

Innovations in Invasive Species Management Conference Agenda

December 13th, 2017

3:00 pm to 7:00 pm

Committee Meetings

7:00 pm to 9:00 pm

Registration and Reception at the Rivers Edge in the Delta

December 14th, 2017

CONCURRENT SESSIONS

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

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.

Presenter: Patterson Clark

“The Art of Alienweeds”

alienweeds.com

Abstract

Exploiting the material abundance of invasive species can transform the weed worker's role from executioner into that of harvester. Notes on prospecting, extraction, production, marketing and pitfalls of a cottage industry transforming weeds into art.

Speaker bio

From alien weeds, Patterson Clark extracts paper, inks and printing blocks, which he uses to make art that refers to the process. When he's not wrestling with invasive vegetation, Patterson serves as senior graphics editor at POLITICO Pro. Previously, he produced science graphics for The Washington Post and op-ed drawings for the Miami Herald and the Arkansas Gazette.

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: Dr. Ed Rudberg, Ph.D.

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

Principal/Co-Found CD³, LLC

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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.

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

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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.

Presenter: Dehli 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: Shawna L. Bautista

“Invasive Species Management in the US Forest Service”

US Forest Service R6 Invasive Plant and Pesticide Use Coordinator

Pacific Northwest Region, State & Private Forestry, US Forest Service, Portland, OR

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Abstract

Invasive species management in the US Forest Service is a reflection of the basic organization of the agency. That is, it is decentralized (read “variable”) and different types of activities are conducted in each of three branches of the Forest Service (National Forest System, State & Private Forestry, and Research & Development). However, we have a National Strategic

Framework for Invasive Species Management that provides broad strategic direction across all branches of the agency and for all taxa of invasives species. The National Forest System branch is the one that manages the National Forests and likely the most well-known operation of the agency. Management of invasive species on the National Forests is largely distributed among 1) interested and motivated individuals, and 2) staff groups that reflect the invasive taxa. For example, Wildlife Biologists would be responsible for feral swine and white-nose syndrome, Fisheries Biologists for invasive fish and aquatic invertebrates, and Botanists or Range Conservationists for invasive plants. The actual responsibilities vary considerably across different Forests and attention to invasive species issues often requires a person in place that is motivated enough to pursue projects and funding. 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 most of our Entomologists and Pathologists work and address invasive forest pests. 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.

To effectively control invasive species, we utilize valuable partnerships with States, counties, and other organizations to conduct projects across boundaries in an "all lands" approach to management. Our partnerships are also crucial in providing consistent messaging to the public and improving the effectiveness of our outreach and education efforts.

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, the use of Ecological Site Description and State & Transition models to inform management of invasive annual grasses, studying herbicide impacts to rare plants, and the use of horseback herbicide sprayers to treat invasive plants in wilderness areas.

Presenter: John Krupovage

"Challenges in Invasive Species Control in Urban Natural Area Restoration"

Natural Resources Manager, Civil Engineering Directorate

Tinker Air Force Base, Oklahoma

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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: Jennifer Hillmer

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

Invasive Plant Coordinator

Cleveland Metroparks

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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: Douglas A. Burkett, PhD

“Invasive Plant Management in the DOD”

Environmental Biologist, Operations Division, Armed Forces Pest Management Board

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: Stephen F. Enloe

Associate Professor

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

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

Presenters: Brendan Quirion and Zachary Simek

Adirondack Park Invasive Plant Program

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

Presenter: Andrew Fraser

PNW IPC EDRR Program Coordinator (Pacific Northwest Invasive Plant Council)

“PNW-IPC EDRR Citizen Science Invasive Plant Program”

Presenter: JAMES V. HUNT. (JIM)

“Invasive Species Management in an Affluent Urban Area”

Mayor, City of Belle Meade

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: Nicole F. Angeli

“Positive impacts of mongoose control and a path forward”

Post-doctoral Fellow

Alabama Cooperative Fish and Wildlife Research Unit, School of Forestry and Wildlife Sciences
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Claudia D. Lombard, Biologist

U.S. Fish and Wildlife Service, Sandy Point and Green Cay National Wildlife Refuges,
Fredericksted, VI

Steven Brewer, Lecturer

Biology Department, University of Massachusetts, Amherst, MA

Buzz Hoagland*Professor

Biology Department, Westfield State University, Westfield, MA

Abstract

Invasive species control is a global conservation challenge. Three quarters of Caribbean nations control invasive small Indian mongoose (*Herpestes auropunctatus*) to protect native reptiles, birds, and invertebrates. Most control efforts have failed regionally, and predation on native fauna continues. Sandy Point National Wildlife Refuge, St. Croix, Virgin Islands was the first wildlife refuge in the United States designated to protect nesting sea turtles (*Dermochelys coriacea*, *Chelonia mydas*, *Eretmochelys imbricata*). We captured, marked, and released mongoose over 15 biannual seasons to analyze population demographics within the refuge. We used a Bayesian structured time-series analysis to evaluate the impact of a control program in the last four years of the population study. We compared the cost of an exclusion fence with the annual costs of control. We found seasonal population size fluctuating between 93 – 247 individuals with high adult recruitment. Predation on a quarter of hawksbill sea turtle and green sea turtle nests continued after the first year of control, and the mongoose population size reached its maximum on the refuge after the second year of control. However, the program achieved a 28% cumulative decrease in mongoose at the end of four years. Fencing is more cost-effective by an order of magnitude saving 1.5 million USD over 50 years. Population demographic studies used to evaluate invasive species populations and attempted control help to identify long-term solutions for vulnerable species.

Speaker bio

Nicole Angeli uses biological, stakeholder, and monitoring information to create population models that inform management and support policy for imperiled and invasive species. She is currently a postdoctoral fellow in the Alabama Cooperative Wildlife and Fish Research Unit embedded at Auburn University, having received her PhD from the Texas A&M University Department of Wildlife and Fisheries Sciences and a Masters of Science at the University of Maryland in Conservation Biology and Sustainable Development.

Presenter: Mike Berkley

Co-Founder of Growild Native Nurseries

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

Presenter: Brian Riskas

President, RMD Systems

"Use of small UAS for aerial application of chemicals for invasive plant management"

Presenter: Sarah Lowe

Botanical Garden & Horticulture Manager, Cheekwood Botanical Gardens

"The Role Botanical Gardens Play in Invasive Plant Management"

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.

Biography

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.

Presenter: Amy Walter

Volunteer Programs Manager, Nashville Zoo

"Controlling Invasives to Create the North American Wildlife Exhibit at the Nashville Zoo"

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
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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.

Presenter: Todd Neel

Pesticide Specialist, US Forest Service State and Private Forestry Intermountain and Northern Regions

“Incorporating new tools and technologies (including pesticides); risk assessment; when working with external partners of NFS Lands”

Presenter: Bob Caveny Conservation Stewardship Program Manager, Illinois Department Of Natural Resources

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

Presenters: Rebekah Wallace Chuck Bargeron

University of Georgia Center for Invasive Species and Ecosystem Health

“Tools for Invasive Species Early Detection and Rapid Response Information Management”

Presenter: Joel Helm

USAF 611th CES

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

Presenters: Anne Pearce and Mark Renz

“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

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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: 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

December 15th, 2017

Introduction to the newest Tools and equipment for Managing Invasive Species

Presenter: Sheila Kennedy Owner/Operator, S-K Environmental, Portable Invasive Species Rinse off and Reclaim System

“Eliminating transfer and introduction of invasive species with rinse off reclaim decontamination system”

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: Curtis Pearce, Uprooter Founder and CEO
“Love the Lever: Multiplying the Force Against Invasive Plants”

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: Zach Richardson, Founder of Chew Crew
“Grazing in Cities: An Overview of the Environmental, Economic, and Social Implications of Grazing Urban Landscapes”

Presenter: Jim Bean
“The Benefits of Branded Chemistry”
Strategic Accounts Manager, BASF Professional & Specialty Solutions

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

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.

Presenter: Todd Hagenbuch

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

Vegetation Management Specialist, Arborchem Products

thagenbuch@arborchem.com, 570-401-7098

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: 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: 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

ecoffey@atlantbg.org, 509-591-1590 (w)

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.

Speaker: Michelle J. Aulson

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

greatrockfarm@gmail.com, 703-994-8353, Georgetown, Massachusetts

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.

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
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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.

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.

Speaker: Mike Berkley

“If You DON’T Build It, It Will Come...BACK!”

Vice-president of GroWild, Inc

growild@gmail.com

Abstract:

Mike Berkley loves to talk about removing invasive plants, but he would much rather discuss native plant alternatives. Not surprisingly many of our non-native invasive species are still being used as back yard landscape plants. Mike will highlight some of the native plants he would much rather see being used in the landscape today. His biggest challenge is going to be keeping his talk to the limited time slot.

Speaker Bio:

Mike Berkley is vice-president of GroWild, Inc, a native plant nursery and landscape company in Fairview, TN. Mike joined the Board of TN-EPPC 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, he has been the Fairview, TN City Arborist since 2000, a member of the Tennessee Plant Conservation Alliance, a 25 year attendee of the Cullowhee Native Plant Conference, frequent speaker and co-host on the Native Plant Podcast.

As a result of Mike's passion, he is dedicated to educating the public on the use of native plants in the landscape. He has been involved in the installation of numerous sustainable projects including vegetative roofs, commercial and residential rain gardens, stream bank restoration. He has work for the National Parks Services, Corps of Engineers, city parks and every state park in TN.

Speaker: Meghan Scholl

“Weed Wrangle in 33 Tennessee State Parks”

Friends & Volunteer Programs Assistant, Tennessee State Parks, Nashville, TN

Meghan.scholl@tn.gov, 615-253-9945

Abstract:

Tennessee State Parks' involvement with Weed Wrangle[®] 2017 helped increase invasive plant removal statewide by teaching the community about why this event is so important. Weed Wrangle Workshops were offered regionally to volunteers and State Park personnel to learn more about exotic species and how to safely remove them from our beautiful land. Come to this small talk and learn about the benefits of and how to set up workshops to teach those in your community about invasive plant removal and Weed Wrangle[®]!

Speaker bio:

Meghan Scholl was initially hired by Tennessee State Parks as an AmeriCorps member, and is currently employed as a Seasonal Interpretive Recreator with the Friends and Volunteer Program for Tennessee State Parks. In this role, she assists in growing the number of Friends Groups, making improvements to the volunteer program, and running special events such as Weed Wrangle[®], TN Promise Saturday, and National Public Lands Day. She is also instrumental in planning and organizing the Annual Friends Conference and coordinates with a local outdoor outfitter, Rock/Creek, hosting monthly workshops that benefit the Friends of Tennessee State Parks Mini Grants Program. Meghan's outside hobbies and interests include hiking, kayaking, software development, and spending time with her family.

Presenter: Rob Richardson

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

Professor and Extension Specialist, North Carolina State University

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.

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

sbautista@fs.fed.us, 503-808-2697, Portland, OR

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: Tony Pernas

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

Supervisory Botanist, Big Cypress National Preserve, National Park Service

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).