



**Presenter Abstracts and Biographies
(In Alphabetical Order According to Authors Last Name)**

Presenter: Dehlia Albrecht

“Invasive Species Education: Invading a Classroom Near You!”

Education Initiative Coordinator, University of Florida/IFAS Center for Aquatic and Invasive Plants

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Abstract

The Florida Invasive Plant Education Initiative began in 2006 as part of a long-term education and outreach partnership between the University of Florida/IFAS Center for Aquatic and Invasive Plants and the Florida Fish and Wildlife Conservation Commission, Invasive Plant Management Section. Over the past eleven years, we have developed an extensive program to get invasive species issues taught in classrooms, nature education centers, and after-school programs - with a combination of training, lesson plans aligned to educational standards, and activities that truly engage students. We provide complete curriculum modules, an annual professional development workshop for educators (Plant Camp), online resources, in-class presentations, and educational materials and games.

The two main resources the Education Initiative offers are Plant Camp and *Lakeville – A Natural Resource Management Activity*. Plant Camp is an annual 5-day workshop that provides Florida educators with the unique opportunity to learn first-hand about natural resource management issues in Florida. *Lakeville - A Natural Resource Management Activity* is a curriculum unit that teaches students the role native, non-native, and invasive species play in ecosystems and the social significance of these ecosystems. Students are challenged to make management decisions, taking the perspectives of various stakeholders in their community into account as they attempt to address the problem of invasive species. Students then assess what effect their decisions will have on the ecosystem.

This presentation will provide an overview on the Education Initiative, Plant Camp and Lakeville and present key findings from our pre- and post-test results and evaluations from both Plant Camp and Lakeville.

Speaker Bio

Dehlia works for the UF/IFAS Center for Aquatic and Invasive Plants, where she coordinates the Florida Invasive Plant Education Initiative, including the organization and preparation for an annual 5-day teacher workshop, and the preparation and dissemination of Education Initiative curricula about invasive plants for grades 2-12. She also assists with other outreach efforts for the Center. Dehlia earned a Bachelor's degree in Biology from Aurora University and a Master's degree in Entomology and Nematology from University of Florida. She has had experience in curriculum development and assessment, teaching in formal and informal educational settings, public outreach, evaluating program outcomes, and in conducting biological field and laboratory research.

Presenter: Karen Alexander

“A collaborative citizen-science tool: the *Phragmites* Adaptive Management Framework (PAMF)”

Senior Program Specialist, Great Lakes Commission, Ann Arbor Michigan

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Abstract

Non-native *Phragmites australis* (common reed) is invading the Great Lakes basin and has already covered more than 24,000 ha of the U.S. coastline, much of the Canadian coastline, and a significant amount of inland. Although land managers invest substantial resources managing *Phragmites*, treatments differ in effectiveness from site-to-site. This indicates a degree of uncertainty about the biological response of *Phragmites* to management. In addition, there are limitations in coordinating all the disparate *Phragmites* management efforts going on among the 8 States and 2 Provinces within the basin. This presentation will highlight the developing *Phragmites* Adaptive Management Framework (PAMF), a citizen science tool that uses adaptive management to reduce the uncertainty for land managers while providing constantly improving site-specific treatment guidance (i.e., best management practice) that is based on learning gained from each treatment that occurs on the landscape.

PAMF was developed by a team of scientists and staff from the U.S. Geological Survey, the Great Lakes Commission, the University of Georgia, and Bugwood (University of Georgia Center for Invasive Species and Ecosystem Health). This collaborative development process involved experts in *Phragmites* management representing a variety of organizational perspectives, including private landowner, academia, municipal, province, state, federal, and non-profit. The 2017 “pilot year” for PAMF included 35 land managers from the region who enrolled 93 parcels of *Phragmites*-invaded land in order to improve and refine the system before it becomes fully available in early 2018. This innovative program will promote maximum effectiveness of *Phragmites* management across the landscape by providing land managers data-driven guidance that will reduce treatment uncertainties through time.

Speaker Bio

Karen Alexander joined the Commission in 2016 as a Senior Program Specialist. Her main role is to work collaboratively with researchers at the United States Geological Survey to address the spread of the invasive plant *Phragmites*, by implementing the *Phragmites* Adaptive Management Framework (PAMF).

Prior to joining the Commission, Karen worked as a Community Engagement Leader with the Township of Tiny, a municipal government in Ontario where she created and implemented various volunteer programs and special events, of which several aimed to benefit environmental health and sustainability. Karen is the co-founder and current co-chair of the Ontario *Phragmites* Working Group and holds an Honours Biology degree from Wilfrid Laurier University, a Graduate Certificate in Ecosystem Restoration from Niagara College, and a Young Conservation Professional certificate from the University of Guelph.

Presenter: Michelle J. Aulson

“Effective Use of Goat Browsing as an Application for Invasive Species Control in Northeast Suburbs”

Owner MJA Services & Outreach Director of Goats to Go at Great Rock Farm Georgetown, Massachusetts 703-994-8353, greatrockfarm@gmail.com

Abstract

Goats browsing is historically one of the traditional methods for controlling weed species that take over fields and woodland areas. The desire for goat browsing is not only for an environmentally and ecologically friendly method but also a fun option for controlling vegetation in heavily used recreational lands such as suburban backyard and gardens, local Parks & Recs, and conservation lands. Goats are very effective and efficient in areas that are not easily mowed near rocks, stumps, and walls; near streambanks that are sensitive to slope erosion; and areas with near water, heavily used by human and pets, and bee populations that are impacted by the presence and use of chemicals. Areas around where the goats are browsing can continue to be used and enjoyed by the community and also draw people out to watch the goats work. In the Northeast nuisance species such as poison ivy (*Toxicodendron radicans*) and invasive species oriental bittersweet (*Celastrus orbiculatus*) and multiflora rose (*Rosa multiflora*) are just a few of the species goats eat that are costly to control and cause health issues to millions of people each year. Therefore, it is advantageous to use goats to efficiently control, and eventually eradicate with continuous control, the nuisance and invasive species in these challenging areas of the northeast suburbs. When goats are used for targeted areas the goats prevent the plants from flowering and seeding, thereby stressing and weakening the plants ability to continue to thrive. Goats can also affect the area earlier than other methods when they can eat any weeds that germinated too early, or too late, to be affected by herbicides and help to reclaim the recreational or conservation lands that can easily be degraded by species that can render it unusable by thick woody and shrub undergrowth and poison ivy that is a penchant for causing skin rashes sending millions to the emergency rooms each year. In times of declining budgets, goat browsing is proving to be a popular and effective application for controlling nuisance and invasive species.

Speaker Bio

Ms. Michelle Aulson has an M.S. in Engineering Management with a focus on technology management from the George Washington University in Washington, DC and a BS in Environmental & Natural Resources Policy and Management from the University of New Hampshire. She has worked on various DoD environmental programs, including 10 years as a Civilian for the Department of the Navy as an Engineering Manager supporting Afloat Environmental Programs. A few notable program areas include analysis and investigation of technologies that remove invasive species that impact aquatic ecosystems, evaluation of technologies that are feasible and effective at meeting discharge requirements from DoD vessels, and she has been a leader in developing federal regulations and rulemaking documents under Section 312 of the Clean Water Act (called the Uniform National Discharge Standards). Now residing in Georgetown, Massachusetts, she is pursuing her passions to stop the spread of nuisance and invasive species that have significant economic and ecosystem impact on suburbs and conservation lands rendering it unusable.

Presenter: Chuck Bargeron

“EDDMAPS PRO – A New App For Professionals To Collect Invasive Species”

Associate Director, Center for Invasive Species and Ecosystem Health, University of Georgia,
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Abstract

EDDMapS Pro is a new smartphone app that leverages existing resources, such as the EDDMapS website and I'veGot1, to allow land managers to track and monitor invasive plants infestations and treatments without cellular connectivity. Specifically, it is focused on four critical features currently missing from EDDMapS:

1. Ability to select an area of interest on a map through a web interface and download both the satellite imagery and EDDMapS points/polygons to their smartphones and tablets
2. Ability to view existing infestations (with background imagery) from smartphones and tablets where both the infestations and current location are displayed when users don't have cellular connectivity
3. Ability add new infestations including drawing polygons (with background imagery available) from a smartphone or tablet when users don't have cellular connectivity and sync back to EDDMapS when devices are back on cellular or WiFi connectivity
4. Ability to revisit/update existing infestations sites with treatment or size expansion/reduction from a smartphone or tablet when users don't have cellular connectivity and sync back to EDDMapS when devices are back on cellular or WiFi connectivity

EDDMapS Pro is an advanced version of the existing apps focused on implementing these much needed and requested features.

Speaker Bio:

Chuck has been with the University of Georgia for 18 years where his work focuses on invasive species and information technology. He has a B.S. and M.S in Computer Science. Websites that he designed have been featured twice in Science Magazine and have received over 1.7 billion hits since 2002. Chuck developed the infrastructure behind Bugwood Images which runs the ForestryImages.org and Invasive.org websites. Recently, Chuck has focused on mapping invasive species and tools for Early Detection and Rapid Response using EDDMapS and smartphone applications. He has led development of 26 smartphone applications including the first apps for the U.S. Forest Service and National Park Service. He was appointed to the National Invasive Species Advisory Council in 2013 and elected as Vice-Chair in 2016. Chuck has been an invited speaker at over 80 regional and national conferences and co-authored over 20 journal articles and outreach publications.

Speaker: Shawna L. Bautista

“Innovative Invasive Species Management in the US Forest Service”

Invasive Plant Program Manager, Pacific Northwest Region, State & Private Forestry, USDA Forest Service

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Abstract

Invasive species management in the US Forest Service includes all taxa and all lands, with each of three branches of the Forest Service (National Forest System, State & Private Forestry, and Research & Development) responsible for different aspects of the issue. The Forest Service has perhaps the strongest and most comprehensive policy direction for invasive species management of any federal agency and this policy includes the activities of all three branches of the agency. Our Research & Development branch is the only part of the organization authorized to conduct actual research. Invasive species are one of the strategic program areas within R&D. The State and Private Forestry branch provides technical and financial assistance to landowners and resource managers to help sustain the nation’s forests. It is within this branch that we engage and support State, County, private, federal and tribal partners to address taxa that threaten the health of forest lands. The National Forest System branch is the one that manages the National Forests and the most well-known operation of the agency. Many invasive species prevention and control projects are implemented on and by the National Forests, in cooperation with, literally, thousands of partners.

Within each of these branches, the Forest Service is conducting and researching innovative ways to address the threats posed by invasive species. Some examples that will be discussed include use of unmanned aerial systems to distribute biocontrol agents and inventory invasive plants, the use of eDNA to inventory aquatic invasive species, studying herbicide impacts to rare plants, Adopt a Trailhead, Trail and other citizen science programs, use of Ecological Site Descriptions and State and Transition models to inform management decisions, and more than 70 consecutive years of aerial survey of forested land in the Pacific Northwest.

Speaker bio:

Shawna Bautista is currently the Regional Pesticide Use and Invasive Plant Coordinator for the Pacific Northwest Region of the Forest Service in Portland, Oregon. She has been with the Forest Service for 29 years, starting as a Wildlife Biologist on the Angeles National Forest. It was on the Angeles NF that Shawna noticed the devastating effects of *Arundo donax* on endangered fish and bird habitat, and it sparked her passion for managing invasive plants. She received her B.S. in Wildlife Management from Humboldt State University and her M.S. in Zoology and Physiology from the University of Wyoming.

Presenter: Jim Bean

“Changes and Innovations in the Invasive Species Control Market”

Strategic Accounts Manager, BASF Professional & Specialty Solutions

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Abstract

There are many changes among the herbicide manufacturers that will impact the invasive plant control market. These market changes have already impacted the products, services and support offered by the manufacturers. New problem weeds continue to be found and the spread of difficult to control weeds continues. Branded products offer great value, which is often lost during the bid process. A few new compounds are registered and will fit the invasive plant control market.

Speaker Bio

Jim Bean is a graduate of West Virginia University with a B.S. in Forest Resources Management. For the last 36 years Jim has worked in vegetation management, including 9 years as a Transmission Forester for Appalachian Power Company and 27 years with BASF. Jim has held many positions with BASF including sales, sales management, and marketing. Jim currently lives in Raleigh, NC. From 2004 to 2007, Jim worked with federal, state and local agencies and NGO's in the eastern U.S. to increase funding for, and improve management of invasive weed control. Jim was a driving force behind the creation of CEIPSC - The Coalition for Eastern Invasive Plant Species Control. As Strategic Accounts Manager, Jim helps educate and serves customers in the Forestry, Rights of Way, Industrial Bareground, Roadside, Invasive Weed and Pasture / Rangeland markets across the U.S

Speaker: Mike Berkley

If You DON'T Build It, It Will Come...BACK!" Native Plant Restoration After Eradication

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Abstract

Who knew? The beautiful ornamentals we have used for decades in our suburban yards sometimes passed down from generation to generation, would also become invasive non-native species. The good news: the savvy backyard gardener has recognized the risk that some of these ornamentals will become a threat to our natural areas and they have volunteered to remove them from their landscapes. However, if we remove the "nasties" and not put something back in their place the invasive non-native species can return. Also, many gardeners are still holding on to their invasive ornamentals because they 'ARE' beautiful. In this discussion, Mike Berkley will show several native substitutes that not only can out-compete the invasive species and prevent reintroduction but also can be quite attractive.

Speaker Bio

Mike Berkley is co-owner of GroWild, Inc, a native plant nursery and landscape company in Fairview, TN. Growing over 1,000 species and cultivars of native plants, Mike has experimented with all things native in homeowner's yards, state and federal parks, commercial development, land restoration, on roof tops, rain gardens and in his own yard for the past 32 years.

Mike joined the Board of TN-IPC in 2009 as a representative of the nursery industry. His goal is to bring awareness to his fellow nurserymen of the problems invasive plants bring to our environment. Mike is a lifetime member of the TN Native Plant Society and has been the Fairview, TN City Arborist since 2000

Presenter: Douglas A. Burkett, PhD

“Invasive Plant Management in the DOD”

Environmental Biologist, Operations Division, Armed Forces Pest Management Board, Office of the Assistant Secretary of Defense (Energy, Installations and Environment) US Army Garrison Forest Glen, Silver Spring, MD

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Abstract

The U.S. Department of Defense (DoD) manages approximately 25 million acres of land across 525 installations, 344 of which have significant natural resources that require management through an Integrated Natural Resources Management Plan (INRMP). DoD's mission is to protect and defend our nation and its interests. Our installation natural resources and pest managers work to ensure that our soldiers, sailors, and airmen have the land, air, and water resources they need to conduct crucial testing, training, and operational activities. DoD requires high quality testing and training landscapes to conduct mission activities and must balance mission needs and environmental stewardship responsibilities through implementation of our primary land management driver, the Sikes Act. Non-native and other invasive species commonly impact the military's testing and training mission, force health protection, security, global movement of personnel and equipment, installation infrastructure, and natural resources. Presentation will provide a global overview of the most important invasive species impacting the Department of Defense.

Speaker Bio

Dr. Burkett is the Environmental Biologist at the Armed Forces Pest Management Board within the Office of the Assistant Secretary of Defense for Energy, Installations, and Environment in Washington DC. He is responsible for formulating policy guidelines and providing technical guidance for integrated pest management, invasive species, nuisance wildlife, and other biological / natural resources. In 2014, Dr. Burkett retired from 24 years on active duty in the Air Force as a medical entomologist. While on active duty, he served as the Chief of Conservation for the Air Force and worked various environmental issues on Air Force Ranges.

Presenter: James H. Castle

"Eradication of Flowering Rush using the Diver Assisted Suction Device (DASH)"

Wildlife Biologist, U.S. Army Corps of Engineers, Walla Walla District Burbank, WA

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Abstract

The introduction, natural history, description, management issues of Flowering Rush and the eradication method used with Divers and DASH; concluding with future of chemical and biological controls and their management. Flowering Rush (*Butomus umbellatus*) was first introduced into the North America in 1897. Two populations emerged from the Great Lakes. Populations moving west were thought to be from European origins whereas populations moving east originated from Asia. Flowering Rush tolerates a variety of shallow water and wetland habitats. These dense stands can displace native species and alter hydrologic flows and shelter predatory fish that may threaten ESA species in the Columbia and Snake River systems. Flowering Rush also creates an issue with navigation of both recreational and commercial vessels. Flowering Rush is a perennial monocot that can reach heights of 5 feet and spreads vegetatively. Presently there are no effective control for this plant with the exception mechanical removal using surface supplied divers with assistance of the Diver Assisted Suction Harvest (DASH) apparatus. The Tri-Rivers Natural Resource Office of the Walla Walla District, U.S. Army Corps of Engineers (USACE) has modified a DASH system that is 97% effective in removing Flowering Rush. Research is being conducted by the USACE Engineering Research and Development Center in the study of an effective agent and method for applying the agent to Flowering Rush in fluvial systems. Biological Controls are being studied by others and there may be an effective control emerging using an integrated approach with one or a combination of these methods.

Speaker Bio

Prior to joining the U.S. Army Corps of Engineers, Mr. Castle spent the past 25 years managing natural resources for several environmental consulting firms and working a number of positions with the federal government. Mr. Castle spent 6 years on active duty with the U.S Army Corps of Engineers as a construction and reconnaissance diver conducting projects and dives the world over. After the Army Mr. Castle remained in diving conducting research dives and later earned a B.Sc. degree from Humboldt State University in Integrated Biology and a M.Sc. Degree from Sonoma State University in Avian Behavioral Ecology and Conservation Biology. Mr. Castle is currently the Project Wildlife Biologist at the Tri-Rivers Natural Resource Office, Walla Walla District and Manages Habitat in 31 Habitat Management Units along 120 miles of the Lower Snake and mid- Columbia Rivers in eastern Washington State.

Speaker: Bob Caveny

“Aerial Application as an Initial Strike for Heavy Bush Honeysuckle (*Lonicera maackii*) Infestations in Illinois”

Conservation Stewardship Program Manager, Illinois Department Of Natural Resources

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Abstract

Bush (Amur) Honeysuckle (BH; *Lonicera maackii*) has infested large acreages across the state of Illinois. A common invader of forests, it shades out native herbaceous vegetation and prevent oak regeneration. Starting in 2013, Missouri Department of Conservation examined using aerial application in the fall using aquatic rated glyphosate to treat stands of BH in oak hickory forests in Eastern Missouri (Leahy et al 2017). The application is completed when most of the native vegetation is in dormancy and all the leaves off the trees have come down. In 2014, Illinois Department of Natural Resources (IDNR) began testing this technique, with the addition of prescribed fire on the areas as a follow up treatment. Spraying in the fall and burning in the spring would in theory double stress the plant. IDNR has also been testing the effectiveness between the use of fixed wing aircraft and helicopter application as well. We found a significant difference between treatment type (fixed wing or helicopter) as well as following helicopter spraying with a spring prescribed burn. With fixed wing application, a kill rate of about 46% and defoliation of 75% was observed. Using helicopter application, kill rates rose to 86% and 90% defoliation. Burning these helicopter spray sites the next spring yielded a BH kill of 94% and a defoliation of 97%. Average costs for this type of application range \$40-55, with a prescribed burn cost ranging from \$30-45, which allows 2 treatments on a heavy infestation of BH for less than \$100/ac. Typically, this type of operation could cost from \$250-500/ac. Using this new tool could allow for more efficient and cost effective means of controlling BH infestations on a landscape scale. This tool needs to be used in conjunction with other methods of invasive species management in order to get these infestations under control, but reduces stem density to more manageable levels.

Speaker Bio

Bob Caveny has been the Conservation Stewardship Program Manager since April 2014 within the Division of Private Lands at the Illinois Department of Natural Resources. Previously, Bob worked as a IRAP Coordinator for the Sangamon SWCD, and as a Regional Wildlife Biologist and Farm Bill Biologist for Pheasants Forever in Indiana and eastern Illinois respectively. He has a BS degree from Eastern Illinois University in Environmental Biology and a MS degree from Texas A&M University in Wildlife Biology predicting distribution and abundance of wild turkeys. In his spare time, he enjoys hunting (especially waterfowl), fishing and generally being outdoors.

Presenter: Dr. Emily E.D. Coffey, PhD

“A New Tool for Invasive Species Management - Plant Risk Evaluator “PRE”

Vice President of Conservation and Research, Atlanta Botanical Garden, Atlanta, GA

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Co-Authors

Carrie Radcliff, Restoration Manager, Atlanta Botanical Garden

Jan Merryweather, Senior Plant Manager, PlantRight, San Francisco, California

Abstract

Meet the science-based, horticultural plant risk analysis tool that is good for business and the environment. Known as PlantRight “PRE” (Plant Risk Evaluator), this 20-question, online tool, and database enables Gardens to know before they grow if a plant poses an invasive risk. In addition to hearing how this new decision support tool serves the needs of Gardens across the United States, the presentation will share key findings from Atlanta Botanical Garden use of the tool and evaluation of some of the key species examined. The key issues include: identifying invasive plant threats; easily sharing risk analysis data; evaluating cultivars on their own merits, not those of an invasive parentage; and the need for a platform for collaboration between horticulture and conservation communities in addressing invasive plant challenges.

Speaker Bio

Dr. Emily E. D. Coffey is VP for Science and Conservation at the Atlanta Botanical Garden. Coffey joined the Garden in 2017 to lead the Conservation and Research Department where she leads and collaborates with a team of conservation scientist and horticulturists to expand the activities in species conservation and recovery programs (both in the United States and internationally), assessments of the risk status of species, and habitat restoration, propagating and growing rare plants, and develop conservation initiatives for plants and amphibians. She received a B.S. in Biology from University of Missouri – St. Louis, a M.S. in Biodiversity, Conservation, and Management from University of Oxford – UK, and Ph.D. in long-term ecology and conservation biology from the University of Oxford –UK. As a post-doc she conducted research in the long-term ecology lab at The Biodiversity Institute – Oxford, UK. Before joining ABG, she was a faculty member of Biology at the University of North Carolina Asheville. Her research projects have included examining ecological baseline conditions in order to distinguish temporal vegetation transitions, identify potential drivers of the transitions, and evaluate their importance for conservation and management practices. For more than two decades the ABG has collaborated within diverse partnerships to conserve rare species from private and publically owned land throughout the southeastern U.S. Signature programs include restoration of pitcher plant bogs with The Nature Conservancy (TNC), US Fish and Wildlife Service, GA Department of Natural Resources (DNR), and Florida Park Service; head starting Carolina gopher frog with GA DNR, TNC and UGA; as well as native orchid restoration with the Florida Park Service, Florida Fish and Wildlife Commission.

Speaker: Adam Dattilo

“Vegetation Management on Tennessee Valley Authority Rights of Way: Transmission System Reliability and High-Quality Habitats”

Botanist, Tennessee Valley Authority

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Abstract:

The Tennessee Valley Authority (TVA) transmission system spans portions of seven states and has 16,200 miles of line. The rights of way (ROW) required for transmission lines need to be periodically re-cleared of woody vegetation, which can grow tall enough to disrupt the electrical system. TVA uses an integrated vegetation management (IVM) approach on its ROW that utilizes selective application of herbicide as a primary tool for controlling woody plant species, including fast-growing invasive tree species. The use of this approach has drastically reduced woody stem count on TVA ROW and has resulted in a shift towards native, herbaceous species on ROW across the system. These high quality habitats, where they occur, support over 300 known occurrences of federally and state listed rare plant species and diverse assemblages of pollinator species. The TVA application of the IVM model exemplifies how the conscientious use of herbicide can provide for the reliability of the transmission system and promote conservation of plants and animals on a landscape scale.

Speaker Bio:

Adam Dattilo is a botanist with the Tennessee Valley Authority and has worked on habitat restoration and rare species conservation in the southeastern United States for over 15 years. He graduated from the University of Kentucky with a MS in forestry in 2003 and began his professional career by managing revegetation and educational outreach for a large stream restoration project at Bernheim Arboretum and Research Forest just outside of Louisville, Kentucky. In 2005, he served as botanist for Mammoth Cave National Park where he focused on restoration of the American chestnut and plant community management using prescribed fire. In late 2006, he began his current position at TVA. He currently serves on the Tennessee Invasive Plant Council board and the Tennessee Rare Plant Advisory Committee. He has authored numerous papers on the topics of botany, ecology, and species restoration.

Presenter: Stephen F. Enloe

“Hacking up the Hack and Squirt Paradigm in Natural Areas with Milestone and Method Herbicides”

Associate Professor Agronomy Department/Center for Aquatic and Invasive Plants, University of Florida

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Abstract

Hack and squirt is a widely used individual plant treatment technique for woody invasive plant control across the US. However, hack and squirt approaches have historically been developed within a silvicultural context for suppression of undesirable hardwoods. This has inevitably led to wide variation in effectiveness for many difficult to control invasive trees. Two newer herbicide chemistries, aminopyralid (Milestone) and aminocyclopyrachlor (Method) have recently been tested on numerous woody species using a modified hack and squirt technique called incision point application. This presentation will cover current research on several woody invaders using this technique. The history of its development, methodology, efficacy, and potential flashback issues will be discussed.

Speaker biography

Dr. Stephen Enloe has been involved with invasive plant research and extension for the past 15 years. He has worked throughout the western and southeastern United States, including California, Colorado, Wyoming, Alabama, and Florida. He is currently an associate Professor at the University of Florida Center for Aquatic and Invasive Plants and his current research focus is divided between upland and aquatic invasive plant issues. Dr. Enloe earned his PhD at UC Davis in Plant Biology, a Master's degree in weed science from Colorado State University, and an undergraduate degree in Agronomy from NC State.

Presenter: Andrew Fraser

“PNW-IPC EDRR Citizen Science Invasive Plant Program”

PNW IPC EDRR Program Coordinator (Pacific Northwest Invasive Plant Council) Seattle, WA
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Abstract

After prevention, Early Detection Rapid Response (EDRR) is the most effective method to control the establishment and spread of new populations of invasive plants. Invasive species management is often constrained by time and resources. In 2012, the Pacific Northwest Invasive Plant Council (PNW IPC) developed an EDRR Citizen Science Invasive Plant Program in order to support county, state and federal management agencies working to locate and eradicate invasive species in Washington State. To date the PNW IPC's EDRR program has trained hundreds of Citizen Scientists to identify target EDRR species and conduct surveys in natural areas on county, state and federal public lands in Washington and Oregon State. We will present how our volunteers have made measurable progress in the effort to detect report and eradicate priority invasive plants from public lands since 2012. We will also present other metrics of success, challenges and lesson learned.

Speaker Bio

A Pacific Northwest native, Andrew Fraser spent his youth volunteering at invasive species pulls and tree plantings and working as a park docent along the Oregon Coast. He continued his love for the environment through college getting a M.S. in Restoration Ecology and Environmental Horticulture. Since getting his degrees, Andrew has worked and volunteered for various non-profit groups and the National Park Service recruiting volunteers, leading restoration events, and teaching environmental stewardship. In the spring of 2017, Andrew began work as the Early Detection Rapid Response Coordinator for the PNW-IPC.

Speaker: Anna Greis

“Invasive Species Success Stories across the Southern Region”

Forest Health Protection Program Manager, USDA Forest Service Southern Region Atlanta GA

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Abstract

The USDA Forest Service’s Southern Region Invasive Plants Program provides support to the 13 Southern state forestry and agricultural agencies stretching from Texas to Virginia. The diversity of landscapes across the South lead to a diverse group of plants targeted for control and unique programs tailored to state priorities. These invasive plant programs have had many successes over the years and this presentation will address the four main facets of those successes. These are: successful eradication efforts, landowner support programs, early detection and rapid response, and leveraging partnerships and volunteers to extend the value of support.

Speaker Bio

Anna Greis has worked for the USDA Forest Service Southern Region since 2011 as the Invasive Species Specialist and Forest Health Protection Program Manager. She has also served as the acting National Invasive Plant Program Manager for State and Private Forestry. Always interested in natural areas restoration, Greis graduated with a MS degree in Agronomy-Weed Science from the University of Florida, focusing her research on evaluating herbicides for invasive species control and native species restoration in Florida.

Presenter: Gwen Griffith, DVM, MS

“The Magic of Stormwater Retrofits and Native Plant Restoration”

Program Director, Cumberland River Compact

www.CumberlandRiverCompact.org

Abstract

Stormwater runoff from an office park was degrading Cathy Jo Branch, an important headwater stream that flows through the Nashville Zoo. The challenge was to restore the stream’s health with better stormwater management and at the same time restore the stream’s riparian zone to native prairie habitat for a new elk and bison Zoo exhibit. This collaborative project demonstrates the power of innovative stormwater practices coupled with restoration of native vegetation to bring back the health of a headwater stream ecosystem. The project also models the significant potential for stormwater retrofits as a strategy to improve water quality on a large landscape scale.

Speaker Bio

Dr. Gwen Griffith is a former veterinarian turned environmental educator and conservationist. She applies her science and health training to promote ecosystem health at the landscape scale for people, animals and natural systems. Gwen is a Program Director for the [Cumberland River Compact](http://www.CumberlandRiverCompact.org) where she focuses on watershed stewardship, sustainable building, and climate resilience. Gwen led the award winning EPA-funded Building-Outside-the-Box program and facilitated several high profile demonstration sites of green building, three of which individually received the TN Governor’s Environmental Stewardship Award for Building Green. Gwen’s background includes 20 years in veterinary medicine, 2 science fellowship positions with the U.S. Senate Environment Committee and U.S. Agency for International Development, and 4 years as Executive Director of the Tennessee Environmental Council. She received her D.V.M. degree from Auburn University College of Veterinary Medicine and her M.S. from Texas A&M University College of Veterinary Medicine.

Presenter: Todd Hagenbuch

“Radiarc® Sprayers and the Ultra-Low Volume Thinvert® Spray System”

Vegetation Management Specialist, Arborchem Products

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Abstract

Radiarc® Sprayers have been around for many years, but still are one of the best choices for broadcast weed/brush control for invasive plant managers. The Radiarc® Sprayers are equipped to spray as little as a 3-foot pattern all the way up to a 40-foot pattern. The Radiarc® Sprayer provides uniform coverage, consistent droplet size, and helps reduce drift. It can be arranged in a vertical or a horizontal position depending on what your project requires. The system can be equipped with an actuator so you can adjust the spray head on the fly. These work great on UTV's and can be paired with a Raven 440 to assure proper calibrated rates while traveling at varying speeds. Waldrum's Radiarc® Spray Heads and accessories are available through Arborchem Products.

The Ultra-Low Volume Thinvert® Spray System. The thin invert emulsion does not require 100% coverage on the leaf surface which allows for faster, more efficient applications with less end use product. Typical backpack sprayers applying water carrier range from 10-25 gallons per acre depending on target density. The Thinvert® System is generally 1/3 to 1/4 of the gallons used to treat the equivalent targeted area. That means typical Thinvert application with a backpack application vary from 3-7 gallons per acre. The greatest inefficiency in spray operation is filling time or non-spraying activities. If you can reduce your trips back to the nurse truck, you can be more productive in the field. The Thinvert spray pattern cannot be produced by just any nozzle, there are specialized Thinvert® spray nozzles that are found on Waldrum's Thinvert® Brush Gun for backpacks or the Widecast Thinvert® Spray Nozzle that works well on UTV set ups. Thinvert RTU serves as its own drift control agent and surfactant. The proprietary Thinvert RTU Carrier and Thinvert Pre-mixes (herbicides pre-mixed in Thinvert® RTU to your specification) are available through Arborchem Products.

Biography

Todd Hagenbuch graduated from Penn State University with a B.S. in Forest Science. Throughout his career he has focused on Right of Way weed management, working with contractors, DOT's, Utilities, and Forestry Applicators all over the Mid-Atlantic and Mid-West. Todd is currently the vegetation management specialist for Arborchem Products, the makers of the Radiarc Sprayers and the Ultra-Low Volume Thinvert® Spray System.

Presenter: Jason Hanley

“The Hawaii and Pacific Islands Invasive Species Strike Team Model – An Invasive Species Tool to Protect National Wildlife Refuges”

Invasive Species Strike Team Leader, U.S. Fish and Wildlife Service, National Wildlife Refuge System, Waialua, Hi
tulip_548@hotmail.com, 808-224-0510

Abstract

Within the National Wildlife Refuge System (NWRS), the economic cost of managing non-native species has been estimated in excess of \$336 million and is the fastest growing component of the Refuge Operations Needs System. Invasive species management has resulted in tremendous strain on ever decreasing annual refuge operations budgets and staffing.

To offset the tide, Congress appropriated funds in 2004 for the creation and implementation of U.S. Fish and Wildlife Service (USFWS) Invasive Species Strike Teams (ISST), following the example of Exotic Pest Management Teams, a similar program implemented by the National Park Service in 1999. The primary function of the ISSTs is to provide a mechanism for early detection and rapid response (EDRR) to incipient infestations of highly invasive species in an effort to achieve eradication.

Established in 2006, the Hawaii and Pacific Islands Invasive (HIPI) ISST program accomplishes EDRR projects using inventorying and monitoring techniques to detect, control, treat, and eventually eradicate invasive species. The ISST also provides technical expertise and support to NWRS staff for prioritization of invasive species targets and methods of control using Integrated Pest Management principles. In 2004, the Department of Interior joined forces with the University of Hawaii to establish the Pacific Islands Cooperative Ecostudies Unit (CESU) to emphasize working in collaboration among Federal agencies, universities, and partner institutions. The agreement has led to the creation of invasive species committees and watershed partnerships, which the HIPI ISST program uses extensively throughout the HIPINWRC to address invasive species priorities focused on protecting Hawaii's ecosystems from invasive species encroachment.

Since 2008, CESU cooperators have inventoried over 5,000 acres of Refuge lands in the HIPINWRC and have been responsible for the early detection of many new invaders and outlier populations.

Lastly, the HIPI ISST conducts outreach and education by funding internships through programs such as the Hawaii Youth Conservation Corps and Pacific Internship Programs for Exploring Science to educate young adults about invasive species and provide a pathway to employment in conservation jobs. In 2016, a total of nine interns were funded through the program.

In 2016, personnel from HIPI ISST program surveyed 1,115 acres across five national wildlife refuges. A total of 17 acres and 16,285 stems were treated.

Speaker Bio

Jason Hanley is the Invasive Species Strike Team Leader in Hawaii and the Pacific Islands for the National Wildlife Refuge System Program within the U.S. Fish and Wildlife Service. He received a B.S. in Marine Science from Richard Stockton State College. Jason has focused on prevention, eradication, early detection and rapid response, and control of invasive species for over 14 years.

Presenters: Joel Helm and Matt Moran

"Securing DoD Mission efficiencies and biodiversity by Aggressively Managing Invasive Species on Remote Pacific Islands"

Joel Helm: Natural Resources Program Manager, United States Air Force, Pacific Air Forces Regional Support Center, 611th Civil Engineer Squadron, joel.helm.1@us.af.mil

Matt Moran: Natural Resources Specialist, Office of Surface Mining Reclamation and Enforcement

Abstract

Wake Island Airfield is located approximately 2300 miles from the Island of Oahu and is currently managed by the United States Air Force (USAF), more specifically the Pacific Air Forces Regional Support Center (PRSC). The airfield is located on Wake Island, however the USAF managed property extends and includes emergent portions of both Peale and Wilkes Islands. The atoll's overall emergent size amounts to approximately 740 hectares across the three aforementioned islands. While managed by the predecessor Command, the 15th Wing out of Hickam Air Force Base, the islands arrestor tape system was compromised by invasive rodents. Military aircraft were grounded as a result of this invasive species interaction and arrestor barrier repair parts were flown out immediately from Joint Base Pearl Harbor Hickam. This unique mission impact identified a military need for the complete removal of both the Polynesian Rat (*Rattus exulans*) and Asian House Rat (*Rattus tanezumi*). In 2012, the PRSC, in conjunction with the United States Fish and Wildlife Service and private contractors, conducted an island wide rodent eradication effort, using both aerial and ground based baiting. The 2012 effort successfully removed *Rattus tanezumi* from the entire atoll, however, complete eradication was not achieved and today, *Rattus exulans* still persists on Wilkes and Wake Islands. The successful removal of both rat species from Peale island in 2012, has stimulated the execution of follow on restoration actions. Peale Island restoration actions have included herbicide treatments targeting *Casuarina equisetifolia*, *Opuntia sp*, *Agave americana*, and *Leucaena leucocephala*. Concurrent with focused invasive plant removal actions in 2016 and 2017, a native plant nursery was erected in 2017 and the rearing of young native plants has since ensued. This presentation will summarize 1) the complexities of the 2012 Rodent Eradication Project, 2) follow on efforts to remove the persisting species *Rattus exulans*, and 3) Peale island restoration efforts conducted post rodent eradication.

Speaker Bio:

Joel Helm is the current Natural Resources Program Manager for the Pacific Air Force Regional Support Center's 611th Civil Engineer Squadron. His primary role for the United State Air Force is to execute and manage environmental projects depicted within Integrated Natural Resource Management Plans for remote airfields and radar sites in the State of Alaska, Hawaii, and the unincorporated territory of Wake Atoll. Joel has spent the last 15 years supporting federal, state, and private entities with the management of various natural resources in Japan, Canada, and his personal favorite, the United States of America.

Speaker Bio

Matt Moran is a Natural Resources Specialist for the Office of Surface Mining Reclamation and Enforcement. He received an M.S. in Environmental Science at Pace University and a B.S. in Biological Science at Florida State University. Matt has worked for the OSMRE, USAF, USFS, NPS for the last 20 years focused on wildlife management, protection of Threatened and Endangered Species, restoration/reclamation of federal lands, and invasive species management in Tennessee, Alaska, Wyoming, and the Pacific.

Presenter: Jennifer Hillmer

“Using strike team treatment records to measure progress, find maintenance thresholds, and save the planet.”

Invasive Plant Coordinator, Cleveland Metroparks, Cleveland, OH

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Abstract

Invasive plant management plans recommend the use of action thresholds for the initiation of treatment. These measures derive from agricultural determinants of detection, damage, and economic thresholds. There are few examples of management thresholds for invasive plants of natural areas, however, due to the complexity of natural systems and inadequate sampling methods across invasive ranges. In the absence of quantitative ecological monitoring, invasive plant managers still have the means to track thresholds of effort. The legally-required, routine recordkeeping of pesticide use, can be adapted to track progress and determine action thresholds. When local extirpation of invasive species is unlikely, the maintenance of invasive populations at low densities in perpetuity becomes a management objective. Using detailed treatment records from 2009 to 2017, we compare the relative effort of invasive plant crews across a set of sites for several target species. We look for distinctive thresholds of effort, measured by the cost of treatment, that could indicate a need to adjust return intervals, change tactics, or stay the course. We are examining patterns of effort across reproductive strategies, and expect to discern seasonal trends.

Speaker Bio

Jennifer Hillmer has over twenty years of experience in natural areas stewardship and invasive plant control. Her primary area of interest is building organizational and regional capacity for invasive plant detection and control, through volunteer and staff training, weed inventories, and management planning. Currently the Invasive Plant Coordinator at Cleveland Metroparks, Jennifer helped establish and directs a district-wide management program to find, evaluate, prioritize, and remove invasive plants from 23,000 acres of parkland. She is a founding partner and active participant in the Crooked River CWMA in northeast Ohio. She has worked for the Ohio Department of Natural Resources, The Nature Conservancy, and The Holden Arboretum in Kirtland, Ohio. As a founding board member of the Ohio Invasive Plants Council and the Midwest Invasive Plant Network, she has worked regionally to promote cooperative weed management areas, develop educational material about invasive plants, and connect professionals, volunteers, and landowners across the Midwest to effectively combat invasive plants.

Presenter: Terri Hogan

“The National Park Service’s Exotic Plant Management Teams”

Invasive Plant Program Manager, The National Park Service

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Abstract

Mandates for the National Park Service (NPS) to manage invasive species are found in law and in NPS policy. Through the Natural Resource Challenge of 2000, the funding and structure necessary to implement a program of invasive plant management was created. It included direct funding to parks as well as funding for the Exotic Plant Management Team (EPMT) Program. The EPMT Program started testing the concept with a small number of EPMTs to provide rapid response and management of invasive plants in clusters of parks, focus on specific target species, and, where feasible and necessary, develop and implement revegetation techniques specific to the targeted species. Today there are 17 teams within the NPS. Several of these remain similar to the original model of a self-contained, traveling team. However, over the years, many teams have evolved to take advantage of resources available to them within their networks and to adjust to a stagnant budget and restrictions on travel. Currently, no two teams operate exactly alike. Models include a continuation of the original traveling team model, providing grants to parks, contracting out on-the-ground work, and collaborating with adjacent Federal, state, county, and tribal partners. Each model has benefits and draw-backs. Other models and opportunities are also available to pursue and the NPS is exploring several options.

Biography

Terri Hogan is a plant ecologist and the national lead for the NPS Invasive Plant Program that addresses threats posed by invasive plant species to NPS resources. In this capacity, she oversees the NPS Exotic Plant Management Team program that provides “boots-on-the-ground” invasive plant management support and expertise to parks. She also has natural and cultural resource management experience in parks. Terri has worked on landscape scale collaborative efforts, is a cofounder of the Tennessee Cooperative Weed Management Area (TN CWMA), and served as president of the Tennessee Exotic Pest Plant Council (TN-EPPC) for four years.

Presenter: JAMES V. HUNT. (JIM)

“Invasive Species Management in an Affluent Urban Area”

Mayor, City of Belle Meade, TN

Speaker Bio

Jim Hunt has served as a Commissioner of the City of Belle Meade since 2008 and as its Mayor since 2012. He attended Battle Ground Academy and Vanderbilt University. He and his wife Sally Beasley Hunt, formerly of Franklin have been married for 53 years. Jim is a retired Captain in the US Navy. He has two sons, Jim Jr. and Allan. Jim Jr lives in Belle Meade with his wife, Betsy and their three children. Allan, lives in Oak Hill. Jim retired in 2011 after selling the business he founded in 1981. Jim Jr. working in the company since 1995, purchased control of that business, Benefit Communications Inc. During his active years in business, Jim earned numerous insurance awards: Local, State and National, including election to the Tennessee Insurance Hall of Fame. In his earlier years, Jim served on multiple boards and held numerous leadership positions in community, civic and business organizations, including presidency of The Nashville Area Junior Chamber of Commerce, a co-founder and President of Buddies of Nashville (now Big Brothers/Big Sisters of America) and President of the American Cancer Society of Davidson County, Jim was a participant in the initial year of Leadership Nashville in 1976 and is an active member of its Alumni Association.

Jim's passion for the past 22 years has been the Nashville Zoo. He served as chairman of the Zoo's Board of Directors for eight years from 2000-2006 and 2010-2013 and currently serves on the Zoo's advisory board. Jim and his family foundation has funded two exhibits, Lorikeet and Kangaroo, and is a major donor in the new veterinarian hospital. Jim has also served as president of The Downtown Exchange Club (now Economic Club of Nashville) in 2007-2008. He currently serves on the Advisory Board of Big Brothers/Big Sisters of Middle Tennessee and a Board Member of the Belle Meade Plantation, Operation Stand Down Tennessee and Cheekwood Botanical Gardens. At Cheekwood, he serves as Vice Chairman of the Board and will become its board chairman in 2018.

Presenter: Sheilah Kennedy

“Portable Invasive Species Rinse off Reclaim and Decontamination System”

Owner/Operator S-K Environmental, Okanogan, Washington

shekennedy@hotmail.com, <http://s-k-enviro.com>, 509-322-6909

Abstract

S-K Environmental’s Portable Invasive Species Rinse off Reclaim and Decontamination System provides the strongest prevention tool available utilizing the specific DOTWASH System components and the only weed wash/decontamination system that has incorporated the Electro-static system, (ESS) providing 95-98% seed elimination.

Speaker Bio

Sheilah has been involved with all aspects of invasive species. 15 Years as Noxious Weed Control Coordinator for Okanogan County, Washington State. Developing integrated invasive species programs and projects between private landowners, State, Federal and Tribe. Past President and previous Board Member for North American Weed Management Association (when it was NAWMA). Coordinated the first Weeds Across Borders established successful working projects between Okanogan County and two Weed Districts in Canada. Working to educate State and Federal Legislators is always a top priority, testifying several times before Congressional Committees in WA DC as well as State Legislative work sessions and Committees. Utilizing the experience gained over the years, I shifted towards research, development, providing effective, efficient and quality prevention equipment to prevent the introduction of invasive species.

Please visit my webpage <https://s-k-enviro.com> to review the various projects, work and scientific decontamination testing projects with Dr. Craig Ramsay, APHIS and Colorado State University.

Presenter: Angela Kowalzek-Adrians

“Managing Extensive, Well-established Invasive Phragmites in Brown County, Wisconsin: Taking an Unmanageable Problem and Making it Manageable”

Natural Resources Planner, Bay-Lake Regional Planning Commission

AngelaKA@baylakerpc.org, (920) 448-2820, Ext. 106, Green Bay, WI

Abstract:

Dense invasive Phragmites has covered large swaths of the Green Bay coastline, and shorelines of tributaries Brown County, Wisconsin for over 25 years. Phragmites not only impacts the coastal wetlands of the area, but has significantly impacted public access, recreation and property values, and fire risk.

In an effort to manage invasive Phragmites, the Bay-Lake Regional Planning Commission addressed the issue through chemical and mechanical treatments, partner collaborations, and education and outreach. With two years of funding from EPA GLRI, invasive Phragmites was targeted along the shorelands of the lower Green Bay of Lake Michigan, and along tributaries to Green Bay in Brown County, Wisconsin.

Invasive Phragmites was inventoried using multi-spectral aerial imagery, and nearly 1,000 acres was chemically treated in fall 2016, followed by mowing of 550 acres. Approximately 600 acres were retreated in fall 2017, followed by mowing of nearly 200 acres. Monitoring of treatment areas is being conducted under the Great Lakes Phragmites Adaptive Management Framework (PAMF).

This project accomplished the management of 2,200 acres of very dense, extensive invasive Phragmites that has been well established in the area for over 25 years. It took an unmanageable problem for municipalities and private landowners and made it manageable, and provided an opportunity for communities to see the value in a visible shoreline. Local partner collaborations, and education and outreach has developed around this issue. Those collaborations will now be counted and further fostered in order to support continued management.

Speaker Bio:

Angela Kowalzek-Adrians is the senior Natural Resources Planner for the Bay-Lake Regional Planning Commission, an agency that has been providing technical assistance to county, municipal, and tribal governments in northeast Wisconsin since 1972. She is responsible for management of the environmental and hazard mitigation programs at the Bay-Lake Regional Planning Commission. For the past 15 years, Angela has worked with local and tribal governments, and state and federal agencies to promote sustainable planning, smart growth initiatives, and protection and restoration of Lake Michigan coastal resources. Angela holds a Master's of Science degree in Environmental Science and Policy with an emphasis in Environmental Planning from the University of Wisconsin - Green Bay.

Presenter: John Krupovage

“Challenges in Invasive Species Control in Urban Natural Area Restoration”

Natural Resources Manager, Civil Engineering Directorate

Tinker Air Force Base, Oklahoma

john.krupovage@us.af.mil, (405)739-7074

Abstract

Converting urban land to natural prairie and woodland systems within an active urban and industrial context presents many unique challenges. Cultural, economical, ecological, institutional, and other considerations influence restoration and invasive species control strategies. Challenges and solutions to managing Tinker Air Force Base's natural area network will be discussed.

Speaker Bio

John Krupovage is the Natural Resources Program Manager for Tinker Air Force Base, a 5,500-acre military industrial complex in central Oklahoma. It is the state's largest single-site employer and is 90% developed with over 700 buildings and two 10,000-foot runways.

For the past 29 years, John has managed the installation's urban ecosystem for the betterment of the warfighter, surrounding community, and the environment. The program's primary goal has been to establish and maintain a positive balance between military readiness and natural resources stewardship. His responsibilities have included fish and wildlife management, urban forestry, agricultural outleasing, invasive species control, wetland/floodplain protection, and green infrastructure restoration.

John received his B.S. degree in biology and M.S. degree in wildlife science from New Mexico State University.

Presenter: John Lampe

“Novel electronic dispenser for precision applications of herbicide sprays and foam”

Founder of Green Shoots, LLC, Saint Paul, Minnesota

john@greenshootsonline.com

Abstract

This presentation focuses on a new ultra-low pressure electronic dispenser for herbicides. Ultra-low pressure (below 15 psi) has been used in the commercial spray coatings industry to increase “transfer efficiency,” i.e., increase the amount of spray material that adheres to the target as opposed to the amount released into the broader environment. The new ultra-low pressure electronic dispenser for herbicides releases slower spray drops of a larger, more uniform size. The new dispenser also can be used for creating herbicide foams which can be dabbed and wiped on target weeds. This new technology can increase target adhesion; reduce spray drift and off-target harm; and decrease power demands on the dispenser.

Speaker Bio

John founded Green Shoots, LLC, in 2011. Green Shoots develops and markets precision devices for control of invasive plants. John has presented at numerous conferences: Upper Midwest Invasive Species Conferences, Midwest-Great Lakes Society for Ecological Restoration Chapter Meetings, and North Central Weed Science Society Meetings. He is a licensed pesticide applicator. For more than two decades John has helped restore ecosystems burdened with invasive species – much of that work has been as a volunteer.

Speaker: Sarah Lowe

“The Role Botanical Gardens Play in Invasive Plant Management”

Botanical Garden & Horticulture Manager, Cheekwood Botanical Gardens, Nashville, TN
slowe@cheekwood.org, 615.353.2159

Abstract

Botanical Gardens serve as a resource to our communities as a living museum or library of what can or cannot be grown in a region. Take a deeper look at what Botanical Gardens like Cheekwood are doing to manage invasive plants. From educating our docents, volunteers, members, and visitors as to who the invasive plants are to what you can do to working in Botanical Gardens to remove the invasive plants. This is an important role of a Botanical Garden and one whose importance is in spreading the word about invasive plants to our communities.

Speaker Bio

Sarah Lowe is the Botanical Garden and Horticulture Manager at Cheekwood. She manages and oversees the botanical garden and horticulture operations of the 55-acre property, including development and installation of Cheekwood's spectacular annual displays, and supervising the professional staff and volunteers that ensure Cheekwood is beautiful year round. After graduating from Michigan State University with a Bachelor of Science in horticulture, she moved to Nashville, Tennessee. Sarah joined the Cheekwood staff in April 1999, working as a gardener in the Howe Garden. She loves working at Cheekwood and connecting people and plants.

Presenter: Cadance Lowell, PhD and Jon Jackson

“NatureZap DE Technology” “Natural area pest plant control with Directed Energy -- Keep aliens away!!”

Cadance Lowell, Central State University Department of Agricultural Sciences

John Jackson, Global Neighbor, Inc

Biographies

Dr. Cadance Lowell is a Professor and Chair of Agricultural Sciences at Central State University, Wilberforce, OH. As part of the land-grant mission of the University, Dr. Lowell maintains a research program in non-chemical weed control. Working with Global Neighbor, Inc. researchers and students are using directed energy as an integrated pest management strategy to kill weeds with non-ionizing light with location and duration controlled by integrated sensors and robotics. Directed energy has shown promise in non-specific vegetation control including weeds such as dandelions, crabgrass, ragweed, and Japanese Knotweed. Testing in vegetation control in woodlots and fields have shown promise in controlling herbaceous and small woody undergrowth. Dr. Lowell received a B.S. in Botany from Duke University, a M.S. in Botany from the University of Florida, Gainesville, and a Ph.D. in Horticulture from the University of Florida, Gainesville. She did post-doctoral work with the USDA in Peoria, IL as a biochemist in soybean oligosaccharide carbon partitioning before joining Central State University.

Jon Jackson is a startup experienced engineer/entrepreneur who founded Global Neighbor, Inc (GNI) where they introduced chemical free weed control solutions, announced the introduction of the first SmartSpray that detects and automatically sprays weeds with organic or traditional herbicides while the user mows the lawn. With startup Greenfield Solar, Jon led the engineering effort to introduce high concentrated solar power (HCSP) with field sites in Taiwan and Ohio. He is a hands on engineer with an MBA whose 34 years of experience includes small, medium and large companies. GNI has received 3 SBIR's to progress their version of directed energy for plant control. Prototype systems include automated detect and treat small herbaceous and woody undergrowth, manually operated hand held units with operating distances of inches as well as large scale units operating over many feet. Additionally, ongoing work is showing promise for controlling diseases in tree bark, controlling citrus greening in certain conditions, aquatic invasive plant and algae control.

Presenter: Steven Manning

“Introduction to the newest Tools and equipment for Managing Invasive Species”

President, Invasive Plant Control, Inc. www.invasiveplantcontrol.com

steve@ipc-inc.org, 615-969-1309

Abstract:

Steven Manning will open the toolbox and outline examples of effective treatments for integrated management of invasive plants including herbicide application methods, manual, mechanical and cultural control. Steve will highlight the good the bad and the ugly learned from more than 25 years of on the ground experience controlling invasive plants in the United States. This includes equipment highlights, effective and ineffective selective and non-selective control methods, the consequences of proper hiring practices, and associated costs.

“The Power of Art Over Argument”

Abstract:

Reaching the non-scientific world in the quest to educate society on the impacts of invasive species can be a difficult task. Most scientists don't have the background or knowledge to effectively reach people in a manner that truly changes attitudes. Many years ago Paul Harvey coined the phrase “Art over Argument” noting that if you want to convince the unconvinced, don't call to arms, call to art. Artists are time proved experts at transplanting hearts into the heartless. Steven Manning will take this idea and show how by infusing various forms of art into invasive species educational campaigns land managers can have a long term impact on the non-scientific community and their unfamiliarity about invasive species.

Presenter Bio

Steven Manning has spent the past 25 years working on invasive species. He is founder and President of Invasive Plant Control, Inc. (IPC). IPC was created to extend internationally its dedication to the control of invasive species utilizing a revised IPM approach and has successfully controlled hundreds of invasive species for a wide variety of land managers including federal, state, municipal and private landowners throughout the world. Mr. Manning also designs and implements multiple training courses and workshops worldwide with topics ranging from “Invasive Species in Ports of Entry” to “On the Ground Control Techniques.” IPC invests heavily in educational and awareness activities annually. Mr. Manning has been an instructor for the USFWS's National Conservation Training Center's Field Techniques for Invasive Plant Management Course for the past ten years. Mr. Manning is also heavily involved with local, state and international industry development projects including Volunteer Based Early Detection Networks. In 2012 IPC introduced a suite of software and web based tools dedicated to environmental needs. Manning is co-author to, Miller, J.H.; Manning, S.; Enloe, S.F. 2010 “A field guide for the management of invasive plants in southern forests” was published by the U.S. Department of Agriculture Forest Service, Southern Research Station. (<http://www.srs.fs.usda.gov/pubs/36915> <http://wiki.bugwood.org/Invplantmgmt>). He is the acting President of the Pacific Northwest Invasive Plant Council Current Vice President of the Mid Atlantic Invasive Plant Council, recent co-chair of the NMFWA's Invasive Species Working Group and serves on the board of the North Carolina Invasive Plant Council.

Presenters: Derrick Mathews & Josh McEnany

“Camp Pendleton and the Challenge of Treating Invasive Weeds”

Derrick Mathews, Restoration Ecologist, Baton Rouge, La 225-757-8088,
dmathews@gsrcorp.com

Josh McEnany, Environmental Resources Manager, Baton Rouge, LA 225-757-8088
Joshm@gsrcorp.com

Gulf South Research Corporation

Abstract

Multiple issues arise when trying to conduct base-wide invasive species management throughout Marine Corp Base Camp Pendleton (MCB Camp Pendleton), with the size of the base (125,000 acres) only being one factor. Some of the challenges of treating invasive weeds on MCB Camp Pendleton include access requirements (military training or endangered species) and the fact that MCB Camp Pendleton is located in southern California. The climate of southern California provides ideal conditions for plants to grow and reproduce and there is a plethora of ways for non-native seeds to move onto the base. In this presentation Gulf South Research Corporation will discuss some of the invasive species and habitat management activities that take place on-base and the issues that arise during each. We will focus on one of the main riparian systems on-base the Santa Margarita River, a coastal dune habitat enhancement project, and how the base is implementing its “Early Detection Rapid Response” program.

Speaker bio

Mr. Mathews has a Bachelor’s degree in Environmental Biology from Radford University and over nine years of experience with a variety of botanical and wildlife surveys, both in professional and academic settings. He has participated in natural resource projects throughout the arid west and in the forests of the southern Appalachians. His main focus has been on restoration and Mr. Mathews possesses a strong knowledge of the flora of the western desert regions. He has a large variety of experience with habitat restoration with emphasis on post-wildfire, overgrazing, and invasive species removal.

Presenter: Jon Morton

“Utilization of Unmanned Aerial Systems (UAS) for Vegetation Mapping and Restoration”

Biologist, U.S. Army Corps of Engineers, Invasive Species Management Branch, Stuart, FL
(904) 233-0852, Jon.m.morton@usace.army.mil

Abstract

The Jacksonville District of the USACE has been exploring the use of Unmanned Air Systems (UAS) since 2005 to gain spatially accurate, very high-resolution imagery (~3cm) for the detection and monitoring of select invasive species and to support ecosystem restoration efforts. Now that the imagery acquisition part of the UAS program is fully operational, the focus is on assessing and quantifying the data within the images for a variety of different invasive species and vegetation mapping projects. This presentation will give a background of the Corps' use of UAS and some of the current technologies and challenges associated with image acquisition, processing, and analysis.

Speaker Bio

B.S. Wildlife Science, Mississippi State University; Has worked for the Invasive Species Management Branch of USACE Jacksonville District since 2005 on various invasive species and wetland restoration projects throughout Florida and the southeastern U.S. Interests with UAS include mapping and analysis of natural area communities; invasive species detection and monitoring; and exploring emerging technologies in auto-classification of high resolution imagery.

Speaker: Todd Neel

“Integrating New Tools and Technologies; Pesticide Policy, and Risk Assessment in the U.S. Forest Service”

Intermountain and Northern Regions, State & Private Forestry, U.S. Forest Service, Missoula, MT

toddaneel@fs.fed.us , 406-329-3133

Abstract:

Decisions regarding the application of pesticides to National Forest lands are driven by a combination of best available science; U.S. Forest Service (USFS) policy, and the National Environmental Policy Act (NEPA). For pesticides commonly used by the USFS in its management activities, Human Health and Ecological Risk Assessments (HHERAs) are prepared. In these documents, the process of risk assessment is used to quantitatively evaluate the probability (i.e. risk) that a pesticide use might pose harm to humans or other species in the environment. The USFS incorporates relevant information from the HHERA into environmental assessment documents prepared for pesticide projects, in order to guide decision-making and to disclose to the public potential site-specific environmental effects. Currently the USFS makes 48 HHERAs available to National Forests and their partners.

The USFS also supports the development of new pesticide products and registrations through the USFS Pesticide Impact Assessment Program (PIAP), which started as one element of the National Agricultural Pesticide Impact Assessment Program (NAPIAP), a USDA-wide effort to develop pesticide use and effects data, and to fill data gaps in support of EPA registrations. When NAPIAP was disbanded in 1998 the Forest Service saw a continuing need to develop pesticide use and effects data to support USFS programs and NEPA analysis of forest management projects involving pesticide application. The mission of the PIAP is to support studies that develop use and effects data for priority forestry pesticides. PIAP studies generate data and findings in support of continued registration by the U.S. Environmental Protection Agency of forestry uses for pesticides.

Presenters: Anne Pearce

“ISMTrack for Invasive Species Management: Case Studies from Wisconsin”

Anne Pearce: Wisconsin First Detector Network Coordinator, University of Wisconsin-Madison

Mark Renz: Extension Weed Specialist/Associate Professor, University of Wisconsin Extension/University of Wisconsin-Madison

anne.pearce@wisc.edu, 608-262-9570

Abstract

ISMTrack is a cloud based software system integrated with EDDMapS that allows users to track invasive species infestations and management activities at their sites. This presentation will illustrate the use of ISMTrack in Wisconsin through case studies from a county parks system, an urban nature preserve, and private woodland owners

Over two thirds of Wisconsin’s natural areas are privately or locally (county, municipal) owned. This poses challenges for natural resources professionals and researchers trying to detect and eradicate invasive species at a state or regional level. In Wisconsin, the Wisconsin First Detector Network works to improve knowledge of invasive species locations in the state by training professionals, agency staff, and volunteers to report invasive species using EDDMapS and the associated Great Lakes Early Detection Network app. Through these efforts, thousands of invasive species reports have been submitted annually. Although the reports improved knowledge of invasive species distribution throughout the state, reports on private lands were limited. To improve reporting, we modified existing invasive species management software (IPC-Connect) and gave access to land. ISMTrack is a cloud based software system that allows users to report invasive species locations via EDDMapS or associated apps and assign management activities, track those activities over time, and generate reports. Launched in 2016, ISMTrack is now being used in areas where invasive species reports were previously not recorded. It has not only improved the management activities of the organizations, but has also improved our understanding of invasive species distribution at a state and regional scale. This presentation will illustrate the use of ISMTrack in Wisconsin through case studies from a county park system, an urban nature preserve, and private woodland owners.

Biography

Anne Pearce coordinates the Wisconsin First Detector Network, a citizen science network that empowers people to take action against invasive species through monitoring, management, and outreach. She supports WIFDN’s volunteer citizen scientists and develops and facilitates online and in person trainings. She holds an M.S. in Water Resources Management from the University of Wisconsin-Madison, in addition to a Graduate Certificate in Environmental Education from the University of Minnesota-Duluth. Prior to joining WIFDN, Anne spent several years teaching environmental education and working on conservation projects across the country.

Presenter: Curtis Pearce, Uprooter Founder and CEO

“Love the Lever: Multiplying the Force Against Invasive Plants”

Owner/Operator, Uprooter

541-226-9872, TheUprooter.com

Abstract

US Patent holder and manufacturer of Uprooter, Curtis Pearce, will be speaking on the benefits and effectiveness of using mechanical methods in removing invasive plant species. Using leverage tools can multiply your individual strength for success in mechanical removal and reinforce community participation. He'll share his personal experience with organizing a volunteer Weed Wrangle work event in Oregon last spring, engaging community partners to take action against the problem of Scotch broom. Join Curtis on Friday for a field demonstration and uproot some of Nashville's invasives!

Biography

Curtis Pearce, the owner of Uprooter, launched his product in January 2014 following the Weed Wrench opt-out. Having spent 3 years working for Tom Ness at The Weed Wrench Company, he learned what improvements would better meet the needs of customers and developed his patented woody plant pulling tool, the Uprooter. Proud to be the manufacturer of a USA made product, Curtis and his wife build Uprooters to be shipped world-wide. Curtis has worked in the manufacturing industry for over 15 years and holds an Associate Degree in Industrial Welding Technology. Curtis is passionate about educating the community on land stewardship, removing invasive plant species, and restoring native landscapes. He and his wife have enjoyed partnering on local Let's Pull Together events, hosting a Weed Wrangle, and creating the annual Riparian Restoration rafting trip on the Wild & Scenic Rogue River.

Presenter: Tony Pernas

“Invasive animals in the Everglades, where do we go from here!”

Supervisory Botanist, Big Cypress National Preserve, National Park Service, Ochopee, Florida
tony_pernas@nps.gov, Cell: (305)815-8849

Abstract

Invasive animals such as Burmese pythons, Argentine black and white tegus, bullseye snakeheads and Nile monitor lizards are potential game changers for the Everglades. They are drastically altering the native fauna of the Everglades and can potentially lead to the collapse of the ecosystem.

The Everglades Cooperative Invasive Species Management Area (ECISMA), was established in 2006 and is a formal partnership of federal, state, and local government agencies, tribes, individuals and various interested groups that manage invasive species within the greater Everglades. ECISMA partners have developed a wide range of initiatives and management efforts to deal with invasive animals in the Everglades including trapping, shooting, amnesty programs, contests and monetary incentive programs. The presentation will give an overview of the invasive animal problem in the Everglades and discuss methods that have been utilized By ECISMA partners to management this serious threat.

Speaker Bio

My career has focused on invasive plant and animal management. I started my career in 1988 as a Resource Management Specialist with the US National Park Service at Big Cypress National Preserve in south Florida. From 1999 to 2000 I worked as the Supervisory Botanist for Everglades National Park. In 2000 I was instrumental in establishing the Florida/Caribbean Exotic Plant Management Team. I have served as the team’s coordinator since its inception until August, 2015. In August, 2015 I began my current position as Supervisory Botanist of Big Cypress National Preserve.

From 1998-2000 I was President of Florida Exotic Pest Plant Council and of the National Association of Exotic Pest Plant Councils. Since 2006, I have been the Co-Chair of the Everglades Cooperative Invasive Species Management Area (ECISMA).

Presenter: Rob Richardson

"Mapping and management of hydrilla: an overview of successful programs in North Carolina"

Professor and Extension Specialist, North Carolina State University, Aquatic and Noncropland Weed Science, Co-director NCSU Weed Science Program, Crop and Soil Science Department

North Carolina State University, Raleigh, NC

(919) 515-5653, rob_richardson@ncsu.edu

Abstract:

Hydrilla is the most economically damaging aquatic weed in the United States. Two biotypes currently infest the US, a dioecious biotype which is prevalent in the Southeastern US and a monoecious biotype which has invaded North Carolina to New York and westward. Monoecious hydrilla has invaded many waterbodies in North Carolina. Initial infestations were in small impoundments (e.g. 300 to 500 A lakes) and it then spread to large Piedmont Reservoirs (e.g. 4,000 to 40,000 A). Over the last 10 years, hydrilla has invaded more dynamic systems such as free flowing rivers. Recent advances in data processing have allowed use of over the counter fish finders to utilize hydroacoustic technology to identify submersed vegetation and create density heat maps in rapid fashion. Data may be processed and basic maps created in less than 24 hours from completion of data collection. The ability to survey, detect, and map hydrilla in rapid fashion has allowed for more efficient management programs. Hydrilla management in North Carolina has typically been achieved through use of triploid grass carp, aquatic herbicides, or combinations of the two methods. Three successful management programs will be discussed, including ongoing hydrilla management in the free flowing Eno River.

Speaker Bio:

Dr. Richardson has responsibilities for aquatic and non-cropland weed science research and extension at North Carolina State University. Rob has been in his current position at NCSU for 12 years and serves on numerous invasive plant advisory committees across the US. He has served as President of the Aquatic Plant Management Society, North Carolina Vegetation Management Association, South Carolina Aquatic Plant Management Society, and North Carolina Weed Science Society. He also currently serves on the Weed Science Society Board of Directors and in the Plant Work Group for the Council for Agricultural Science and Technology.

Presenter: Zach Richardson,

“Grazing in Cities: An Overview of the Environmental, Economic, and Social Implications of Grazing Urban Landscapes”

Chief Executive Shepherd and Founder of Nashville Chew Crew, Nashville, TN

Contact Info: zachabides@gmail.com

Abstract

In urban areas across America, there exists an abundance of overgrown, neglected landscapes. This presentation introduces targeted grazing as an urban landscape management tool, and justifies its legitimacy in terms of its environmental, economic, and social implications."

Here's a brief bio:

Speaker Bio

A Nashville native, Zach Richardson received a bachelor's and master's degree in Landscape Architecture at the University of Georgia, focusing on ecological restoration and targeted grazing in urban areas. Following academia, Richardson worked for a reputable grazing operation in Atlanta, Georgia, where he learned the ins-and-outs of working dogs, husbandry, and the logistics of moving hundreds of sheep throughout a large city. In 2016 Richardson moved back home to start the Nashville Chew Crew, an ecologically-sensitive, cost effective, and socially engaging option for landscape management."

Presenter: Johan Kristian Rud

“Invasive plant species management - Leading the non-chemical way”

Founding owner, Heatweed Technologies – The weed control company
Agronomist, NMBU, MSc Mechanical Engineering, NTNU
Johan.Rud@heatweed.com, (+47) 99960 9999

Abstract

Heatweed Technologies is Europe’s leading supplier of technology and machinery for non-chemical weed control in public spaces and is represented in 15 different countries and counting. Heatweed’s vision is to set new standard for non-chemical weed control in the green sector. The first patent for hot water weed control was established in the US in 1884, but it took more than 100 years before this method was revisited. Heatweed Technologies has more than 35 years of experience in weed control in all its forms. As a result, Heatweed was the first company to introduce hot water as a method for weed control in Europe and is still leading in innovative weed control technology, offering high-capacity machines with world patented sensor technology.

Physics of weeds is important when it comes to developing the most efficient and cost-effective technology. Based on this, Heatweed developed the acclaimed Invasive Species Reduction Program. The Invasive Species Reduction Program has been developed by Heatweed based on the PhD study done by the Norwegian University of Life Science between 2016-2018 on controlling the species *Heracleum Mantegazzianum*, *Impatiens glandulifera* and *Fallopia Japonica*. This program allows municipalities and land owners to monitor reduction of invasive plant species in real-time via an app during a three-year treatment cycle. Plants like Giant Hogweed, Japanese Knotweed, Police Helmet, *Crassula Helmsii* and many other unwanted species are being treated with the Heatweed Method® by contractors in both Scandinavia and the Benelux countries. This presentation will cover alternative thermal methods for weed control in urban areas, the cost of various methods and the results of such treatments.

Speaker Bio

Johan is 23rd generation land- forest- and farm-owner living on the family farm. He is also an agronomist and a mechanical engineer which means that he has been connecting the knowledge from plant science with his interest for developing machinery to make farming more efficient and productive. During the last 30 years part of his farm fields have been kept for research and studies of new plant species and weeding methods.

In 2012 Johan founded Heatweed Technologies in Scandinavia and the Heatweed Method® and machinery became the preferred method for non-chemical weed control in all Scandinavian countries within three years.

In Spring 2017 Heatweed Technologies bought up the largest non-chemical weed control provider in Europe, Wave Weed Control and have grown to become Europe’s largest non-chemical weed control provider. Today, still majority owner, Johan acts as the CTO. 15% of the company’s turnover is invested in research and development projects. Heatweed is today part of 7 different pan-European research projects.

Presenter: Dr. Ed Rudberg, Ph.D.

Changing Behavior: Using Behavior Change Psychology and Tools to Help Tackle AIS

Principal/Co-Found CD³, LLC

952.212.6576; ed@cd3station.com

Abstract

Due to the high cost of high pressure, heated water decontamination, reducing the spread of aquatic invasive species (AIS) often relies upon the adoption of best management practices at the individual level. Public institutions and non-profits do a fantastic job at education and outreach on invasive species. However, often communication is not enough to realize the behavior change necessary to adequately reduce the spread of AIS. Tools to implement best management practices are regularly in the form of innovative products. Developing these tools largely falls outside non-profit and public organizations' authority and/or typical scope of work. Therefore, the private sector must fill the void where the public and non-profit sector ends. While entrepreneurs have the vision for invention, many barriers exist to developing environmental or conservation focused products. Thus, in order to innovate around AIS, we need to catch a "unicorn," the elusive private, public and non-profit partnership. This presentation will outline various ways in which public, private and non-profit partners can co-develop products to reduce the spread of AIS and thus catch the "unicorn." A new CD3 cleaning station will serve as a case study to show how these partnerships can more effectively address AIS issues.

Bio

As the third generation of his family in the boating industry, Dr. Rudberg has a passion for recreation and conservation. His Ph.D. in Natural Resources Science and Management blended communication and psychological theory to catalyze individuals' adoption of conservation behaviors on lakes. As an entrepreneur of over a decade, he has developed numerous conservation-focused products that grew to national distribution. He is formally trained in qualitative and quantitative research methodologies, project management, and various behavioral metrics. He is an avid angler, bow fisherman, hunter and boater.

Speaker: Zachary Simek

“Management of invasive *Phragmites australis* in the Adirondacks: a cautionary tale about prospects of eradication”

Terrestrial Invasive Species Project Coordinator for the Adirondack Park Invasive Plant Program
zachary.simek@TNC.ORG

Abstract:

The Adirondack Park – a six-million-acre protected landscape in northern New York State – contains over 600,000 acres of wetlands; many of which are vulnerable to invasion by *Phragmites australis*. To mitigate the negative effects of this invader and safeguard the regions natural resources and economy, the Adirondack Park Invasive Plant Program (APIPP) began intensively mapping and managing *Phragmites* at a landscape scale in 2010. Outcomes from this seven-year management project demonstrate success, but emphasize caution for those seeking to control large infestations. APIPP staff will share pragmatic results on the probability of *Phragmites* eradication and reappearance following management.

Speaker Bio:

Zachary Simek is the Terrestrial Invasive Species Project Coordinator for the Adirondack Park Invasive Plant Program (APIPP). He is a 2013 graduate of Paul Smith’s College with a Bachelor’s of Science in Natural Resource Management and Policy. In his current role with APIPP, Zachary is responsible for coordinating terrestrial invasive species education, research, surveying, monitoring, and management efforts throughout the six-million acre Adirondack Park.

Presenter: Randy G. Westbrooks Ph.D.

“Overview of the North American Invasive Species Management Association Online Invasive Species Management Training Program.”

[U.S. Federal IVS Prevention Specialist, Chadbourn, North Carolina (1979-2012)] and Rebecca M. Westbrooks (Environmental Science/Biology Instructor, Southeastern Community College, Whiteville, North Carolina (1989-2015). RandyWestbrooks@gmail.com.

Abstract

Introduced Invasive Species (IVS) such as Witchweed (*Striga asiatica* (L.) Kuntze] and Houndstongue (*Cynoglossum officinale* L.) are the number two threat to native plants and animals in the U.S. (after habitat loss), and cause over \$150 billion in losses and control costs to the American economy, annually. Efforts to control invasive species are often piecemeal and under-funded. Compounding the problem is a lack of trained field specialists to lead/assist with control and management efforts. People seeking invasive species management positions usually have training in biology, forestry, agronomy, or related fields – but generally no training or field experience in controlling invasive species.

In response to this need, the **North American Invasive Species Management Association** (NAISMA) is offering a unique college-level online professional development program to train **Invasive Species Field Specialists**. The program provides a comprehensive introduction to all aspects of IVS Management – including Strategies and methods for *Prevention, Early Detection and Rapid Response*, and *Control*. The courses are based primarily on the concepts that Dr. Randy Westbrooks learned as a **Federal IVS Prevention Specialist** with the U.S. Department of Agriculture - Animal and Plant Health Inspection Service (USDA APHIS) and the U.S. Geological Survey (USGS) from 1979-2012.

The six online courses in the program series were initially developed and offered as part of Rebecca Westbrooks' Environmental Science Technology Program at Southeastern Community College in southeastern North Carolina until her recent retirement. The courses include:

- **IVS 110 - Introduction to Invasive Species**
- **IVS 210 – Overview of IVS Management Strategies**
- **IVS 211 – Overview of Federal, State, and Local IVS Management Programs**
- **IVS 220 – Invasive Plant Survey Methods (With Field Lab Component)**
- **IVS 221 – Invasive Plant Control Methods**
- **IVS 260 - State Pesticide Exam Preparation**

Students who complete the six course program will earn a **Certificate of Invasive Species Management** from NAISMA. This new partnership with NAISMA provides a very unique opportunity for training IVS field personnel – and an opportunity to network with professional IVS field specialists *worldwide*.

The overall goal of the NAISMA Online IVS Management Training Program is to help train the next generation of IVS Field Managers – to give them a broad foundation of knowledge about IVS Prevention and Management – and to learn about IVS programs – *local to international* – such as the **Park County Invasive Species Management Program** in Park County, Wyoming,

USA, the **USDA/Carolinas Witchweed Eradication Program**, **Federal Exclusion of Foreign Invasive Species U.S. Ports of Entry**, and the **Working for Water Programme in South Africa**.

The Spring 2018 Semester of the NAISMA Online IVS Management Training Program will begin on Monday, February 5, 2018, with a completion date of Wednesday, May 23, 2018. All six of program courses will be offered during the Spring 2018 semester, including **IVS 110** (for new students), as well as **IVS 210**, **IVS 211**, **IVS 220**, and **IVS 221** (for returning students).

Link to Course Home Page: <https://www.naisma.org/programs/ivs-course>

Speaker Bio

Randy Westbrooks, who is a native of Gaffney, South Carolina, received his B.S. and M.S. degrees in biology from the University of South Carolina in 1976 and 1978. He earned a Ph.D. in botany and weed science from North Carolina State University in 1989.

From 1979-2012, Dr. Westbrooks served as a Federal Invasive Species Prevention Specialist with the U.S. Department of Agriculture (APHIS PPQ - 1979-2000), and more recently the Department of the Interior (U.S. Geological Survey - 2000-2012). From 1979-1986, Dr. Westbrooks served as a Plant Protection and Quarantine (PPQ) Officer for USDA APHIS in the Port of Charleston, S.C.

From 1986-1995, as a Federal Weed Regulatory Specialist with the APHIS Whiteville Methods Development Center, he provided science and technical support for single agency-led federal/state weed eradication programs and projects across the U.S. (EDRR 1.0).

From 1996-2012, as a Federal Invasive Species Prevention Specialist, Dr. Westbrooks collaborated with interagency groups to develop new capacity for early detection and rapid response (EDRR) for new invasive plants in states and provinces across the U.S. and Canada (EDRR 2.0). He is now an Associate with Invasive Plant Control, Inc. (IPC), a Nashville, TN, based company that is working to manage invasive species worldwide.

In his new capacity as a private consultant, his efforts are now focused on development of EDRR capacity on all kinds of land units - at all levels of the landscape – not just at the state and provincial level. The Landscape Approach to EDRR involves development of EDRR capacity for public land units (parks, forests, refuges, lakes, highway corridors, etc.), private land units (farms and ranches, etc.), geographic land units (watersheds, eco-regions and cooperative weed management areas), and political land units (municipalities, counties, states, and nations) (EDRR 3.0). As an Associate with Invasive Plant Control, Inc., Dr. Westbrooks provides Technical Support for development of EDRR Systems, conducts Rapid Assessments of New Exotic Plants, and develops Strategies for Rapid Response to Confirmed Invaders (through landowner / manager weed eradication projects, single agency-led programs, cooperative weed management areas, or interagency task forces). The overall goal is to promote EDRR as a common sense and cost effective strategy for preventing the establishment and spread of new invasive plants on land that a person, agency, or group owns or manages. The [Delaware Invasive Species Council](#), which he helped to establish in 1998, and the [Beach](#)

[Vitex Task Force](#), which he was instrumental in establishing in 2003, are good examples of this new trend in interagency partnering to address new and emerging invasive plants.

In an effort to pass on what he has learned in his career to the next generation, Dr. Westbrook and his wife Rebecca are also collaborating with The [North American Invasive Species Management Association](#) (NAISMA), to provide invasive species management training for field professionals across the world. The [NAISMA Online Invasive Species Management Program](#), which launched in February, 2017, was first offered in the spring of 2008 as part of Rebecca's Environmental Science Technology Program at Southeastern Community College, in Whiteville, North Carolina, until her retirement in 2015. The program includes six online courses covering all aspects of invasive species management, including prevention, exclusion, detection, containment, eradication, and control.

Presenter: Raymond Willard PLA

“The Intersection of Highway Maintenance and Invasive Species – Collaboration, Innovations, and Applied Technology”

State Roadside Asset Manager, Washington State Department of Transportation
Chair, Washington Invasive Species Council

WillarR@wsdot.wa.gov

Abstract

The Washington State Department of Transportation (WSDOT) is actively engaged in statewide efforts to manage and prevent the establishment of invasive species. The agency participates as a member of the Washington Invasive Species Council to coordinate and collaborate with other state, federal, and local agency on overall statewide strategies and efforts. While the primary invasive species threat to native ecosystems along the highway right of way is from noxious weeds, WSDOT is also engaged in management and prevention of other types of aquatic and terrestrial species. This talk will explain WSDOT strategy and methods for planning and conducting noxious weed control using the agency’s new Highway Activity Tracking System (HATS). There will also be specific examples on how the transportation agency conducts itself and coordinates with other public and private stakeholders in the prevention and spread of aquatic invasive species, such as zebra/quagga mussels and New Zealand mud snails, and non-plant terrestrial species such feral swine and invasive insects.

Biography

Ray holds a Bachelor of Landscape Architecture from the University of Washington and is a licensed Landscape Architect in Washington State. For the past 25 years Ray has worked on directing and developing WSDOT’s roadside vegetation management program. He has also has represented WSDOT on the Washington Invasive Species Council since its inception in 2006 and currently serves as the council chair.

At the national level, Ray has helped establish an active network of roadside managers from around the country, to facilitate ongoing research and discussion of best management practices. He currently acts as Research Coordinator for the Transportation Research Board’s Standing Committee on Roadside Maintenance Operations, and also served as president of the National Roadside Vegetation Management Association in 2003.

Weed Wrangle Short Talks

Presenter: Cayce McAlister

Garden Club of America

“Organizing a Weed Wrangle in your State”

Meghan Scholl, Friends and Volunteer Programs Assistant, Tennessee State Parks – “Weed Wrangle in 33 TN State Parks”

Fran Rittenberry The Garden Club of Lookout Mountain

Jackie Congleton Garden Club of Knoxville

Bill Moll Wild Ones Tennessee Valley Chapter

Chattanooga Area Weed Wrangles,

Cheryl Welch Garden Club of Jackson Mississippi

Poster Presentations

“Making Northeast Suburbs Usable With Targeted Goat Grazing”

Alan P. Aulson, Sr

Goats to Go at Great Rock Farm Georgetown, Massachusetts, 508-451-1987,
greatrockfarm@gmail.com

Abstract

Goats to Go at Great Rock Farm has supported projects in the northeast that have unique nuisance and invasive species challenges when it comes to making our suburbs, backyards, and conservation lands usable, given significant overgrowth of plants. Some lands are not easily accessible with large equipment and chemical/herbicide use is costly and proven to be less effective or inefficient in maintaining areas for multi-use purposes, due to continuous human recreational use and presence. This poster will present pictures and success stories on recent project using goats and sheep to effectively manage challenging areas. Notable projects include: control and removal of brush and ivy at the Rye, New Hampshire School District, 1-acre Springhill Solar Farm Bradford, MA, 6+ acres at Covanta Energy, Haverhill, MA Resource Recovery Facility, 2 acres for Ipswich, MA Power Plant, Department of Conservation and Recreation (DCR) Charles River Boston, MA, historic West Parish Cemetery in an effort to uncover hidden and unknown gravestones in Andover, MA, and poison ivy removal at the Danvers, MA Dog in approximately 2 acres to allow for the development of a new multi-use Parks & Rec Dog Park.

Speaker Bio

Mr. Alan Aulson is an Agricultural School Graduate and owner of a Verified Service-Disabled Veteran-Owned Small Business providing industrial and environmental services to Federal and commercial projects. He has maintained active farms in New England and Florida for over 40 years and currently owns a 50-acre farm in Massachusetts, while actively manage an additional 200 acres in New England and 500 acres of land in north central Florida. Taking his passion for land use and farming to the next level, he took his Goats to Go operations public about 5 years ago and uses his 80+ goats and over 200 Katahdin and Dorset sheep to support grazing and vegetation control/removal for small- and large-scale projects in the Northeast. Market demands for environmental and eco-friendly land management for the purposes of controlling vegetation growth and the spread of nuisance native species, such as poison ivy, and invasive species has been successful. Each project is unique and offers evidence of success in using targeted goat grazing as an effective alternative method to herbicides and burning. In his free time Alan enjoys driving horses, maintaining crops, herding with his Australian Shepherds, and bluegrass music.

The Geographic Paint Brush: Development of a Handheld Data-logging Spray Apparatus for Invasive Plants

Jeremy Dixon

Crocodile Lake National Wildlife Refuge

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Jeremy_Dixon@fws.gov

Abstract

In order to successfully eradicate, control, or suppress invasive plants—one feature of management is clearly important, the specific location of invasive plants. Mapping data can help managers make decisions on the success of treatments and use adaptive management techniques to successfully manage invasive plants. Traditionally, the mapping of invasive plant populations is a monotonous, time-consuming procedure which sometimes relies on ocular estimation of infestation size and density. Over time, the reliance of these estimations to determine treatment success further complicates conclusions as mapping information is typically collected by numerous contractors, volunteers, and technicians (all with varying degrees of accuracy). Further, fine-scale mapping and data entry takes much more time than the essential task—the chemical treatment of plants. We present a patented device that is nearly autonomous and requires very little training. This handheld data-logging spray apparatus incorporates a global positioning system (GPS) receiver and microcontroller into a conventional handheld spray unit. As an operator dispenses a chemical using the handheld data-logging spray apparatus, the microcontroller records (among other things) the volume of chemical dispensed and the GPS location of the sprayer. The recorded data is processed and stored on a removable USB thumb drive. With this system, the operator can download the data from the thumb drive and manipulate the data using a conventional spreadsheet program or a commercially-available geographic information system program (GIS), thus building a site specific database of treatment history. Using this device and method, it is no longer necessary to estimate infestation size or density in the field; actual size and density calculations can be obtained from the recorded data. This handheld device allows the collection of standardized fine-scale mapping data while treatments are being conducted, saving considerable time, money, and effort.

Biography

As the invasive plant coordinator for Wichita Mountains Wildlife Refuge, Jeremy Dixon developed this patented device to efficiently collect mapping and treatment data on invasive plant populations. Jeremy is currently the Refuge Manager at Crocodile Lake National Wildlife Refuge, where he is focused on the management and recovery of endangered and threatened species.

“Invasive Species Removal & Native Plant Restoration at Naval Support Activity Bethesda”

Gretchen Gorecki

Analyst, Marstel-Day, LLC, Fredericksburg VA, ggorecki@marstel-day.com, 571.201.2180

Abstract

Marstel-Day, LLC was contracted by Naval Facilities Engineering Command (NAVFAC) Washington to conduct invasive species removal and native plant restoration at Naval Support Activity (NSA) Bethesda. Marstel-Day, LLC, Invasive Plant Control, Inc., Sustainable Solutions, LLC, and Versar comprised the project team.

Fifteen invasive plants species were identified and treated with client-approved herbicides. Care was taken to target only the invasive species with the herbicide through foliar and cut-and-treat techniques. A native plant restoration effort, consisting of seven native plant species, soil amendments, and deer fencing, was then completed.

Bio

Gretchen Gorecki is a Project Lead and Analyst at Marstel-Day, an environmental consulting firm, where she primarily supports U.S. Department of Defense clients. Her project portfolio includes invasive species management, threatened and endangered species surveys, wetland delineation, encroachment management programs, and community partnership programs. She is a certified GIS Professional (GISP) and is currently pursuing a MSc in biodiversity, wildlife, and ecosystem health from the University of Edinburgh. She obtained a BS from the University of Mary Washington in environmental science and geography, and received a GISc certificate.

A Multi-Agency Eco-Voluntourism Venture to Remove Invasive Plants from a National Park Historic Site: Testing a Model for Public Engagement, Service, and Learning

Authors

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- b. PhD Candidate
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- a. Layne Strickler
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Abstract

Eco-voluntourism enables tourists to build a vacation experience that provides meaningful volunteer efforts to improve the environment while integrating cultural or environmental education and service with memorable fun! As part of a National Science Foundation (NSF) grant awarded to Dr. Ashley N. Egan for the study of the invasive kudzu vine, an eco-voluntourism event was designed and tested as a model to engage the public through service learning, education, and recreation. This model is designed to be enacted by environmental organization management teams, such as state or National Park organizations, to gather significant volunteer teams aimed at undertaking large, specific tasks. Here, we partnered with the National Park Service (NPS) at the New River Gorge National River to remove invasive plants that threatened the historical structures at Thurmond, WV a National Historic Place. The event recruited 10 volunteers, staff from the Smithsonian Institution (SI), and two NPS staff.

Thurmond is a historic landmark managed by the NPS of the New River Gorge National River. The old railroad town is currently being overrun by multiple invasive plants, particularly kudzu, which threaten the town's historic buildings. This event brought volunteers to Thurmond for four days of education, labor, and recreation. The first two days were spent in the classroom learning about the biology of invasive plants and the history of Thurmond, both natural and urban, and working on-site in the historic town where the volunteers used their newly acquired identification and plant management skills to manage a half dozen invasive plant species. The volunteers were educated and coordinated in the removal of the invasive plants by both the NPS staff and SI participants; however, the NPS staff were well suited in handling those tasks solely. The management activities of the volunteers, primarily cut-stump, were overseen by NPS employees registered for the use of herbicides. The last two days were spent performing recreational activities at the New River Gorge National River, including boating, and hiking, wherein NPS staff made themselves and their equipment available to the volunteers free of charge, as a means of giving back for their volunteer service.

Over 100 man hours were spent removing invasives from Thurmond over the course of two days. While only a small percentage of acreage was managed, significant progress could be seen on site. Additionally, 10 volunteers ranging in age from their 20s to their 50s were educated on the presence and removal of invasive plants in hopes of further educating the public. The overall eco-voluntourism model for the removal of invasive species could be managed by a single host site organization. This model of service learning and labor for recreational rewards can easily be applied to future research endeavors by being included in grant proposals, as was the case in this event. However, it would also be possible for the NPS or other host organization to institute such events on their own to further educate and enlist the public in their management efforts.

Speaker Bio

Matthew S. Haynsen is a PhD candidate at The George Washington University studying the evolutionary biology of the invasive kudzu vine. Since August 2013 he has been a pre-doctoral fellow at the Smithsonian Institution working in the National Museum of Natural History's Department of Botany and Laboratory of Analytical Biology. Matthew received a Master's of Science degree in 2012 from Towson University while studying the population genetics of the invasive Tree-of-Heaven. He holds Bachelor degrees in molecular biology, literature, and creative writing. Prior to 2007 Matthew held positions managing invasive plants for Americorps, the state of Maryland, and Invasive Plant Control, Inc.