

11th Annual Southeast EPPC Conference

Creating Sustainable Landscapes for the Future

Georgetown, South Carolina - May 13-15, 2009

EDDMapS, WeedUS and Invasive.org: Updates, Enhancements and How You Can Help.

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David Moorhead, Professor, The University of Georgia - Center for Invasive Species and Ecosystem Health

Keith Douce, Professor, The University of Georgia - Center for Invasive Species and Ecosystem Health

Jil Swearingen, Invasive Species Specialist, National Park Service

This presentation will present updates to EDDMapS and Invasive.org and how they come together to support the WeedUS database. How the State EPPCs will be able to manage their state lists through the WeedUS database will also be presented.

CWMA/CISMA Website Cookbook and Template

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The Center for Invasive Species and Ecosystem Health is developing a fully documented web template that can be downloaded and used by any CWMA/CISMA to quickly develop a web presence. This template will be modular and some modules will require some web programming experience to implement; however, the basic structure of the web template will be portable to any web hosting environment. Additionally the Center is developing a CWMA/CISMA Website Cookbook (similar to the CWMA cookbook) to provide a Step-by-Step guide to developing a website to promote and support a CWMA or CISMA. The publication and supporting PowerPoint presentation will be made available for download from Invasive.org.

Challenges Encountered by Regulatory Agencies Charged with Controlling Invasive Species

Steve Compton, Invasive Species Coordinator, Department of Plant Industry, Clemson University, 511 Westinghouse Road, Pendleton, SC 29670, 864-646-2134, scompto@clemson.edu

This presentation will describe challenges encountered by regulatory agencies in controlling invasive species. Some challenges that will be presented include detection, funding, identification, and inter-agency relationships.

Can additives improve glyphosate control of cogongrass?

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Cogongrass is an invasive warm season grass that infests hundreds of thousands of acres in the Southeastern US and continues to spread northward. Eradication efforts of incipient infestations are currently underway in several southern states with repeated prescriptive glyphosate or imazapyr treatments. Recent preliminary research has suggested differential performance of these herbicides with different additives. However, very little replicated testing has been published. Any additive that improves cogongrass control with glyphosate or imazapyr would be extremely useful. Our objective was to test the additive Cogon-X (a nutritional supplement), with commercial and reduced rates of glyphosate applied at spring and fall timings for cogongrass control. A study was initiated in May 2008 at two fields near Mobile, and Bayou La Batrie, Alabama. Maximum rhizome depth was approximately eight inches at both sites. Plot size was six by nine meters with a three meter buffer surrounding each plot. Buffers were treated to prevent encroachment into the plots. The experimental design was a randomized complete block with four replicate blocks. Treatments included glyphosate applied at 0, 1 and 4 lb ai/A alone and with Cogon-X at the label recommended rate of 1 qt/A. Treatment timings included spring (May 2008) and fall (October 2008). Visual evaluations of cogongrass control were taken at approximately 80 and 150 days after spring treatments. Initial results indicate that the addition of Cogon-X to either glyphosate rate did not improve treatment efficacy compared to glyphosate alone at 80 and 150 days after spring treatment. Fall treatments will be evaluated during the growing season of 2009.

Cooperating to Address Invasive Plant Management, *Southern Style*

Nancy Fraley, NPS, Southeast Exotic Plant Management Team

Developing a cooperative in order to more efficiently address prevention, early detection and control of invasive, non-native plants is proving to be an effective tool in the southern US. This presentation will give an overview of the CWMA adaptive model and look at cooperatives in various stages of development in the south. Special emphasis will be given to identifying the unique characteristics of the southern landscape that may help or hinder the success of these efforts.

Data-Driven Management: The Fort Bragg Non-native Invasive Plant Management Program

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Since 2003, Fort Bragg has been working to address the challenge non-native invasive plant species (NIS) pose for successful integrated natural resources management. The Fort Bragg NIS Management Program has relied heavily on data to make management decisions objectively. Extensive NIS surveys throughout Fort Bragg in 2003 and 2004 served as an initial baseline to guide management. 39 species were identified from the more than 5,000 plots sampled. Percent cover estimates for each NIS measured in the plots were then used to interpolate installation-wide distribution estimates. The data from the survey and the interpolated distributions were then used to develop an Integrated Non-native Invasive Plant Species Management Plan outlining specific management goals and prioritized management actions. To prioritize where management actions would occur, a multi-criteria decision analysis was employed. The multi-criteria decision analysis methods objectively integrated multiple diverse stakeholder interests with multiple datasets describing NIS impacts and management efficiencies. The prioritization process was spatially explicit and based on data describing NIS characteristics, abundance, and distribution, as well as the magnitude of the potential impacts NIS exert on protected species and military training. This important planning phase has been followed by several years of NIS management using two different approaches. One approach is species-specific, targeting early detection/rapid response control efforts on 18 species determined to be in early stages of invasion. The other approach is site-specific, controlling NIS in high priority, threatened and endangered (T&E) species sites. Formal monitoring data are continuously collected at all locations where control measures are implemented and within selected T&E species sites. Additional informal monitoring based on roadside observations helps ensure novel invaders from outside the installation are identified early. These data will be used to analyze the effectiveness of control methods, update the management prioritization, and amend the management plan every 5 years. To date, 25 NIS have been managed at 266 sites, covering approximately 420 hectares throughout the installation.

Herbicides and Non-Chemical Methods Working Together: One plus one equals three

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The SC-EPPC formed a statewide Task Force to control kudzu. The leadership of the task force is balanced between individuals experienced in herbicide applications and individuals heavily involved developing and using non-chemical methods. The Task Force initiated a joint study wherein the two groups worked together. They attacked several acres of kudzu behind Spartanburg's best known restaurant. The first year treatment in 2007 was with herbicides. Dow AgroSciences provided the herbicide, Milestone VM(r) and arranged for an experienced, certified applicator to donate his time and equipment. During 2008, the second year, non-chemical methods were used on the north half of the treated area. The surviving kudzu crowns in this half were counted one by one as they were all removed. The south half was sprayed a second time with the same herbicide. Specific results: 1. The kudzu on the north half has been totally removed, thanks to a monitored first year kill rate of 98%. 2. The two groups learned much from each other. 3. The project worked so well that a second joint study was initiated by Dow AgroSciences and the Kudzu Coalition in Spartanburg during 2008 covering six acres. 4. A separate study performed during 2007 and 2008 in Sumter National Forest confirmed the advantages of combining herbicidal methods and non-chemical methods.

The Power of Partnerships: Landscape Scale Efforts in the Florida Keys

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Invasive plants and animals are a threat to habitats and wildlife worldwide. As land managers are increasingly being asked to do less with more, involving stakeholders on a landscape scale through creating a Cooperative Invasive Species Management Area (CISMA) is attracting national attention and funding.

The Florida Keys Invasive Exotics Task Force (Task Force) has been functioning as a CISMA since 1996 to address the proliferation of invasive exotic plants in the Florida Keys. Comprised of biologists, planners and natural resource managers from local, state and federal agencies, non-profits and public utilities, the Task Force's goals include documentation of existing populations, prioritization and control of infestations, public education, tracking of relevant legislation and promotion of interagency cooperation.

Key programs covered include:

Prioritization: Regional Plant Lists, Project Ranking and Keyswide Mapping.

Prevention: GreenThumb Certified Nursery program limits sales of invasive plants.

Early Detection & Rapid Response: Gambian Pouch Rats & Burmese Pythons

Control: Invasives Removal Training & for Best Management Practices.

Landscape Scale: Leveraging Funding and Partners to Work on Public and Private Lands.

Outreach: Demonstration Projects, Native Plant Fairs and AlterNatives Guides.

The Task Force was recognized nationally in 2007 with the Department of Interior's Cooperative Conservation Award for its successes. As the Task Force identifies and demonstrates successful strategies it is hoped that agencies, organizations and like-minded groups will learn from, and improve upon, its successes and innovations. Cooperation is the key to winning the war on invasive exotic plants.

Conducting a Cogongrass Survey With a Volunteer Work Force

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In May 2008 South Carolina conducted an intensive survey for three invasive species. The primary species of interest was cogongrass. The survey was a coordinated effort of the South Carolina Cogongrass Task Force which is made up of nine different groups. Shortly after starting planning we were fully aware that the nine groups would be unable to provide the manpower for the type of survey we envisioned. There was a lot of skepticism as to the ability to use volunteers in such a large project. Two people provided primary leadership and were able to propose a working plan using an incident command structure with six levels of participation. Groups involved included: two State Coordinators, four Area Site Coordinators, four Area Assignment Coordinators, fifty-two County Assignment Coordinators, hundreds of Surveyors, and up to forty Area Identifiers. Position descriptions were developed for each group and a communications network was established for pre, actual, and post survey activities. The four days of surveying were highly

successful. There was excellent participation and a feeling of accomplishment for most of the people who participated in the survey. This presentation will discuss what worked, what we need to do to improve working with a volunteer work force and will outline plans for a second volunteer survey to be conducted in May 2009.

Non-Native Invasive Plant Control Efforts on the Francis Marion and Sumter National Forests

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The Chief of the U.S. Department of Agriculture Forest Service has identified invasive species as one of four critical threats to our Nation's ecosystems. In South Carolina, National Forest lands occur on approximately 610,000 acres or 5% of the forested land base, and includes 84,000 acres of land in the Southern Blue Ridge, 276,000 acres in the Southern piedmont, and 250,000 acres in the Atlantic Coastal Plain physiographic provinces. Fragmented ownership patterns, a long history of human occupation prior to federal ownership, high rates of human population growth at forest boundaries, and a relatively mild climate, have resulted in a high incidence of invasion into the National Forest of common landscape plants such as Chinese tallow, Chinese wisteria, Chinese and Japanese privets, Chinese silvergrass, and mimosa. The Francis Marion and Sumter National Forests invasive plant control program to prioritize and treat infestations on over 1000 acres/year will be discussed.

Name That Plant!

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In the battle against invasive plant species, if you had to name one weapon that you could not do without, what would that be? **Education.**

“... no amount of herbicide, biological, mechanical, or human power can hope to control invasive plants if the state's 17 million residents, homeowners and visitors continue to introduce invasive (or potentially invasive) plants into their backyards, or unknowingly dispose of them in natural areas.” — *Jeff Schardt, Florida Department of Environmental Protection/Bureau of Invasive Plant Management*

What is one tool common to the effort to preserve wild spaces, maintain the health of natural ecosystems, protect rare species, or encourage the landscape use of regionally native plants? **Education.**

“People only protect what they love, but they can only love what they know.” — *Jacques-Yves Cousteau*

We'd like the general public to become more accepting of non-traditional wildlife-friendly landscapes, the gardeners to appreciate the benefits of natives and the dangers of invasives, the plant-savvy to spot a plant that seems out of place and alert the Early Detection/Rapid Response Team — It all starts with education.

The website www.NameThatPlant.net is a public education endeavor: It is a clearinghouse of information about native and naturalized plants of the Carolinas and Georgia, and it includes plants found throughout the Southeast.

For those of us who are not botanists, NameThatPlant.net is like a window, a bridge, to the body of knowledge that's there but we don't know how to access. It “packages” knowledge that plant people have

patiently shared and provides a venue for that sharing. There's more in the site than is immediately obvious. As I demonstrate some of the ways it can be used, I'd like for you to think about your clients or the citizenry you deal with — and also what you might share which could make the site more useful.

NameThatPlant.net would not be possible without the help of many patient and knowledgeable people, and your contributions are welcome!

Chinese privet (*Ligustrum sinense* Lour.): Using life history information to inform management of a non-native invasive plant

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Colonization of natural areas by non-native invasive plants is a problem worldwide and threatens biodiversity and the preservation of natural areas. Chinese privet (*Ligustrum sinense* Lour.) was introduced from Asia to the United States in 1852 and is currently invasive throughout the southeastern United States. High rates of seed production and dispersal coupled with a clonal growth form have given this plant a competitive advantage when introduced to novel areas, thereby enabling it to displace native species. Management efforts such as prolonged flooding, burning, and herbicide application have been used to control Chinese privet with varying rates of success. In order to develop streamlined methods of containing Chinese privet invasions, the extent of invasion and life history of this plant must be adequately understood. The purpose of this study is two-fold, to determine the presence of Chinese privet in bottomland hardwood sites in Louisiana and to assess the key reproductive, maturational, and survivorship characteristics that define Chinese privet's life course. We used a combination of vegetation surveys, germination trials, dendrochronology, and demographic modeling to elucidate stages in Chinese privet's life cycle that contribute most to population growth, those stages that may then be targeted by on-the-ground control methods. Our preliminary conclusions suggest that seed production contributes significantly to overall population growth, although reduction in seed production alone may not be enough to cause a decline in the population. Our research indicates that an integrated approach managing both seed production and reproductive adult plants may successfully retard population growth. We will apply the information we have gained from this study to inform and increase the success of current non-native invasive species management plans. While it is unlikely that Chinese privet can be eradicated from natural areas, this project may identify the most effective methods of containing this invasive plant and preventing its spread into areas of high ecological value.

A New Web Resource for Invasive Plants - www.invasive.org/south/

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A recently created webpage provides several sources of information on non-native invasive species (NNIS), particularly non-native invasive plants species (NNIPS). The page was cooperatively developed by the USDA Forest Service and The Center for Invasive Species and Ecosystem Health at the University of Georgia. The USDA Forest Service Southern Regional Task Force for the Assessment of Nonnative Invasive Species (NNIS) was assembled in August 2006 to prioritize NNIS posing the highest threats to forests and grassland ecosystems in the South. The Task Force is comprised of specialist from all four branches of the Forest Service: National Forest System (NFS), Research and Development, State and Private Forestry, and Forest Health and Protection. The Task Force collaboratively compiled a list of the most potentially damaging invasive species from multiple existing databases and through surveys of Forest

Service regional staff. Existing risk assessments for these NNIS were assembled for study. Through this process three databases were compiled of NNIS that currently or have potential to damage forest interiors, margins, openings, roadsides, waterways, and wetlands along with grasslands and special embedded habitats. These three databases as are available at invasive.org/south/ for your use and A High Priority NNIS Database that will be used to focus programs and review. An Early Detection Watch Database to guide prevention and management A Database of All NNIS Currently Recognized in the containment programs Southern Region with a separate database for Tropical South Florida to gain understanding of the scope of the invasion. These are evolving databases and further assessments are underway. In an effort to inform forest managers, landowners, and others about where the most threatening invasive plants are in the South and to help them prepare for these threats, Miller and Erwin Chambliss collaborated with SRS Forest Inventory and Analysis (FIA) scientists to develop maps showing the occupation, county-by-county, across the Southeast of 33 taxa of some of the most serious NNIPS (a hyperlink at www.invasive.org/south/ and at <http://www.invasive.org/fiamaps/>). The invasive plant data was collected on FIA plots on all forestlands throughout the southern United States in cooperation with State forestry agencies. Also posted is a spreadsheet with estimates of cover by the 33 taxa for each States. The maps and estimates will be annually updated.

Invasive plant responses to the use of fire in natural resource management.

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Johnny Stowe, Heritage Preserve Manager, South Carolina Department of Natural Resources, Columbia, SC

Prescribed fire is a valuable management tool used by natural resource managers for wildlife habitat enhancement, native plant restoration, competition control, and fuel reduction, enhancement of appearance and access and to achieve other goals. However, the suite of exotic plants invading the southeastern landscape poses unique problems to land managers who incorporate fire in their management programs. In some instances fire alone may be an effective control agent; often the use of fire alone exacerbates the problem. This presentation will cover fire effects on invasives common in the southeast and detail prescribed fire regimes and associated management control strategies.

Progress In Using Volunteers' Farm/Heavy Equipment In Controlling Kudzu Without Chemicals

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Summary: Skid loaders and tractors with especially designed attachments have played an important role as initial and secondary treatments in volunteer removal of kudzu without using chemicals. When used in a combination of methods, these machines significantly reduce the manual labor needed for mopping up the last kudzu crowns. They also enable volunteers to attack larger infestations which would otherwise be impractical for non-chemical methods. Abstract: In August of 2006 volunteer Paul David Blakeley brought his skid loader to a Kudzu Coalition work party and demonstrated that the heavy equipment could be useful. The technique of forming a kudzu "roll" proved effective for removing bio-mass, which constitutes approximately 30 to 40% of the labor involved in non-chemical removal of kudzu. This process turns daunting kudzu sites into workable situations for volunteers. A key discovery was that elevating the kudzu vines with skid loader forks caused over half of the kudzu crowns to pop out of the ground or to rip loose

from the root, thus killing or damaging those plants. We then purchased metal tracks to enable the skid loader to work uphill and downhill in previously inaccessible areas. Several unique attachments have been designed by the Kudzu Coalition and built in Spartanburg, SC. These include double wide forks, booms of 16', 8', and 4', grapple hooks, and "rakes". Most helped improve effectiveness but some did not. A commercially available attachment has been acquired for clearing more crowns out as a second method and treatment. The volunteer's skid loader, equipped with these attachments, has been named "Kudzilla". Tractors with bush hogs have been employed successfully as a first and also a second method. Additionally, a specially modified scarifier has proven to remove additional kudzu crowns, although disturbing the soil, in yet another useful method and second treatment. Regular participation by volunteers with their heavy/farm equipment has proven to be important in attacking dozens of kudzu infestations without using chemicals. These weapons permit non-herbicidal success in larger infestations than would be possible otherwise. By not using herbicides, the Kudzu Coalition is able to provide more opportunities for volunteers – especially students -- to participate. The web site www.kokudzu.com provides many before and after pictures and explanations.

Control of Chinese Privet (*Ligustrum sinense*) in Urban Areas: the Influence of Individual Plant Size on Treatment Efficacy

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Since its introduction to the United States in 1852, Chinese privet (*Ligustrum sinense* Lour.) has spread throughout the southeast, invading roadsides, rights of ways and many forest edges and interiors. Chinese privet has been widely used as an ornamental and in many urban areas, the forest understory and mid canopy vegetation is now completely dominated by Chinese privet. Dense stands may be comprised of numerous cohorts ranging from seedlings in the understory to mature trees in the mid canopy. Manual control by cutting is one of the most common strategies many landowners initially employ. However, rapid resprouting from the root collar and some lateral roots results in treatment failure. Cutting followed by either glyphosate or triclopyr application to the stumps has been reported to be effective. However the efficacy of these herbicides in relation to privet root collar size has not been explored. Our goal was to determine the effectiveness of glyphosate and triclopyr cut stump treatments compared to cutting alone at spring and fall timings across a range of privet size classes. A study was conducted at two sites heavily infested with privet in Auburn, Alabama. The first was a riparian hardwood site with a solid privet understory and the second was a rocky upland pasture margin with almost no woody overstory. The study design was a completely randomized design with approximately 50 privet stems per treatment. Treatments included cut stump + glyphosate (25% v/v), cut stump + triclopyr (25% v/v) or cut stump only. Stems were cut 2.5 cm above the ground with a chainsaw, herbicide treatments were applied within 30 seconds of cutting and the entire cut stumps were thoroughly wetted. Root collar diameter was recorded for each stem and ranged from 0.3 to 30.5 cm. Treatment timings included mid April, when the privet was in early flower, and mid November following fruit set. Six months after the spring treatment, both glyphosate and triclopyr provided excellent control with stump resprouting of only 2 and 4% respectively across all privet sizes. Cutting alone resulted in 90% resprouting. Fall treatments have yet to be evaluated. This preliminary data indicate that size class did not influence herbicide efficacy.

Education, Outreach, and Training Efforts to Address Invasive Species in National Estuarine Research Reserves and Their Watersheds

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The National Estuarine Research Reserve System (NERRS) is a network of 27 protected areas established for long-term research, education and stewardship. Reserve staff work with local communities and regional groups to address natural resource management issues, such as non-point source pollution, habitat restoration and invasive species, and help communities develop strategies to deal successfully with coastal resource issues. The issue of invasive species has emerged as a priority issue for the Southeastern Regional Reserves and their watersheds (North Carolina, North Inlet-Winyah Bay and ACE Basin in South Carolina, Sapelo Island in Georgia, and Guana-Tolomato-Matanzas in Florida). In addition to surveys, meetings, and discussions among staff to characterize the issue, the Reserves have explored various ways to address invasive species spread in addition to research and collaborations with other resource management agencies. Education and outreach is a major objective of the Reserve system as it seeks to translate science related to reserve priority issues to the general public and decision makers. Regarding invasive species, the Southeastern Regional Reserves have explored a variety of avenues for disseminating and applying information on invasive species. Approaches used at some reserves and proposed at others include education and training for landscaping professionals on appropriate chemical and manual control and removal techniques, the appropriate sale of native species and prohibition of sale of non-native invasive species, assisting nurseries and landscaping professionals with communication and education efforts for their clients to help the general public understand invasive species issues and how their decisions can be part of the solution to the problem, and even working with local governments to require various certifications that can promote more responsible behaviors in the local landscaping business community. Through the multidisciplinary efforts of the Reserve system – from research to education and information dissemination to promoting stewardship and action – priority issues such as the spread of invasive species can be effectively addressed. In addition, through strong networks and partnerships with other resource management agencies, Reserves are further able to spread the impact of their efforts and increase program results.

Performance and Selectivity of Clearcast® Herbicide for Chinese Tallow Control

Matt Nespeca, Vice President, Conservation Land Company Inc., mnespeca@comcast.net

Lisa Lord, Conservation Easement Monitor, South Carolina Chapter, The Nature Conservancy

Jonathan Smith, Sales Specialist, BASF Corporation- will present

Chinese tallow (*Triadica sebifera*) is an invasive tree that is threatening native forests, marshes and grassland ecosystems in the Southeastern US. Chinese tallow damages native biodiversity, impacts forestry and wildlife values, and creates a wall of vegetation that reduces the long-term aesthetic value of unique coastal areas. Replicated foliar herbicide trials were conducted at the Ernest F. Hollings ACE Basin National Wildlife Refuge to determine the effectiveness and selectivity of three rates of Clearcast® Herbicide, as well as single rates of Habitat® Herbicide and Garlon® 4 Herbicide on tallow control within a scrub-shrub native grassland upland system. Results indicate that 1 year after treatment, 32 oz./acre of Habitat Herbicide provided the best control of tallow, and also controlled other hardwoods such as

sweetgum, persimmon and winged sumac. The 64 oz./acre rate of Clearcast Herbicide showed good control of tallow, while providing safety for native hardwoods and releasing native grasses and forbs, and performed better than the lower rates of Clearcast. 3 qt/acre of Garlon 4 Herbicide also provided control of tallow, and provided safety for native and non-native grasses. The % visual coverage of native grasses and broadleaf forbs was lowest in the control (check) blocks, due to heavy canopy closure of both tallow and native hardwoods. At 1 year after treatment, of the total 38 plant species that were found within the control (check) treatment, the greatest botanical diversity was recorded within the 64 oz./acre Clearcast treatment blocks (29 were encountered), and the lowest botanical diversity was recorded within the 3 qt/acre Garlon 4 treatment blocks (17 species were encountered), mainly due to broadleaf control of Garlon 4 and release of grass species. For large-scale natural area restoration treatments, selectivity for native hardwoods, forbs and grasses can be attained from broadcast applications of Clearcast Herbicide. For natural areas that have high levels of botanical significance, direct foliar and stem injection treatments of Habitat Herbicide or Clearcast Herbicide can increase the safety for native grasses and forbs.

Making Invasive Plant Problems More Accessible Through Education and Outreach with Real Estate Professionals

Matt Nespeca

To grow the invasive plant control market in the Eastern US, there are some significant hurdles that must be addressed to access private lands (which make up ~80% of the total rural forestlands in the Eastern US). For example, kudzu is a 7 million acre problem in the Southeastern US, but most kudzu infestations are not controlled by existing landowners because there is little quantitative value currently placed on the costs associated with the infestation. In many cases, invasive plants on private lands are viewed as fixtures, and not the outcome of past management. The only certainty about rural and rural/urban fringe private lands in the Eastern US is that they will transfer ownership over time. The invasive plant control market will grow on new acres if the detrimental value of invasive plants is made known to buyers of land through real estate due diligence and valuation professionals. Invasive plant infestations must be recognized as a problem during the transaction of rural lands.

In the urban real estate housing market, there are several due diligence inspections that identify problems for buyers, such as wood destroying organism reports and home inspections. In rural land transactions, buyers will commonly commission a Phase I Environmental Assessment (that identifies major environmental hazards), and appraisals (land and in some cases additional timber valuations). For the vegetative condition of a property at the time of an acquisition, there can be some access and aesthetic conditions created by invasive plants that would correspond to environmental and appraisal issues, but many invasive plant problems would not be addressed by this level of due diligence activities.

Strategies are being developed to determine which influencers within the real estate acquisition due diligence process are most likely to respond to damaging and costly invasive plant problems. Professionals who are likely to have an interest in understanding the value of invasive plants on property include real estate appraisers, environmental consultants, land planners, engineers and land developers. As part of this strategy, a targeted marketing and communication campaign must be developed and launched regionally that provides information on species-level impacts of invasive problems on real estate values, and solutions for significant problems. Results of such market development activities will create new business opportunities for private sector consultants and applicators, as well as provide public benefit by controlling unwanted and damaging invasive plants on the landscape.

Variation in Cogongrass Seed Production across Alabama and Georgia

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Cogongrass (*Imperata cylindrica*) is a growing threat as it continues its rapid spread across the Southeast. This aggressive weed is spreading both vegetatively and by seed; however, reports on variability in seed viability has led to questions regarding the relative role of seed production in cogongrass spread and associated implications for cogongrass control. Use of spring applications of herbicides to reduce seed production is increasing; however, the benefit of spring applications on overall plant control, if not providing a reduction in seed production, is still under investigation. Additionally, if outlier populations are not producing viable seed then their control may be less urgent than if they are producing viable seed. Under optimal conditions, an individual cogongrass seed head can produce hundreds of seeds. However, production of unfilled florets is not uncommon as cogongrass is an obligate out-crosser, requiring pollen from distinct genotypes for the production of viable seed. Consequently, low seed production is expected in areas consisting primarily of clonal infestations resulting from spread through rhizome transport. As the density and number of cogongrass infestations increases, the likelihood of multiple genotypes within close enough proximity for successful cross-pollination and seed production increases. In addition, it has been observed that seed fly often occurs in aggregated clusters, increasing the likelihood of multiple genotypes within any infestation originating from seed. In a first year pilot study, mature seed heads were collected from sites across Alabama (n=45) and Georgia (n=16) and tested for seed viability using a simple germination test. Five seed heads per site were spread out on moist filter paper in petri dishes in a growth chamber (30 C, 15 hr light/ 9hr dark) for 2 weeks. Regional differences in germination were observed. In southwest Alabama where cogongrass is well established, germination ranged from 0 to 39%. In central and southeastern Alabama where infestations are less numerous, percent germination was low (< 1%) but consistently above zero. No germination was observed from seed heads collected from sites in Georgia and from outlier infestations in northern Alabama, with the exception of one seed from one site in Georgia. Work continues to further elucidate patterns in cogongrass seed viability.

The Florida Invasive Species Partnership (FISP): Invasive Species Know No Boundaries – Do We? (poster)

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The Florida Invasive Species Partnerships (FISP), originally formed in 2006 under the Invasive Species Working Group as the Private Land Incentive Sub-working Group, is a multi-agency and organizational effort to help improve the efficiency and effectiveness of partnership approaches to preventing and controlling invasive species through increased communication, coordination and shared resources. The health of our production lands, natural lands and wildlife habitats are critically important to us all and invasive species represent a very real and serious threat. If landowners and land managers in Florida wish to achieve long-term success with regards to combating invasive species, it is critical to collaborate with all stakeholders, focusing on prevention as well as treatment.

FISP members have developed four goals:

1. Increase effectiveness and decrease costs by working together;
2. Build focus on prevention as well as treatment;
3. Provide tools for unified approach, bridging the gap “across the fenceline” between public and private lands landowners; and,
4. Encourage development, implementation and sharing of new and innovative approaches.

We have started working towards our goals through two main actions: 1) the creation of the website FloridaInvasives.org, which houses a searchable database of private land incentive programs (the “Incentive Program Matrix”), and 2) fostering Cooperative Invasive Species Management Areas (CISMAs). For the past year, FISP has held a monthly conference call/online meeting for individuals involved or interested in Florida CISMAs, and have been speaking at multiple conferences, land manager meetings and CISMA start-up meetings. In addition FISP members from Florida Fish and Wildlife Conservation Commission (FWC), Invasive Plant Management Section and Florida Department of Transportation (FDOT) have been collaborating on decontamination protocols for equipment and personnel as well as mapping and joint control.

The sum of FISP successes are many, however, none of them can be attributed to an individual effort. Our strength is truly in the partnership, camaraderie and conservation ethic that is shared by our members. This is the approach and success that we wish to develop in Florida through engaging private landowners and fostering CISMAs. The threat of invasive non-native species is great, but it can be effectively and efficiently addressed through coordinated, collective effort, which includes:

- Multiple agencies and organizations in partnership;
- Involving private landowners and interests;
- Recognizing and respecting differences and commonalities in missions;
- Leveraging Conservation, i.e. using each other’s programs and assistance to strengthen and support conservation work.

Do biological invasions affect biological diversity? Comparisons of native and nonnative diversity within *Lygodium japonicum* (Japanese climbing fern) infestations.

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Invasive species are frequently cited as a major threat to biological diversity, perhaps second only to habitat destruction. Within the dense infestations typical of invasive plants, intuitively it seems that the invader has proliferated to the point of excluding other species. However, it is possible that other species can persist even within apparent monocultures of an invasive plant. The present study was conducted within dense infestations of *Lygodium japonicum* (Japanese climbing fern) at the Joseph W. Jones Ecological Research Center in Newton, Georgia. *Lygodium japonicum* is a FLEPPC Category I invasive exotic species present throughout the southeastern United States. The species is characterized by a climbing habit, but also can grow as a dense groundcover. In areas where *L. japonicum* is present as a groundcover, 62 3 m x 3 m plots were established. The plots were located primarily within longleaf pine or mixed pine-hardwood forest in areas where frequent prescribed fire is used for management. Other disturbances including roadways,

agricultural fields, and/or areas of tree harvest were present near all the plots. Percent cover of *L. japonicum* was measured, as was the presence of additional plant species. Within the 9 m² plot, intensive sampling was done in 0.25 m² and 1 m² subplots to measure the presence of additional species; less intensive sampling was done in the remainder of the plot. Biodiversity, as indicated by species richness, was then calculated. A regression analysis was performed to measure correlation of percent cover of *L. japonicum* with overall biodiversity, biodiversity of native plants, and biodiversity of other nonnative plants. Although degree of disturbance was not measured directly, the number of weedy species (native and nonnative) was measured and used as an indicator of the degree of disturbance; this measure was then compared with the biodiversity measures in an additional regression analysis. The persistence of nonnative species within dense infestations of an exotic species is promising in terms of restoration. A seedbank of native species could facilitate restoration of a site following removal of an invasive species. However, disturbance caused by removal of the invasive species could also facilitate reinvasion or promote the growth of other nonnative species. Different treatment scenarios, their potential impacts on native species, and implications for restoration were examined.

National Estuarine Research Reserves' Southeastern Regional Partnership on Invasive Species

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The National Estuarine Research Reserve System (NERRS) is a network of 27 protected areas established for long-term research, education and stewardship. Reserve staff work with local communities and regional groups to address natural resource management issues, such as habitat restoration and invasive species, and help communities develop strategies to deal successfully with coastal resource issues. The five NERRs in the Southeast (North Carolina, North Inlet-Winyah Bay and ACE Basin in South Carolina, Sapelo Island in Georgia, and Guana-Tolomato-Matanzas in Florida) met in 2007 and decided to work together on an issue that would benefit from a regional approach. Invasive species emerged as a topic of concern for all of the southeastern reserves. A survey was developed to collect data on invasive species that would inform future coordinated monitoring, research, education and stewardship activities at site and regional levels. For each invasive species identified as a concern, the reserves were asked if the species is present in the reserve or watershed, if detailed data on the local distribution of the species is available, if the reserve has or plans to participate in research, monitoring/early detection, management or education activities related to the species, and if the reserve has access to expertise on the species. Seven plant species and twelve animal species were identified among the five reserves. Chinese tallow, *Sapium sebiferum*, was listed as present in the reserve or watershed of all five reserves. Common reed, *Phragmites australis*, green porcelain crab, *Petrolisthes armatus*, and feral hogs were listed as concerns for 4 of the reserves. Of the 44 total survey responses, 39% reported having detailed distribution data for the species, reserves were directly involved in research in 18%, 52% reported participation in educational activities, and 57% felt the public was aware of the threats the species poses. At the annual southeastern regional meeting in 2008, it was decided that the reserves would move forward on a regional collaboration to facilitate the sharing of information and resources among reserves, their partners, resource agencies, and other groups participating in research, education and management activities related to the invasive species identified. This collaboration among reserves and local resource management agencies seeks to maximize the efficiency and reach of efforts to control invasive species, and to promote partnerships to strengthen future initiatives in order to increase success of invasive species control.

