: Beth Clawson

Discover how the Michigan Clean Boats Clean Waters Program has evolved from a simple train a volunteer to training leaders and creating regional coordinators. Five intensive minutes of what we did; where we are; and where we are going.

4:40 – 4:50 - *Photovisualization using CanVis.* Author: Jason Gordon

Most people learn best through reading text, viewing pictures or video, or other non-verbal methods because the brain can quickly process visual information. Photorealistic visualization localizes critical issues which can help to communicate information and benefits of the community forest to the general public as well as decision-makers. This presentation describes an MSU Extension program using CanVis, a free software simple enough for users with basic computer skills to manipulate objects and images that can help them to plan and

understand green infrastructure design. The MSU Extension program included a new curriculum, electronic media, and face-to-face trainings. Participants included Extension agents, Master Gardeners, arborists, foresters, and landscape architects. Post-session evaluations indicated high levels of satisfaction among participants.

4:50 – 5:00 - *Woodland Owner Seminars: Does Topic Choice Affect Likelihood of Seminar Attendance?* Authors: David McGill and Agnes Kedmenecz

Private woodland owners play a key role in maintaining and improving environmental amenities for local and downstream communities. To support these owners in making informed land-use decisions, extension professionals often rely on needs assessments to develop well attended educational outreach programs that reflect their ever changing educational needs. Recent work, however, has indicated a low correlation between woodland owners expressed educational needs and seminar attendance. We used three-part woodland education series to explore whether landowners would be more likely to express interest, register, and attend forestry education seminars if they were given the chance to select the seminar topic. Outreach to 3600 woodland owners was conducted exclusively by direct mail. Three treatment groups were: 1) topic participants (TP), who selected seminar topics, 2) prenotification (PN), who were invited to all three seminars, and 3) invitation only (IO), who were initially only invited to the first seminar. TP and PN were also requested to inform us how many people they might bring. Our study found that TPs were more likely to express interest in attending. However, they were no more likely to register and attend than participants in the other two treatment groups. One surprising finding was that the TP and PN groups, whom had been asked about bringing guests, brought 3 times as many guests as the IO group. Over all three seminars, the TP and PN groups had greater numbers than the IO group, but only the PN group was statistically greater than the IO group.

5:00 – 5:30 - *Partnering for a Successful Georgia ANREP Conference.* Authors: Paul Pugliese, Kevin Livingston, and Karol Kelly.

Georgia ANREP members decided to explore ways to grow membership and interest in their fledgling organization. The Georgia ANREP Chapter took a novel approach with this year's conference and partnered with the Georgia Master Naturalists program to provide an advanced training opportunity for certified volunteers alongside the annual professional improvement conference for Georgia ANREP members. The 2016 Georgia ANREP Conference was held at Berry College in Rome, GA. This conference was coordinated by UGA Extension Agents Paul Pugliese, Karol Kelly, and Kevin Livingston. This collaborative effort was a huge success based on the positive feedback received from evaluations and the conference attendance tripled from the previous year. The roster of attendees included agriculture and natural resources agents, Georgia Master Naturalist volunteers, Extension specialists, 4-H/Youth agents, college students and interns. Because of the success of this conference, plans are underway to continue this unique collaboration for future Georgia ANREP Conferences. This concept could be easily replicated in other states that are struggling to increase ANREP membership and participation.

Post-Conference Workshops/Meetings Thursday May 3, 2018 8:00 – 11:00 AM

Ship Island Room A: ANREP Initiatives Post-conference Meeting
Presiding: Christopher Jones

The ANREP Initiatives: National Network for Sustainable Living Education, National Extension Energy Initiative and Climate Science Initiative, are grassroots efforts by Extension educators to strengthen Extension programming to address these emerging and important issues. The initiatives collaborate and create opportunities for us as Extension educators to learn from one another. Activities include conducting national summits, working on cross state grant proposals, and publishing scholarly products. This post-conference meeting will allow the leadership of the initiatives and interested participants to communicate interests and activities.

Ship Island Room B: Wildfire and Prescribed Fire Communities of Practice Meeting
Presiding: Jennifer Fawcett

The National Cohesive Wildland Fire Management Strategy encourages collaboration among stakeholders across all landscapes, using best science, to develop landscapes that are fire-resilient, communities that are fire-adapted, and wildfire response that is safe and effective. To meet these goals, Extension professionals, local communities, and numerous other stakeholders have an unprecedented need to work together. During this meeting, participants (i.e., CoP members and others interested in wildland fire) will learn about results from a recent nationwide needs assessment on the types of outreach materials and specific topic areas that natural resource professionals and educators have identified as the greatest need for prescribed fire education and outreach. We will discuss ideas as to how the Wildfire and Prescribed Fire CoPs can collaboratively work to meet these needs, as well as share best practices for effective communication with communities concerning fire-related issues, and compare strategies for effectively implementing wildland fire programming to targeted audiences. Participants will also be encouraged to share programming ideas and success stories from their own communities. Resource materials including fact sheets, handouts, sample learning exercises, information from regional Fire Science Exchange Networks, and more will be shared among participants for immediate application after the meeting. Additional meeting goals will be to continue and broaden our discussion from the 2016 meeting, discuss ways in which the Extension commnity can better share existing fire-related resources, network with other Extension professionals interested in wildland fire, and gauge interest for potential development of a ANREP Wildland Fire Initiative.

Ship Island Room C: National Sustainability Summit & National Extension Energy Summit Planning Workshop (8-9:30 AM)
Presiding: Jennison Kipp Searcy

In the Spring of 2019, leaders of the National Network for Sustainable Living Education (NNSLE), Climate Science Initiative (CSI), and National Extension Energy Initiative (NEEI) will co-host the USDA-NIFA sponsored National Sustainability Summit (NSS) and National Extension Energy Summit (NEES) in Tampa, Florida. The 2018 ANREP Conference is a prime opportunity for the National Summit organizing teams to convene a planning meeting, gather input from ANREP members, and identify priority actions one year out from NSS and NEES. The ultimate goal of this proposed workshop is to maximize the effectiveness, efficiency, and overall success of the National Summits in addressing the extension and research sustainability, energy, and climate science programming goals of each ANREP sub-initiative. While we will work with the ANREP Conference planning team to determine the final schedule for the

proposed working meeting, we envision 2-3 hours of time on the ANREP Conference agenda for a group of 20-25 Extension leaders, USDA-NIFA program officers, summit partners and collaborators to address and deliberate a range of event planning priorities, including but not limited to:

1. Facilities, lodging, equipment, and other vendor services;
2. Overall event themes and track foci;
3. Event branding and promotion;
4. Confirmed and prospective keynote speaker(s);
5. National Summit tentative process agendas;
6. Study and leisure tour opportunities and logistics;
7. Budgets, sponsorships, and event marketing;
8. NSS and NESS-related outputs (e.g., publications and digital media) status; and
9. Next steps.

Ship Island Room C: National Extension Energy Initiative (9:30 – 11 AM)
Patricia Townsend, presiding

Ripple Effect Mapping (REM) is a fun and engaging way to see the impacts of programs or events. We are looking for 10-20 people who either attended NEES 2013/2015/2017 or are interested in the future of energy-focused Extension to participate. Effective program evaluation can be challenging for Extension programs, particularly those with varied, broad, and long-term goals. Common methods of program evaluations, such as surveys or interviews, are often expensive, time-consuming, and may miss critical outcomes. REM can address many of these issues, while being exciting for participants!