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FALL 2009

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Fall 2009, Volume 12, Number 4

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The mission of the Exotic Pest Plant Councils is to support the management of invasive exotic plants in natural areas by providing a forum for the exchange of scientific, educational and technical information.

An **exotic plant** has been introduced, either purposefully or accidentally, from outside of its natural range. A **naturalized exotic plant** is one that sustains itself outside of cultivation (it is still exotic; it has not "become" native). An **invasive exotic plant** not only has become naturalized, but it is expanding its range in native plant communities.

Wildland Weeds (ISSN 1524-9786) is published quarterly by the Florida Exotic Pest Plant Council (FLEPPC) and distributed to all Southeast Exotic Pest Plant Council (SE-EPPC) members to provide a focus for the issues and for information on exotic pest plant biology, distribution and control. The Charter issue of *Wildland Weeds* was published in Winter 1997.

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On the Cover:
Chinese tallow (*Triadica sebifera*), one of the south's worst invasive plant species, was discussed as a potential biofuel at the Southeast Bioenergy Conference – August 11-13, 2009. According to USDA Forest Service Forest Inventory and Analysis data, Chinese tallow is estimated to invade 450,000 acres of forest land in the thirteen southern states.
Photo by Chris Evans, bugwood.org

Family Forest Owners Appraise the Effectiveness and Value of Wildland Weeds Control Methods

Matthew B. Howle[1], Matthew C. Nespeca[2], and Thomas J. Straka[1]

Introduction

Family forest owners control nearly two-thirds of the private forest land in the United States and, thus, have a large impact on the nation's environmental quality. Their holdings tend to be in small tracts; nearly half are less than 100 acres in size (Butler 2008). The opinions, perceptions, and motivations of these family forest owners lead to forest management decisions that have great impact on the health of the nation's forests, especially the ever-growing problem of invasive species. Clearly, their perceptions on the effectiveness of various control methods, along with benefit/cost issues, will determine how active a role they play in invasive species control.

Focus groups are commonly used to gain understanding about public views on natural resource issues. We used them to evaluate forest owner perceptions concerning chemical and mechanical control methods for Chinese privet (*Ligustrum sinense*), an invasive woody shrub imported from China in the mid-nineteenth century (Miller 2003). It dominates mesic forest understory throughout the southeastern United States and is an aggressive, shade-tolerant invasive, particularly in bottomland hardwood forests, where it produces abundant seeds that are widely spread by birds and water drainages (Langeland and Burks 1998). Many different treatment methods have been tested in attempts to control Chinese privet: foliar, basal, and stump herbicide applications; biological control, mechanical treatment, and prescribed burning (Harrington and Miller 2005, Williams and Minogue 2008). Our field examples attempted to mimic established treatments.

The focus groups provided an opportunity to both analyze what made family forest owners perceive various control methods to be effective and how they evaluated the benefit/cost relationship of each method. The focus groups facilitated the communication, understanding, and integration required to effectively connect on-the-ground invasive plant management with scientific research (Renz et al. 2009). Rather than quantitative data, focus groups provide shared perspectives from a combined local demographic and elicit often surprising information through conversational clues and repeated words or ideas (Grudens-Schuck et al. 2004).

Our objective was to get feedback on a specific invasive plant species, Chinese privet, in South Carolina's bottomland forests, but at the same time to identify the factors that forest owners use in evaluating forest management techniques like chemical and mechanical control. We also stressed perceptions on economic feasibility from the forest owners. Unlike the conventional indoor setting used for most focus groups, we took participants to see varying herbicide treatment areas in the field, walking through various levels of infestation, and stopping at strategic evaluation points. They experienced all the natural factors that affect owners' perceptions of treatment effectiveness, i.e. insects, heat, and humidity. Participants were able to give very specific on-site perceptions of treatment efficacy.

Methods

Field focus groups require site selection and planning, participant selection, on-site focus group interviews, and data analysis. To provide examples of effective treatments, glyphosate and metsulfuron were applied during hardwood dormancy at levels suggested in scientific literature. This resulted in four treatment areas and one control block. Relatively small blocks on each tract were appropriately treated utilizing different methods, in demonstration fashion (Table 1).

Treatments	Location 1	Location 2	Location 3
4% glyphosate foliar mist blower application	✓		✓
4% glyphosate foliar mist blower application plus cut and spray (50% glyphosate) on all stems over 2m (6ft.)	✓		✓
73.1 ml/ha (1 ounce/ac) metsulfuron foliar mist blower application	✓		✓
18.7 L/ha (8 quarts/ac) glyphosate aerial helicopter application		✓	
Untreated control (check)	✓	✓	✓

Table 1. Treatments applied by location

Specific themes and subthemes	Timber Group Frequency	Non-timber Group Frequency	Total Frequency
Biological efficacy concerns	**34**	**46**	**80**
regrowth	10	11	21
not effective control	7	12	19
effective control	4	14	18
herbicide selectivity	4	3	7
Economic concerns	**34**	**39**	**73**
timber quality and return dollars	10	17	27
cost-share assistance	5	8	13
retreatment and guarantee	7	5	12
Field focus group critique	**10**	**13**	**23**
demonstration value	9	8	17
Environmental concerns	**9**	**17**	**26**
invasive species impact	7	13	20
herbicide impact	2	4	6

Table 2. Frequency, or number of times, each theme and subtheme was mentioned by either timber oriented or non-timber oriented family forest owners and both added together to show total frequency.

Site selection involved locating cooperating forest owners and geographic locations that were representative of typical forest stand conditions across the state. Sites ranged from the upper Piedmont to the upper Coastal Plain. Winter treatments were chosen in order to avoid killing deciduous native trees and shrubs which were dormant at the time.

Prior to the focus group discussion, the most representative examples of treatments and varying results were located on each tract and a walking path between examples (stops) was determined. Special effort was made to expose forest owners to the variability between the different treatments, the variability, if any, within each treatment, and the terminal variability where a treatment ends and non-treatment areas persist. The participants were separated into two groups by their main forest management objective, either timber production or non-timber production. Each group had about a dozen participants.

Discussions at each stop along the walking tour were directed by the moderator to bring out the reasoning and specific factors used by participants to evaluate the biological and economic effectiveness of the various herbicide treatments. The order of questioning is important (Krueger and Casey 2000). First, participants were asked what they saw and how they perceived the vegetation with no knowledge of the treatment techniques or proven effectiveness. After initial discussions began to fade, an expert on herbicides explained the treatments in detail including their cost. A new round of moderator-led questions focused on benefit/cost relationships and willingness to treat privet using these treatments. The moderator used specific questions in order to probe deeper into why participants responded as they did (motivations). They were asked to justify the factors they employed in evaluation and to explain reasons for each perception of treatment.

The focus group data were compiled as a comprehensive transcript made from the recorded interviews. The conversations were analyzed for comparisons and frequencies. Frequent, specific and comparative quotes from both timber and non-timber forest owners were identified. Forest owner perceptions, concerns, and comments were categorized and subthemes were established.

Results and Discussion

The themes that surfaced due to their specific nature within the dialogue and their frequency of occurrence were observed (Table 2). Major themes were biological effectiveness, economic

A typical concern was stated as, "Do you have to come back the second year and spray again because of the seeds? This stuff produces seeds like nobody's business."

issues, field focus group critique, and environmental impacts. Subthemes centered on regrowth concerns, control effectiveness, chemical selectivity, timber quality and investment return, cost-share incentives, retreatment and guarantees, demonstration value, aesthetics, invasive impacts, and chemical impacts.

During discussions, participants observed, walked through, and experienced varying degrees of privet control. They moved from areas that were extremely void of any live privet (due to chemical and mechanical treatments) to untreated (control) areas where the privet was dense and exceeded 12 feet in height. The most frequent of the biological concerns brought up by participants was the possibility and probability for regrowth after the treatments. A typical concern was stated as, "Do you have to come back the second year and spray again because of the seeds? This stuff produces seeds like nobody's business."

A second major biological issue was the selectivity of chemicals used for the treatments. Participants were not aware that treatments were done in winter while hardwoods and other deciduous plants were dormant. So a typical concern was, "I am real curious as to what you used to not harm any of the rest of the hardwood trees around here." Often, a participant would compare one treatment area with the other, "Back there (cut and spray) where you cut it down it looks like you sprayed the stumps and it looked like a good kill and I didn't see anything coming back out … and it was good. But along here (spray only), you see the tops are still living and that implies that the rest of the plant is still living and would come back out…I would be unhappy." It was apparent to the groups that the spray-only glyphosate treatment was not as effective as the other treatments.

Regardless of effectiveness, participants discussed concerns they have about paying for Chinese privet control. Would controlling Chinese privet promote timber growth and increase future harvest values enough to justify the cost of management? Timber quality was a concern. Participants recognized that there were some treatment areas that were void of valuable timber sizes and species and noted that treatments would not be worth the cost unless timber quality was sufficient. Some sort of quality timber stand seems to be necessary before an investment in privet control would be considered. A typical comment was, "Yeah, well, your timber value…if you got good timber, it's valuable, you know, and it's (privet) taking a lot of plant food and moisture from the timber…if it's a stand of beautiful hardwoods, I would come near to considering it."

Forest owners associated timber harvest time as a period when revenue was available for treatments. This appeared to be another factor motivating the forest owners to favor harvest time applications. Participants indicated that the cut and spray glyphosate treatment (most expensive) was very effective due to its open appearance and its low expectancy for retreatment. The discussion produced the sentiment that landowners would rather pay more up front to cut and spray than possibly pay again for follow-up treatments. Retreatment concerns led to discussion on negotiation and contractual guarantees from hired herbicide applicators to avoid high retreatment cost and low biological effectiveness. Some form of cost-share assistance would be a decision-making factor with regard to privet control for many of the participants.

Field focus groups were a successful way to gain insight into the perceptions of South Carolina family forest owners with regard to invasive species management practices. While unconventional, and potentially difficult, in-field focus groups are possible. They offer a setting which puts participants in contact with each other and in actual field conditions to observe management applications. Extension agencies could benefit from some of the techniques used for in-field focus groups, because of their demonstration benefits. Surprisingly, field focus groups were perceived as a highly effective demonstration method. Participants were consistent and enthusiastic in feeling that the focus group was a great invasive species management and herbicide demonstration technique. This aspect could be utilized in an extension setting.

Participants repeatedly brought up environmental quality issues such as the impacts (both positive and negative) of invasive plants on wildlife and biodiversity, as well as the impact of herbicide applications on water quality. A participant stated, "I wouldn't mess with it around the creek because that's where I see most of my wildlife … I see most of my wildlife in the privet around the creek." It was expected that some of these environmental concerns would surface when discussing invasive plant management and herbicides. However, the outdoor nature of the focus groups themselves could have brought more emphasis to these issues because participants were experiencing, not just hearing about or seeing pictures of, privet infested ecosystems.

Through discussions about herbicide treatment efficacy, the decisive factors that forest owners consider when weighing management options on wild weed control were identified. Methods or chemicals that show selectivity when applied are important to landowners. The interviews found that controlling only target species and leaving desirable species could be a decisive factor when choosing management options. It is clear that much of the information regarding effectiveness was frequently and strongly driven by cost.

Conclusions

Specifically, it surfaced that the presence of valuable timber, cost-share incentives, and control guarantees from contracted herbicide applicators are determining factors related to the feasibility, affordability, and willingness for forest owners to engage in large-scale herbicide treatment for Chinese privet control. Perceived low timber value, lack of growth and yield projections, and the possibility of mediocre treatments requiring costly follow-up applications could discourage family forest owners from participation in invasive species management. Managers should address these cost-sensitive views when suggesting invasive species control to family forest owners. Treatments with low expectancy for regrowth or follow-up applications may be the best recommendation. We did expect to see differences between timber-oriented and non-timber-oriented forest owners, but these did not surface. Also, harvest and reforestation periods are good times to approach invasive plant control because of their perceived effectiveness with respect to timing and availability of harvest revenue.

Acknowledgment

This research was supported by a grant from the USDA Forest Service, Forest Health Protection, Non-Native Invasive Plants Program.

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The Calusa Lakes Community Brazilian Pepper Busting Initiative

by Annemarie Post, Extension Agent, Florida-Friendly Landscaping™ Program, University of Florida/IFAS Sarasota County Extension

While exploring the wetland preserve areas and studying plot maps of the Calusa Lakes Homeowners Association in Nokomis, FL in 2002, community residents Julie Whitney and Peter Price found that about sixteen acres were infested, mainly with Brazilian pepper (*Schinus terebinthifolius*). Smaller pockets of punk trees (*Melaleuca quinquenervia*) and air potato (*Dioscorea bulbifera*) also were present. They took the initiative to start restoring these areas by removing invasive exotic plants and replanting appropriate native vegetation. To help them manage this daunting task, they engaged a group of volunteers from their community. On monthly work days, you can find about 20 enthusiastic participant who have been involved from the beginning, working hard under sometimes inclement weather conditions. These volunteers have contributed over 3,200 work hours to date. Their tasks consist of removal of invasive exotics, follow-up control of already cleared areas, and planting of appropriate wetland species. Their efforts are supported by several local institutions. Todd Herschfeldt and Andrea Lipstein, Sarasota County Resource Protection, and Annemarie Post, Extension Agent and coordinator of the UF/IFAS Sarasota County Extension Florida-Friendly Landscaping™ Program, provided technical direction for exotic plant removal, and help with plant selection.

This great project was started with limited financial resources, but it soon became clear to the coordinators that in order to tackle the heavily infested areas additional follow-up funding would be needed. Help arrived in the form of the Sarasota County Neighborhood Grant Program, one of the strategic initiatives adopted by the Sarasota Board of County Commissioners in 2003 to help residents enhance the character, value, safety, health and infrastructure of their neighborhoods. To accomplish this goal, the commissioners set aside $200,000 per year to fund neighborhood projects. Grant cycles occur twice a year in the spring and fall with $100,000 available each cycle. It is a 50/50 matching grant program; 100% of the grant value must be matched either with direct funds, other grants, and/or volunteer labor (at $12/hr.). A maximum of $12,000 can be awarded to participants. For more information about this grant program, visit http://www.scgov.net/PlanningandDevelopment/NeighborhoodServices/Grants.asp

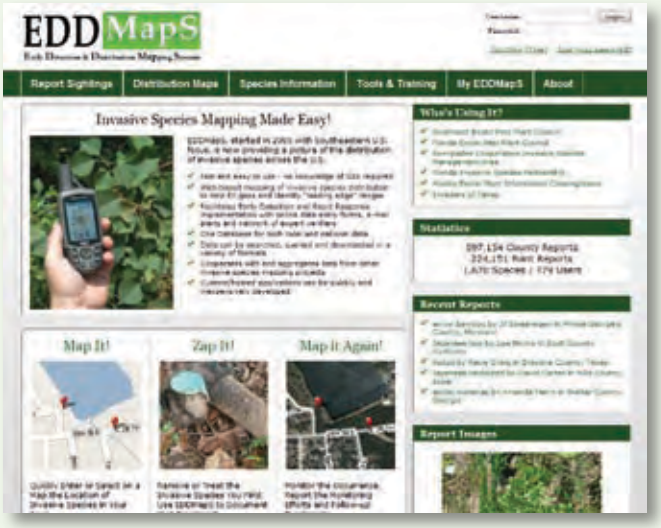
The Calusa Lakes group received a total of about $75,000 over several grant cycles through the Sarasota County Neighborhood Grant program, and received another $9,000 through the Florida Yards & Neighborhoods Grant program from the Sarasota Bay Estuary Program (see www.sarasotabay.org for more information).

Their commitment to restore the preserve areas was recognized in 2006 when the group received the Sarasota County Conservation Award for Community Initiative. At the time of writing, this group has removed 70%-80% of invasive exotic plants from their preserve areas and they are currently working on a Management Plan under the direction of Sarasota County Resource Protection. Their enthusiasm has also spilled over to their neighbor, Mission Valley Golf Course. Plans are underway for a collaborative effort to remove invasive exotic plants between the Calusa Lakes Community and this golf course.

Contact Annemarie Post at 941/861-9815 or ampost@ufl.edu

Updates to EDDMapS

- New Interface for Southeast EPPC and Florida EPPC EDDMapS
- Location Reporting Tools – convert a physical address to Lat/Long, convert UTMs and Degrees/Minutes/Seconds
- Reporter Profiles – create your own, learn more about reporters
- Species with large numbers of points now load much faster in Google™ Maps view
- Invasive Plant Status Reports by State – Most Reported Plants, Most Abundant Plants by County, Counties with Most and Least Reported Plants
- Manage Your Reports – view, edit, revisit and delete reports
- Create Alerts by Location – receive an automatic e-mail when a plant or animal is reported in a specified area
- Batch Upload Your Data – send data (Excel, Access, shapefiles) using a web form



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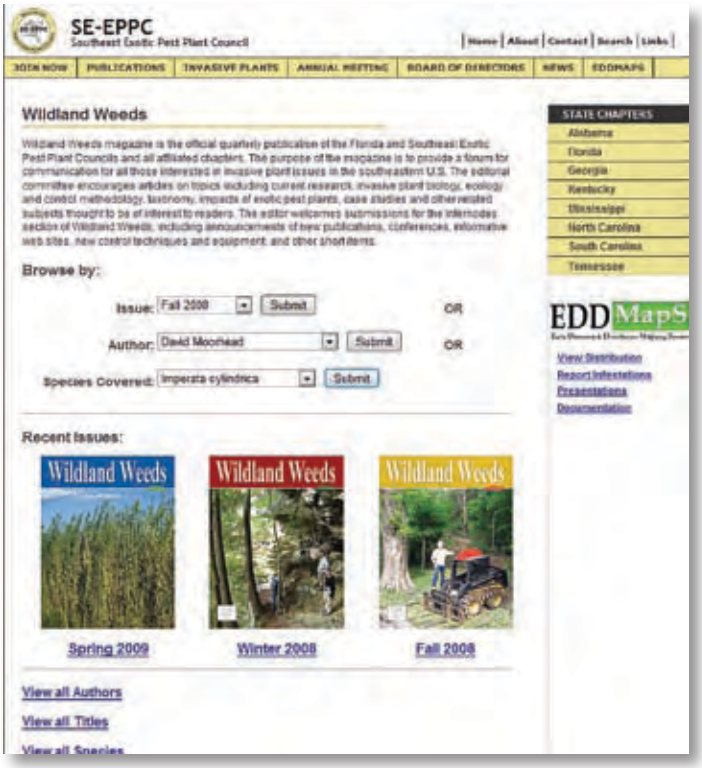
Wildland Weeds issues in searchable database!

A new *Wildland Weeds* database has been created that searches all content from the Winter 1997 charter issue through Spring 2009. Search the collected articles of *Wildland Weeds* by issue (e.g. Winter 2008), author name, or species covered. A list of authors, titles, or species may also be browsed. Articles and/or full issues are provided as PDF files. The database will be updated as new issues are published. We welcome feedback and reporting of any errors.

Bringing the old technology of print journals from 1997 up to the new technology of web-searchable PDF files through 2009 was an arduous task. This new resource is available thanks to Chuck Bargeron, Information Technology Director, and Elizabeth W. Carlson, Center for Invasive Species and Ecosystem Health, The University of Georgia; Corrie Pieterson, School of Natural Resources and Environment, University of Florida; and Karen Brown, *Wildland Weeds* editor.

To search the Wildland Weeds database, go to:
http://www.se-eppc.org/wildlandweeds/ or
http://www.fleppc.org/wildlandweeds/



It's in the Bag

by Gerardo Celis and Corrie Pieterson

University of Florida graduate student Gerardo Celis has created a new tool to assist in the removal and transport of invasive exotic plant material, Tyvek® bags. Celis and fellow student Corrie Pieterson have been removing exotic plants, primarily coral ardisia (*Ardisia crenata*), from the hardwood hammock section of the Natural Area Teaching Laboratory (NATL) on the University of Florida campus in Gainesville. *Smilax* spp. and other thorny vegetation were tearing holes in the plastic bags used to collect the plant material. In addition, the ardisia stems and roots tore the plastic bags from within. Torn bags are not only inconvenient and difficult to transport, but could also inadvertently spread the ardisia if fruits fell out of the holes.

With these concerns in mind, Celis designed a new collection bag made from DuPont Tyvek® material. He was inspired and helped by the Design 4 Development group in the Graphic Design department at UF, which has been working with this material since 2008. The group, directed by Associate Professor Maria Rogal, explores alternative materials for diverse uses (see www.design4development.org). Tyvek® was first implemented by student Abby Chryst under the Design 4 Development group as protective rain clothes and gear for indigenous Mayan communities in Mexico. The material is lightweight yet durable, and is much more resistant to tearing. The weed collection bag is reusable and has held up well over several trips into the hammock.

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Corrie Pieterson, School of Natural Resources and Environment, University of Florida, cpieterson@ufl.edu

Adam Grayson pulls a sapling of weeping bottlbrush (*Callistemon viminalis*) found growing in the shallow water of a depression marsh pond in Martin County. A mature tree grows behind him. This species has been added to Category II of the FLEPPC 2009 List of Invasive Plant Species. Photo by Vernon V. Vandiver

Biofuels: Cultivating Energy, Not Invasive Species

A briefing paper was approved by the U.S. Invasive Species Advisory Committee (ISAC) on August 11, 2009.

ISSUE

To provide alternatives to petroleum-based energy, the United States (U.S.) government has mandated a greater proportion of plant-based biofuels be integrated into its energy portfolio. However, certain plant species being proposed for biofuel production in the U.S. are invasive species or are likely to escape cultivation and become invasive.

ACTION – Provides

a) background information on the potential linkages between biofuels and invasive species and; b) recommendations for Federal action to reduce the risk of invasive species introduction and spread through its biofuels programs. Implementation of these recommendations will help to ensure that the U.S. maximizes the benefits of its biofuel initiatives while preventing the spread of invasive species.

View the entire briefing paper at:
http://www.invasivespecies.gov/home_documents/BiofuelWhitePaper.pdf

Florida Exotic Pest Plant Council's 2009 List of Invasive Plant Species

Purpose of the List: *To focus attention on —*

- the adverse effects exotic pest plants have on Florida's biodiversity and plant communities,
- the habitat losses from exotic pest plant infestations,
- the impacts on endangered species via habitat loss and alteration,
- the need to prevent habitat losses through pest-plant management,
- the socio-economic impacts of these plants (e.g., increased wildfires in certain areas),
- changes in the seriousness of different pest plants over time,
- the need to provide information that helps managers set priorities for control programs.

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.*

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Abrus precatorius	rosary pea	I	N	C, S
Acacia auriculiformis	earleaf acacia	I		C, S
Albizia julibrissin	mimosa, silk tree	I		N, C
Albizia lebbeck	woman's tongue	I		C, S
Ardisia crenata (*A. crenulata* misapplied)	coral ardisia	I		N, C, S
Ardisia elliptica (*A. humilis* misapplied)	shoebutton ardisia	I	N	C, S
Asparagus aethiopicus (*A. sprengeri; A. densiflorus* misapplied)	asparagus-fern	I		N, C, S
Bauhinia variegata	orchid tree	I		C, S
Bischofia javanica	bishopwood	I		C, S
Calophyllum antillanum (*C. calaba* and *C. inophyllum* misapplied)	santa maria (names "mast wood," "Alexandrian laurel" used in cultivation)	I		S
Casuarina equisetifolia	Australian-pine, beach sheoak	I	P, N	N, C, S
Casuarina glauca	suckering Australian-pine, gray sheoak	I	P, N	C, S
Cinnamomum camphora	camphor tree	I		N, C, S
Colocasia esculenta	wild taro	I		N, C, S
Colubrina asiatica	lather leaf	I	N	S
Cupaniopsis anacardioides	carrotwood	I	N	C, S
Dioscorea alata	winged yam	I	N	N, C, S
Dioscorea bulbifera	air-potato	I	N	N, C, S
Eichhornia crassipes	water-hyacinth	I	P	N, C, S
Eugenia uniflora	Surinam cherry	I		C, S
Ficus microcarpa (*F. nitida* and *F. retusa* var. *nitida* misapplied)[1]	laurel fig	I		C, S
Hydrilla verticillata	hydrilla	I	P, U	N, C, S
Hygrophila polysperma	green hygro	I	P, U	N, C, S
Hymenachne amplexicaulis	West Indian marsh grass	I		C, S
Imperata cylindrica (*I. brasiliensis* misapplied)	cogon grass	I	N, U	N, C, S
Ipomoea aquatica	water-spinach	I	P, U	C
Jasminum dichotomum	Gold Coast jasmine	I		C, S
Jasminum fluminense	Brazilian jasmine	I		C, S
Lantana camara (= *L. strigocamara*)	lantana, shrub verbena	I		N, C, S
Ligustrum lucidum	glossy privet	I		N, C
Ligustrum sinense	Chinese privet, hedge privet	I		N, C, S
Lonicera japonica	Japanese honeysuckle	I		N, C, S
Ludwigia peruviana	Peruvian primrosewillow	I		N, C, S
Luziola subintegra	Tropical American water grass	I		S
Lygodium japonicum	Japanese climbing fern	I	N	N, C, S
Lygodium microphyllum	Old World climbing fern	I	N	C, S

[1]Does not include *Ficus microcarpa* subsp. *fuyuensis*, which is sold as "Green Island Ficus"

FLEPPC List Definitions:

Exotic – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida.

Native – a species whose natural range includes Florida.

Naturalized exotic – an exotic that sustains itself outside cultivation (it is still exotic; it has not "become" native).

Invasive exotic – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

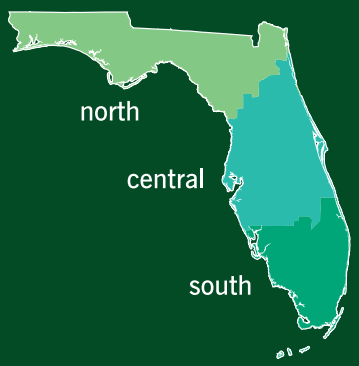
Abbreviations:

Government List (Gov. List):
P = Prohibited aquatic plant by the Florida Department of Agriculture and Consumer Services;

N = Noxious weed listed by Florida Department of Agriculture & Consumer Services;

U = Noxious weed listed by U.S. Department of Agriculture.

Regional Distribution (Reg. Dist.):
N = north, C = central, S = south, referring to each species' current distribution in general regions of Florida (not its potential range in the state). Please refer to the map below.



Changes to the 2009 List:

Luziola subintegra, added to list as Category I

Luziola subintegra (rice grass) was first discovered in Lake Okeechobee by Mike Bodle in 2007. This aquatic grass is spreading in the lake. It grows in water 2-3 m deep, spreads vegetatively and by seed, and aggressively outcompetes other native and exotic species. To date, 2,000 acres have been treated.

Nymphoides cristata, moved from Category II to Category I

Snowflake (*Nymphoides cristata*) is an Asian aquatic that became problematic in southwest Florida in the 1990s. It is now an abundant weed in canals and ponds in southwest Florida, and has spread throughout the peninsula where it has been documented in seven counties, from Collier to St. Johns. It has colonized the Big Cypress National Preserve where it is invading several strand swamps along Tamiami Trail, presumably introduced by fisherman using cast nets infested from waters outside of the preserve.

Salvinia minima, added to list as Category I

Water spangles (*Salvinia minima*), first found in Florida in 1928, remained a cryptic species during a period when opinions differed on its status as native or introduced in Florida. In 2001, a study of early herbarium voucher data revealed the introduction points and systematic spread of this free-floating fern into and throughout Florida. *S. minima* outcompetes more nutritive native duckweeds by overtopping their thinner fronds, which float flat upon the water surface.

Scleria lacustris, moved from Category II to Category I

Wright's nutrush (*Scleria lacustris*) is an annual tropical sedge that was first collected in Florida in 1988. In Florida, its distribution extends to more than 20 distinct natural areas in eight counties within four major drainage regions of the central and southern peninsula. Its unique growth habit obscures open water and drastically alters the naturally sparse and upright structure of preexisting native vegetation. Such domination may even displace native prey for the endangered Florida snail kite, a sight feeder inhabiting many locations where invasive colonization occurs.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Macfadyena unguis-cati	cat's claw vine	I		N, C, S
Manilkara zapota	sapodilla	I		S
Melaleuca quinquenervia	melaleuca, paper bark	I	P, N, U	C, S
Melinis repens (= *Rhynchelytrum repens*)	Natal grass	I		N, C, S
Mimosa pigra	catclaw mimosa	I	P, N, U	C, S
Nandina domestica	nandina, heavenly bamboo	I		N, C
Nephrolepis cordifolia	sword fern	I		N, C, S
Nephrolepis brownii (= *N. multiflora*)	Asian sword fern	I		C, S
Neyraudia reynaudiana	Burma reed, cane grass	I	N	S
Nymphoides cristata	snowflake	I		C, S
Paederia cruddasiana	sewer vine, onion vine	I	N	S
Paederia foetida	skunk vine	I	N	N, C, S
Panicum repens	torpedo grass	I		N, C, S
Pennisetum purpureum	Napier grass	I		N, C, S
Pistia stratiotes	water-lettuce	I	P	N, C, S
Psidium cattleianum (= *P. littorale*)	strawberry guava	I		C, S
Psidium guajava	guava	I		C, S
Pueraria montana var. *lobata* (= *P. lobata*)	kudzu	I	N	N, C, S
Rhodomyrtus tomentosa	downy rose-myrtle	I	N	C, S
Rhynchelytrum repens (See *Melinis repens*)				
Ruellia brittoniana[2] (*R. tweediana* misapplied)	Mexican petunia	I		N, C, S
Salvinia minima	water spangles	I		N, C, S
Sapium sebiferum (= *Triadica sebifera*)	popcorn tree, Chinese tallow tree	I	N	N, C, S
Scaevola taccada (= *Scaevola sericea, S. frutescens*)	scaevola, half-flower, beach naupaka	I	N	C, S
Schefflera actinophylla (= *Brassaia actinophylla*)	schefflera, Queensland umbrella tree	I		C, S
Schinus terebinthifolius	Brazilian pepper	I	P, N	N, C, S
Scleria lacustris	Wright's nutrush	I		C, S
Senna pendula var. *glabrata* (= *Cassia coluteoides*)	climbing cassia, Christmas cassia, Christmas senna	I		C, S
Solanum tampicense (= *S. houstonii*)	wetland nightshade, aquatic soda apple	I	N, U	C, S
Solanum viarum	tropical soda apple	I	N, U	N, C, S
Syngonium podophyllum	arrowhead vine	I		N, C, S
Syzygium cumini	jambolan plum, Java plum	I		C, S
Tectaria incisa	incised halberd fern	I		S
Thespesia populnea	seaside mahoe	I		C, S
Tradescantia fluminensis	small-leaf spiderwort	I		N, C
Urochloa mutica (= *Brachiaria mutica*)	Para grass	I		C, S

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. *These species may become ranked Category I, if ecological damage is demonstrated.*

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist
Adenanthera pavonina	red sandalwood	II		S
Agave sisalana	sisal hemp	II		C, S
Aleurites fordii (= *Vernicia fordii*)	tung oil tree	II		N, C
Alstonia macrophylla	devil tree	II		S
Alternanthera philoxeroides	alligator weed	II	P	N, C, S
Antigonon leptopus	coral vine	II		N, C, S
Aristolochia littoralis	calico flower	II		N, C, S
Asystasia gangetica	Ganges primrose	II		C, S

[2]The Plant List Committee is uncertain as to the correct name for this species. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana, R. tweediana, R. caerulea,* and *R. simplex*.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Begonia cucullata	wax begonia	II		N, C, S
Blechum pyramidatum	green shrimp plant, Browne's blechum	II		N, C, S
Broussonetia papyrifera	paper mulberry	II		N, C, S
Callisia fragrans	inch plant, spironema	II		C, S
Callistemon viminalis	bottlebrush, weeping bottlebrush	II		S
Casuarina cunninghamiana	river sheoak, Australian-pine	II	P	C, S
Cecropia palmata	trumpet tree	II		S
Cestrum diurnum	day jessamine	II		C, S
Chamaedorea seifrizii	bamboo palm	II		S
Clematis terniflora	Japanese clematis	II		N, C
Cryptostegia madagascariensis	rubber vine	II		C, S
Cyperus involucratus (*C. alternifolius* misapplied)	umbrella plant	II		C, S
Cyperus prolifer	dwarf papyrus	II		C, S
Dactyloctenium aegyptium	Durban crowfootgrass	II		N, C, S
Dalbergia sissoo	Indian rosewood, sissoo	II		C, S
Elaeagnus umbellata	silverberry, autumn olive	II		N
Elaeagnus pungens	silverthorn, thorny olive	II		N, C
Epipremnum pinnatum cv. Aureum	pothos	II		C, S
Ficus altissima	false banyan, council tree	II		S
Flacourtia indica	governor's plum	II		S
Hemarthria altissima	limpo grass	II		C, S
Hibiscus tiliaceus (See *Taliparititi tiliaceum*)				
Hyparrhenia rufa	jaragua	II		N, C, S
Ipomoea carnea ssp. *fistulosa* (= *I. fistulosa*)	shrub morning-glory	II	P	C, S
Jasminum sambac	Arabian jasmine	II		S
Kalanchoe pinnata	life plant	II		C, S
Koelreuteria elegans ssp. *formosana* (= *K. formosana; K. paniculata* misapplied)	flamegold tree	II		C, S
Leucaena leucocephala	lead tree	II	N	N, C, S
Landoltia punctata (= *Spirodela punctata*)	Spotted duckweed	II		N, C, S
Limnophila sessiliflora	Asian marshweed	II	P, U	N, C, S
Livistona chinensis	Chinese fan palm	II		C, S
Melia azedarach	Chinaberry	II		N, C, S
Melinis minutiflora	Molassesgrass	II		C,S
Merremia tuberosa	wood-rose	II		S
Murraya paniculata	orange-jessamine	II		S
Myriophyllum spicatum	Eurasian water-milfoil	II	P	N, C, S
Panicum maximum (= *Urochloa maxima, Megathyrsus maximus*)	Guinea grass	II		N, C, S
Passiflora biflora	two-flowered passion vine	II		S
Pennisetum setaceum	green fountain grass	II		S
Phoenix reclinata	Senegal date palm	II		C, S
Phyllostachys aurea	golden bamboo	II		N, C
Pittosporum pentandrum	Philippine pittosporum, Taiwanese cheesewood	II		S
Pteris vittata	Chinese brake fern	II		N, C, S
Ptychosperma elegans	solitaire palm	II		S
Rhoeo spathacea (see *Tradescantia spathacea*)				
Ricinus communis	castor bean	II		N, C, S
Rotala rotundifolia	roundleaf toothcup, dwarf Rotala	II		S
Sansevieria hyacinthoides	bowstring hemp	II		C, S
Sesbania punicea	purple sesban, rattlebox	II		N, C, S
Solanum diphyllum	two-leaf nightshade	II		N, C, S
Solanum jamaicense	Jamaica nightshade	II		C
Solanum torvum	susumber, turkey berry	II	N, U	N, C, S

Callistemon viminalis, added to list as Category II

Bottlebrush (*Callistemon viminalis*), a popular landscape tree, is now invading undisturbed short hydroperiod wetland communities in Miami-Dade, Collier, and Martin Counties, including those in Big Cypress National Preserve and Everglades National Park.

Dactyloctenium aegyptium, added to list as Category II

Durban crowfootgrass (*Dactyloctenium aegyptium*) is an annual grass that is a widely distributed weed throughout the southeastern US. In Florida, this species has been documented in 54 counties. While it is primarily a weed of disturbed areas, it also invades beach dune communities in southern Florida, including those located within Everglades and Dry Tortugas National Parks. Dense growth of this species interferes with ground nesting birds in Dry Tortugas and competes with state and federally listed plant species on the mainland.

Elaeagnus umbellata, added to list as Category II

Autumn-olive (*Elaeagnus umbellata*) is an aggressive shrub capable of replacing entire native ecosystems, which it has done in numerous locations in other states. There are three known native locations in the eastern Florida panhandle; two are local escapes from cultivation. The third is a mixture of mature upland sand hill and pine communities where a wildlife planting has escaped. The entire 2,081 acre site is infested. The infestation ranges from 100% (12.5 acres), to 50% (49.9 acres), to 25% (38.3 acres), to 10% or less (1,683.4 acres).

Hyparrhenia rufa, added to list as Category II

Jaragua (*Hyparrhenia rufa*) is an annual grass that is known from 14 Florida counties. In Miami-Dade County it has been found in intact habitat in at least 12 pine rockland fragments, outcompeting native plant species.

Landoltia punctata, added to list as Category II

Spotted duckweed (*Landoltia punctata*) is a small floating aquatic plant that is native to Australia and Southeast Asia. Since it was first found in Missouri in the 1930s, it has spread to 22 states and been documented in 36 Florida counties. It invades a wide range of undisturbed aquatic habitats and outcompetes native species.

Syzygium jambos, formerly Category II, removed from List

The Committee has not been able to locate data showing this species behaves as a Category II invasive.

Use of the FLEPPC List

FLEPPC encourages use of the Invasive Species List for prioritizing and implementing management efforts in natural areas, for educating lay audiences about environmental issues, and for supporting voluntary invasive plant removal programs. When a non-native plant species is to be restricted in some way by law, FLEPPC encourages use of the List as a first step in identifying species worth considering for particular types of restriction. For more information on using the FLEPPC List of Invasive Plant Species, see *Wildland Weeds* Summer 2002 issue (Vol. 5, No. 3), pp. 16-17, or http://www.fleppc.org/list/list.htm

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NOTE: Not all exotic plants brought into Florida become pest plants in natural areas. The FLEPPC List of Invasive Plant Species represents only about 10% of the nearly 1,400 exotic species that have been introduced into Florida and have subsequently established outside of cultivation. Most escaped exotics usually present only minor problems in highly disturbed areas (such as roadsides). And there are other exotics cultivated in Florida that are "well-behaved" — that is, they don't escape cultivation at all.

www.fleppc.org

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
Sphagneticola trilobata (= *Wedelia trilobata*)	wedelia	II		N, C, S
Stachytarpheta cayennensis (= *S. urticifolia*)	nettle-leaf porterweed	II		S
Syagrus romanzoffiana (= *Arecastrum romanzoffianum*)	queen palm	II		C, S
Talipariti tiliaceum (= *Hibiscus tiliaceus*)	mahoe, sea hibiscus	II		C, S
Terminalia catappa	tropical-almond	II		C, S
Terminalia muelleri	Australian-almond	II		C, S
Tradescantia spathacea (= *Rhoeo spathacea, Rhoeo discolor*)	oyster plant	II		S
Tribulus cistoides	puncture vine, burr-nut	II		N, C, S
Urena lobata	Caesar's weed	II		N, C, S
Vitex trifolia	simple-leaf chaste tree	II		C, S
Washingtonia robusta	Washington fan palm	II		C, S
Wedelia (see *Sphagneticola* above)				
Wisteria sinensis	Chinese wisteria	II		N, C
Xanthosoma sagittifolium	malanga, elephant ear	II		N, C, S

Citation example:
FLEPPC. 2009. List of Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: http://www.fleppc.org/list/list.htm or *Wildland Weeds* Vol. 12(4): 13-16. Fall 2009.

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FLEPPC Database – The Florida Exotic Pest Plant Database contains over 75,000 sight records of infestations of FLEPPC Category I and Category II species in Florida public lands and waters. 211 species are recorded. Nearly all of the records are from local, state, and federal parks and preserves; a few records document infestations in regularly disturbed public lands such as highways or utility rights-of-way. Natural area managers and other veteran observers of Florida's natural landscapes submit these records, with many supported further by voucher specimens housed in local or regional herbaria for future reference and verification. New and updated observations can be submitted online at www.eddmaps.org/florida/. This database, along with other plant-data resources such as the University of South Florida Atlas of Florida Vascular Plants at www.plantatlas.usf.edu, the Florida Natural Areas Inventory database at www.fnai.org, and The Institute for Regional Conservation Floristic Inventory of South Florida database at www.regionalconservation.org, provides important basic supporting information for the FLEPPC List of Invasive Plant Species.

Images and/or distributional data of FLEPPC-listed species may be found at one or more of the following websites: University of South Florida Atlas of Florida Vascular Plants, www.plantatlas.usf.edu; the University of Florida Herbarium collection catalog, http://www.flmnh.ufl.edu/herbarium/cat/, and image gallery, http://www.flmnh.ufl.edu/herbarium/cat/imagesearch.asp; at Fairchild Tropical Botanic Garden's Virtual Herbarium, www.virtualherbarium.org/vhportal.html, The Robert K. Godfrey Herbarium at Florida State University, http://herbarium.bio.fsu.edu/index.php; the University of Florida's IFAS Center for Aquatic and Invasive Plants, http://plants.ifas.ufl.edu, and the USDA PLANTS database, http://plants.usda.gov/. Please note that greater success and accuracy in searching for plant images is likely if you search by scientific name rather than a common name. Common names often vary in cultivation and across regions. For additional information on plants included in this list, see related links and pages at www.fleppc.org.

2009 TEXAS INVASIVE PLANT & PEST CONFERENCE

On November 13 and 14, 2009, the **Texas Invasive Plant & Pest Council** will host the third statewide conference on invasive species at Trinity University in San Antonio, Texas. Building off the 2005 and 2007 conferences, the 2009 conference will be a professional level meeting including keynotes, concurrent sessions, posters, field trips and symposia. This conference is designed to serve scientists, land managers, state and federal agencies, local governments, the green industry and other professionals interested in invasive species issues in the state of Texas.

To learn more, visit **www.texasinvasives.org**
and select *2009 Conference* under *State Conference.*

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USDA APHIS Proposed Rule Published in Federal Register — Not Authorized Pending Plant Risk Analysis (NAPPRA) or Q-37

The USDA Animal and Plant Health Inspection Service (APHIS) has published a proposed rule in the Federal Register: "Importation of plants for planting: Establishing a category of plants for planting not authorized for importation pending pest risk analysis" on July 23, 2009 (vol. 74 (140): 36403-36414). This rule is one of several within the section of the Code of Federal Regulations – 7 CFR Part 319, plant quarantine regulation or "Q-37," that APHIS intends to add or modify to increase consistency of the regulations governing plant imports, and to reduce the probability of importing future invaders. This particular rule establishes a new category of plants, "NAPPRA" (not authorized pending pest risk analysis), that are not permitted for import into the U.S. unless a full pest risk analysis is conducted. These species are either new to the U.S., or represent a new country of export/species combination, the former intended to prevent import of plant species with potential to become invasive, and the latter intended to prevent import of plant species from specific countries likely to host pests or pathogens of concern. Any party wishing to import a species on the NAPPRA list would need to make that request of APHIS prior to action. APHIS would then conduct a full pest risk assessment and determine, using scientific evidence, whether the species should be allowed entry into the U.S. or should be prohibited from importation. APHIS has said they have approximately 185 species ready to propose for NAPPRA listing once this rule is established. Any proposed species would be open for public comment for 60 days prior to final inclusion on the NAPPRA list. The NAPPRA list will be available on a Plant Protection and Quarantine (PPQ) web site.

The background information in the Federal Register provides good documentation of the need for greater regulation of imported plants, including the large increase in both the volume and the number of plants and genera being imported into the U.S. from increasing numbers of countries in recent years. For example, 1,000 more plant genera were imported through the Port of Miami in 2006 than in 2004. More information is available in the Federal Register (http://www.gpoaccess.gov/cfr/index.html, search "7 CFR Part 319"). This rule is open for public comment until Oct. 21, 2009. FLEPPC and NAEPPC intend to submit comments and would welcome input from members.

See an important briefing paper recently approved by the U.S. Invasive Species Advisory Committee (ISAC), ***Biofuels: Cultivating Energy, not Invasive Species****, at http://www.invasivespecies.gov/home_documents/BiofuelWhitePaper.pdf*

Presented at the 2009 Joint meeting for the Florida State Horticultural Society (FSHS) and the Soil and Crop Science Society of Florida (SCSSF) held June 7-9, 2009, which included a joint Symposium on *Biofuel Production in the US: Status and Future Prospects*

Cultivating Non-Native Plants in Florida for Biomass Production: HOPE OR HARM?

by James P. Cuda, Entomology & Nematology Department, University of Florida-IFAS, Doria R. Gordon, The Nature Conservancy, and Joseph M. DiTomaso, University of California-Davis

The President's comprehensive New Energy for America Plan mandates that the US become energy independent by 2025 by significantly reducing its consumption of foreign oil during the next decade. One of the proposed strategies for achieving this goal is to produce synthetic petroleum ("biofuel") by investing in the production and processing of sustainable feedstocks ("biomass"). An added benefit of transitioning from natural to synthetic petroleum and cellulosic ethanol is that it will address the economic and ecological challenges associated with climate change and sustainability. In response to this initiative, an increasing number of Florida's growers are using traditional agricultural lands for non-native biomass plantings. Unfortunately, Florida has an unenviable record of being the recipient of numerous plant introductions that have escaped cultivation and become invasive. The proposed large scale plantings in Florida of giant reed, *Arundo donax* L. (Poaceae) and jatropha, *Jatropha curcas* L. (Euphorbiaceae) for cellulosic ethanol and biodiesel production, respectively, are of concern because of documented evidence of invasiveness, propagule pressure and the results of recent weed risk assessments. These species are predicted to become invasive in Florida's unique natural systems and should be discouraged as bioenergy crops. Some varieties of jatropha not only are invasive but also are extremely toxic. Additionally, the USDA currently is funding a multi-million dollar biological control program against the invasive giant reed in California and Texas. Species unlikely to become invasive or incur other environmental damage should be selected as bioenergy crops as Florida invests in more sustainable and lower emission fuels.

Internodes

Mark Your Calendar

- **2009 North American Weed Management Association (NAWMA) Conference**, *Response to the Riparian Invasion*. Kearney, NE. September 21-24, 2009. www.nawma.org
- **International Congress on Biological Invasions,** *Managing Biological Invasions Under Global Change*, Fuzhou, China. November 2-6, 2009. http://61.154.14.15/icbi2009/default.htm
- **Southeast Herbicide Applicator Conference**, Panama City Beach, FL. September 22-24, 2009. www.conference.ifas.ufl.edu/sehac
- **2009 Texas Invasive Plant & Pest Conference**, Trinity University in San Antonio, Texas. Hosted by the Texas Invasive Plant & Pest Council. November 13-15, 2009. www.texasinvasives.org
- **Save the Date!** The first-ever all taxa **National Invasive Species Awareness Week** is scheduled for January 10-14, 2010 in Washington, DC. Information about this all-taxa event will be widely circulated soon. www.nisaw.org
- The first **South Carolina EDRR Training Workshop for Volunteers and Agency Field Personnel**, Sesqui-Centennial State Park near Columbia, SC. January 26, 2010. The workshop will be conducted by the SC-EPPC EDRR Coordinating Committee. For more information about the workshop and the SC EDRR Capacity Development Project, contact Committee co-Chairs Dr. Randy Westbrooks (USGS, Whiteville, NC) (rwestbrooks@usgs.gov), and Robin Mackie (USDA Forest Service, Columbia, SC) (rmackie@fs.fed.us).
- **Disturbance and Change, Invasive Plants and Paths to Recovery** – A Joint Meeting of the Southeast Exotic Pest Plant Council and Southeast Society for Ecological Restoration, Chattanooga, Tennessee. May 11-13, 2010. Call for Papers and additional information will be available at www.se-eppc.org
- **Weeds Across Borders 2010,** Shepherdstown, West Virginia. June 1-4, 2010. A biennial conference gathering people from Canada, the U.S., and Mexico to focus on "Plant Invasions, Policies, and Politics." http://www.fs.fed.us/ficmnew/wab10.shtml

Websites

The **National Invasive Species Council** (NISC) recently refreshed their website: www.Invasivespecies.gov. NISC members are the Secretaries and Administrators of thirteen federal departments and agencies who provide high-level coordination on invasive species. NISC is co-chaired by the Secretaries of Commerce, Agriculture, and the Interior.

The **Invasive Plant Atlas**, www.invasiveplantatlas.org, previously the "WeedUS" website, began as a database initiated by the National Park Service in 1997 to address the need for distribution information on alien invasive plants affecting natural areas in the United States. The database was posted and maintained on the Plant Conservation Alliance "Weeds Gone Wild" website from 1999-2008. In 2008, the University of Georgia Center for Invasive Species and Ecosystem Health (CISEH) created a website for WeedUS and expanded it to include individual species web pages with images, distribution maps, links to biology and management resources and native plant alternatives. The new Invasive Plant Atlas will allow for various queries, management tracking, and many other features.

The **Invasive Species Ireland** project is a joint venture between the Northern Ireland Environment Agency and the National Parks and Wildlife Service. See Invasive Species Ireland for an excellent view of the problems there: http://www.invasivespeciesireland.com/

Publications

Screening new plant introductions for potential invasiveness: a test of impacts for the United States, by D.R. Gordon and C.A. Gantz. Conservation Letters (2008) 1:227-235. "These results, in combination with the savings incurred when likely invaders are identified and prohibited prior to import, suggest that this screening system could be implemented to protect the economy and environment and would be unlikely to significantly preclude opportunities for the horticultural industry."

Estimating the benefit of early control of all newly naturalised plants, by S. Harris and S. M. Timmins. Science for Conservation 292 (2009), 26 pp. Dept. of Conservation, Wellington, New Zealand. See *Publications*, then *Science & Technical* at www.doc.govt.nz. "Our data suggest that, early on, while an infestation is small (only a few plants or plants covering an area up to 400 m2), all individuals can be easily removed for a minimal cost—an average of $1090. By contrast, if control is postponed until a later stage (when the infestation is widespread or dense) it is, on average, 40 times more expensive than early removal."

Approaches for Assessing the Status of Nonnative Plants: A Comparative Analysis, by A.M. Fox and D.R. Gordon. Invasive Plant Science and Management (2009) 2:166-184. The authors identified four generalized types of existing approaches to assess the status of non-native species in specified geographies, ranging from those that are relatively easy and rapid to apply to those that are more time-consuming and costly but can be more objectively and consistently applied.

Comparison of Relocatable Commercial Vehicle Washing Systems, by Joe Fleming, U.S. Department of Agriculture, Forest Service, San Dimas Technology & Development Center, September 2008. 0851 1809—SDTDC, 36 pp. A range of systems was evaluated with respect to efficacy, economics, waste containment, waste disposal, and the viability of any propagules that were collected in the cleaning process. http://www.fs.fed.us/eng/pubs/pdf/08511808.pdf

How well do we understand the impacts of alien species on ecosystem services? A pan-European, cross-taxa assessment, by M. Vilà, C. Basnou, P. Pyšek, M. Josefsson, et al. Frontiers in Ecology and the Environment e-View. http://www.esajournals.org/doi/abs/10.1890/080083 "...we present a review of the financial costs, as the first step toward calculating an estimate of the economic consequences of alien species in Europe."

Consistent accuracy of the Australian weed risk assessment system across varied geographies, by D.R. Gordon, D.A. Onderdonk, A.M. Fox, and R.K. Stocker. Diversity and Distributions (2008) 14:234-242. "...we believe that this tool functions similarly across islands and continents in tropical and temperate climates and has been sufficiently tested to be adopted as an initial screen for plant species proposed for introduction to a new geography."

Phragmites australis *root secreted phytotoxin undergoes photo-degradation to execute severe phytotoxicity,* by T. Rudrappa, Y.S. Choi, D.F. Levia, et al. Plant Signaling & Behavior (June 2009) 4:6, 1-8. "The study highlights the persistence of the photo-degraded phytotoxin in the *P. australis*'s rhizosphere and its inhibitory effects against the native plants."

Tiny moth tackles Old World climbing fern, by S. Yao. Agricultural Research/July 2009, pp. 6-7. "A little moth known as *Neomusotima conspurcatalis* – nicknamed "Neo" – is currently the most successful of all the biocontrol agents that have been tested by the Fort Lauderdale and Brisbane scientists."

Nonnative species and bioenergy: are we cultivating the next invader? By J.N. Barney and J.M. DiTomaso. BioScience (January 2008) 58:64-70. "We used a weed risk-assessment protocol, which categorizes the risk of becoming invasive on the basis of biogeography, history, biology, and ecology, to qualify the potential invasiveness of three leading biofuel candidate crops – switchgrass, giant reed, and miscanthus (a sterile hybrid) – under various assumptions."

New and noteworthy plants from Florida, by J.M. Kunzer, R.P. Wunderlin, and L.C. Anderson. J. Bot. Res. Inst. Texas (2009) 3(1):331-337. "Most of these [taxa] are either protected by Florida law (Florida Chapter 5B-40) or are not native to the state (Wunderlin & Hansen 2008)."

Will 'energy crops' become the next Kudzu? by Jessica Leber of ClimateWire. NYTimes.com. (August 12, 2009) "U.S. policies are subsidizing new energy crops that are likely to spread off the farm and wreak economic and ecological havoc, a federal advisory board cautioned yesterday."

The cost of weeds to California, by E. Brusati. Cal-IPC News (Spring 2009): 6-7, 13. In 2008, Cal-IPC and Sustainable Conservation (www.suscon.org/) surveyed agencies and organizations to gather a rough estimate of the work conducted on invasive plants in California. The surveyors asked them to report annual expenditures on invasive plant control, monitoring, mapping, and outreach. See the Cal-IPC website for the results. You can download a one-page flyer or read an article in the Spring 2009 issue of their excellent newsletter. www.cal-ipc.org/ip/research/cost.php

Cool Stuff

According to a National Geographic News video and report, "New smart-phone applications may enable the public to help scientists monitor invasive species and collect data in a fraction of the time it normally takes. With more people using smart phones equipped with cameras and GPS, the Center for Embedded and Networked Sensing, or CENS, has developed a way for anyone with a phone to input data into a project. With smart phones from CENS, the Park Service collected in just weeks an amount of data that would have previously taken years to gather." See http://news.nationalgeographic.com/news/2009/07/090730-survey-video-ap.html reported July 30, 2009.

Videos

View six short videos on the biological control of tropical soda apple *(Solanum viarum)* at: http://pesticide.ifas.ufl.edu/TropicalSodaApple/vids.shtml The videos were created by Bill Overholt, Rodrigo Diaz, Ricky and Brandon Telg, and Ken Gioeli of the University of Florida-IFAS.

The Center for Aquatic and Invasive Plants at the University of Florida-IFAS has released new identification videos on six invasive plant species in Florida: Japanese climbing fern *(Lygodium japonicum)*, Chinese ligustrum *(Ligustrum sinense),* Heavenly bamboo *(Nandina domestica)*; Carrotwood *(Cupaniopsis anacardioides),* Camphor tree *(Cinnamomum camphora),* and Chinaberry *(Melia azedarach).* More than 100 identification videos also are available on other invasive and aquatic species. View them on the Center's website at http://plants.ifas.ufl.edu/node/677

Notes

The 17th annual Hawai'i Conservation Conference attracted over 1,100 people with various lectures, symposia, and other presentations focusing on the theme, "Hawai'i in a Changing Climate." View over 84 of these presentations, covering issues from climate change to invasive species to environmental education efforts throughout the Hawaiian archipelago, at http://hawaiiconservation.org/2009hcc_presentations.asp

Add your CWMA to the National Map! – An interactive national map of Cooperative Weed Management Areas illustrates the broad range of community-led weed management efforts in the United States, including Alaska and the Canadian provinces. All CWMAs are invited to input their data and become a pop-up point on the map. Go to http://www.invasiveplantcenters.org/cwmamap.cfm to enter simple location and contact information. The map will continue to evolve as people add their CWMA info. The map was programmed and is being hosted by the Center for Invasive Species and Ecosystem Health/Bugwood.

Go, Hoosiers! Using a pen made from the invasive grass, phragmites, Governor Mitch Daniels signed new legislation creating the **Indiana Invasive Species Council**. The Council will facilitate coordination and communication between agencies and various stakeholder groups and landowners around the state. For more information about the threat of invasive species in Indiana, visit: www.nature.org/indiana

Invasive Plant Control was established in 1997 with the sole purpose of controlling invasive species in natural areas.

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In this time of economic distress, IPC is dedicated to employing 100% US Citizens trained in resource management.

IPC is one of the leading private entities for controlling invasive species worldwide, from training port of entry inspectors to detect problems before they occur, to managing invasives on the ground throughout the US.