Wildland Weeds

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Wildland Weeds

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Table of Contents

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 is expanding its range in native plant communities.

Wildland Weeds (ISSN 1524-9786) is published quarterly by the Southeast Exotic Pest Plant Council (SE-EPPC) and distributed to 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 by the Florida Exotic Pest Plant Council in Winter 1997.

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Nancy Loewenstein,
Jennifer Possley

On the Cover:

FRONT COVER – Cogongrass blooms in the southeast.

BACK COVER – Hay from cogongrass infested fields contributes to long distance spread of cogongrass. Photo by Patrick Waldrop, retired Alabama Forestry Commission Forester. See article on page 7.

Update on *Lumnitzera racemosa*

On March 23, 2011, the Everglades Cooperative Invasive Species Management Area (ECISMA) gathered 23 people from 10 organizations to descend upon the "lowlands" of Fairchild Tropical Botanic Garden (FTBG) in Coral Gables, Florida. The group continued work to remove the invasive Asian mangrove, *Lumnitzera racemosa*. The property was surveyed by land and boat and approximately 100 plants were removed. Most were small enough to be hand-pulled. In addition to volunteer efforts through ECISMA, a private company has been hired to treat the densest part of the infestation, which FTBG shares with a neighboring Miami-Dade County Park, "Matheson Hammock Park." The March 23rd event was one of many in the quest to eradicate *Lumnitzera racemosa* from the area since the infestation was discovered in late 2008. So far, all indications are that the population is limited to about 20 acres, and eradication in the next few years is imminent.

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GABY ORIHUELA

Dennis Giardina treats an invasive Asian mangrove, Lumnitzera racemosa.

The Poisoning of Toomer's Oaks at Auburn University

by Stephen Enloe and Gary Keever

On January 27, 2011, a very disturbing admission of wrongdoing was broadcast on the Paul Finebaum radio show. A caller claimed he had poisoned Auburn University's famous 130 year old Toomer's oak trees with the herbicide Spike 80DF. Auburn University officials took the wild claim seriously and quickly collected soil samples for testing. On February 9th, the poisoning was confirmed when concentrations of tebuthiuron ranging from 0.78 to 51 parts per million were found in the soil around the base of each of the two trees. These levels equate to an extremely high dose of tebuthiuron as 100 parts per billion will kill many species of oaks. A university task force was rapidly assembled with horticulture, forestry, agronomy, weed science, soil science, chemistry, biochemistry, and civil engineering experts from across campus. After a speedy literature review and consultation with numerous industry experts, the task force concluded that there are no antidotes for tebuthiuron and no methods to rapidly degrade it chemically that would not be dangerous to the trees. Additionally, there are no rapid microbial solutions as tebuthiuron is very persistent in soil, with a half life of 12 to 15 months across much of the southeast. The task force then opted to apply liquid activated carbon around each tree to adsorb as much of the herbicide as possible, and then physically remove as much of the tebuthiuron contaminated soil from around the base of each tree as could safely be done. The soil removal occurred in two separate excavation events that utilized an air-spade and a high-pressure water application to safely loosen soil from the roots. Both methods used a heavy-duty vacuum system to remove the soil and water applied. The contaminated soil was then replaced with new soil and more activated carbon. The trees are currently being monitored weekly and have recently begun showing symptoms of the herbicide. On the larger tree, many leaves have yellowed and fallen. The smaller tree appears to be doing better but it is too early to determine the outcome as tebuthiuron works very slowly. The trees could potentially experience a few cycles of leaf-out and subsequent leaf-drop before death. The task force will continue to monitor the situation and evaluate additional measures that might be used to help save the trees. For more information, go to www.auburn.edu/oaks.

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The National Association of Exotic Pest Plant Councils (NAEPPC):

PAST AND PRESENT

by Brian Bowen – SE-EPPC liaison to NAEPPC

It was October 1995 when several Exotic Pest Plant Council (EPPC) officers representing Florida, Tennessee, California, and the Pacific Northwest, the only four EPPCs at the time, met at Asilomar, California to consider starting a national organization of EPPCs. The meeting lasted the better part of two days and from it came a Memorandum of Understanding announcing an agreement to form the National Association of EPPC. It was fondly referred to as the "Asilomar Accord" by its charter members.

A purpose of the fledgling organization was to address issues of national importance related to federal invasive plant policies that state or regional EPPC might not otherwise be attuned to, since national issues are broader in scope than what EPPCs might be working on within their own political boundaries. Another purpose was to bring the EPPCs together in an effort to speak as one voice and bring attention to a cause that had been woefully ignored at the national level.

Keep in mind this start-up occurred well before the Federal Executive Order was signed by President Clinton (1999) and at a time when there was little advocacy concerning invasive plants. NAEPPC began with great hope and aspiration, and even hired a part-time director to lobby in DC (which only lasted a short while). But since its inception, it has evolved slowly, coinciding with the formation of new organizations. Its activity level has progressed with the participation of members from these nascent groups.

Since 1995, the National Association of EPPCs has grown to include 20 state or regional Exotic Pest Plant Councils and Invasive Plant Councils. The "Asilomar Accord" identified several goals. Two of them were: 1) to help facilitate the formation of new EPPCs, and 2) to help increase membership. Most of this growth happened because key individuals in various states and regions organized their own non-profit organizations; however during this time, NAEPPC also created a network for communication which facilitated this activity.

NAEPPC represents its member organizations as one voice which is heard by federal agencies and legislatures. EPPC organizations participate in NAEPPC via the internet, conference calls, e-mails, and an occasional face-to-face meeting. Bylaws provide for elected officers and an executive committee, which handles the coordination of the organization's affairs. Voting or consensus on proposed NAEPPC positions takes place primarily online by use of a dedicated board of directors' listserve or, in some instances, by conference calls.

The board of directors is comprised of a president (or chair) from each of the 20 member organizations, and the NAEPPC officers: a president, vice president, treasurer and secretary. By intent, NAEPPC attempts to minimize its member's involvement to essential concerns since everyone's time is extremely valuable and limited. Face-to-face organization meetings tend to occur once or twice per year, most always in conjunction with the Natural Areas Conference in the fall, and occasionally in Washington, DC in conjunction with National Invasive Species Awareness Week in late February.

Action items are presented to the board using a listserve. A proposed bill, documentation explaining the bill, and related source information is provided. The Executive Committee offers the board a written position response. If agreed to, a letter writing campaign and phone calls follow. Other non-legislative initiatives are approved by the board using a similar process. Conference calls may occur when issues are complex or significant matters of concern require discussion.

NAEPPC positions and activities are posted at http://www.naeppc.org/. The website provides a national map showing EPPC locations, a list of member EPPCs, and information about each organization and their activities. The website also serves as a contact hub for multi-agency state invasive species councils; Cooperative Weed Management Areas (CWMAs) and Cooperative Invasive Species Management Areas (CISMAs); and other partnerships based on the collaborative management of invasive plants. A goal is to provide a strong communication network through the website between the many groups working on invasive species issues.

NAEPPC is currently publishing *Policy Notes* on the website, a monthly summary of activities provided by Janet Clark who serves as policy liaison for NAEPPC in a part-time term position. Funding for the position was received from the Union of Concerned Scientists and became available through NAEPPC's membership in the National Environmental Coalition on Invasive Species (NECIS).

The policy liaison keeps NAEPPC informed about legislative policy (i.e. Q - 37, the Reid Bill, etc.) while communicating NAEPPC's positions to agencies, NGOs, legislators, and others involved in invasive plant issues. This includes coordinating advocacy with NECIS and others, while assisting NAEPPC with organizing its members and other grassroots organizations to advocate for funding of on-the-ground projects and sensible regulations.

Janet's work also includes outreach and networking with the many like-minded organizations that support invasive species issues. She is a member of the Invasive Species Advisory Committee (ISAC) to the National Invasive Species Council (NISC), and was involved in organizing this year's National Invasive Species Awareness Week (NISAW) in which many NAEPPC members participated by leading workshops and as panel members.

The NISAW event in Washington, DC has expanded from what was once National Invasive Weeds Awareness Week, to what is now an "all taxa" event. The 2011 event was a mix of workshops with presentations and panels, luncheons with speakers, meetings, and federal agency forums. Members of the NAEPPC Executive Committee were leaders in the following workshops: Elements of Effective State and Regional Coordination; Strengthening Grassroots Partnerships; and the Regional and State Early Detection Networks. While NAEPPC did not meet as an organization at NISAW this year, its executive committee met with many key DC staff and agency leaders.

Networking with key partners is particularly important to establish working relationships with organizations and groups who are involved with invasive species at the national level. NAEPPC continues to participate in NECIS and has recently signed a MOU with the National Network of Invasive Plant Centers (NNIPC). The NNIPC agreement recognizes the similar interests both organizations share, and agrees to collaborate as partners to advance these interests. NAEPPC also has a similar agreement with the Natural Areas Association which was signed in 2003. This agreement has led to participation in the annual NAA Conference and an opportunity for the NAEPPC board to hold meetings at these conferences.

This year, NAEPPC and NAA have entered into a MOA specific to collaborating as partners at the 38th Annual Natural Areas Conference in Tallahassee, Florida. This recognizes NAEPPC as a co-host and enables NAEPPC to organize the invasive species program at the conference. NAEPPC has been involved in this capacity in past NAA conferences and played a significant role in organizing the Nashville conference in 2008. The agreement provides a formal framework for this partnership. This year's NAA Conference will have a strong EPPC presence November 1-4 in Tallahassee..

These agreements and our participation with other organizations advances NAEPPC involvement in national issues and provides opportunities to interact with organizations that help us form coalitions to inform policy. NAEPPC will continue to evolve and its success will depend on the member organizations and their continued participation in advancing the EPPC cause at the national level. We will continue to speak with one voice on this issue.

Brian Bowen is the SE-EPPC liaison to NAEPPC, treasurer of NAEPPC, and serves on the NAEPPC Executive Committee. He is a founding member of NAEPPC. He is the Tennessee Natural Areas Program Administrator for the Tennessee Department of Environment and Conservation. Brian.Bowen@tn.gov

Cogongrass Seed Production Across Alabama and Georgia

by Nancy J. Loewenstein, James H. Miller and Stephen F. Enloe

Cogongrass is well known for its charismatic flowers in the spring. The showy, fluffy blooms are often the first sign of new infestations, and seeds can be the culprit responsible for long distance dispersal. Clearly, cogongrass is capable of prolific flowering (Figure 1), but the number of seeds produced by cogongrass infestations remains unclear.

Studies indicate that cogongrass seed viability is quite high (>90%) but that seed set can be variable (Shilling et al. 1997, Yager 2006). Flower fertilization in cogongrass, which is an obligate out-crosser, can only occur if plants of different genetic material are close enough for wind-dispersed pollen exchange. It is likely, therefore, that seed production will be higher in areas where cogongrass is common than where infestations are widely scattered and isolated. The potential for seed dispersal is an important consideration when developing cogongrass control strategies, especially for isolated infestations along the advancing front.

To begin to address this issue, we collected cogongrass seed heads from throughout Alabama and Georgia to determine if there are regional differences in cogongrass seed production and if outlying populations produce viable seed. Seed was collected within the occupied zone, the advancing front and from outlying infestations (Figure 2). Collections were a cooperative effort by Alabama and Georgia Forestry Commission personnel, Alabama Cooperative Extension System personnel and others. In 2008, 5 panicles (seed heads) were collected from each of 45 infestations (21 counties) in Alabama and 13 infestations in Georgia. In 2009, ten seed heads were collected from each of 116 sites (18 counties) in Alabama and 14 sites (8 counties) in Georgia. Seed heads were typically collected 10-14 days after flower initiation when the panicles were fluffy white, but before panicles began shedding seed. (See sidebar on page 9 with information about an ongoing project to track cogongrass flowering.)

Cogongrass seeds have no dormancy and seed viability was tested using a germination test. The length of each panicle was recorded, and then the entire panicle was placed in a petri dish lined with filter paper moistened with deionized water. Spikelets were spread out using a dissecting needle. Particularly large panicles were split between two plates to minimize crowding. The plate was sealed with Parafilm and placed in a growth chamber set on a 16 hr light/8 hr dark cycle with temperatures of 30 C/20 C, respectively. Plates were watered as needed. Very little microbial growth was observed on the plates (Figure 3), especially when immature panicles with anthers (male flower parts) were avoided. Seed germination was monitored for two weeks during 2008. Since most seed germinated within one week and to allow processing of more samples, the trial was reduced to a one week period in 2009. After the number of germinants were counted, percent germination was determined based on an estimate of 25 spikelets (potential seed) per centimeter of panicle (Shilling et al. 1997).

Figure 1 – Cogongrass infestation with large number of blooms. Flowering on this site was stimulated by a prescribed fire several months prior to blooming.

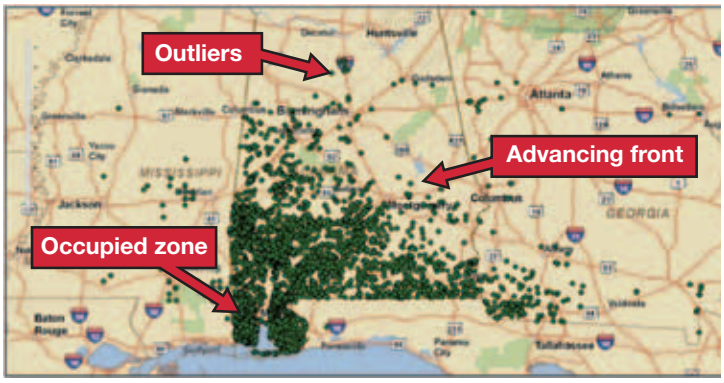

Figure 2 – Cogongrass infestations within Alabama and Georgia. (Map courtesy of the Alabama Forestry Commission - http://www.forestry.state.al.us/Viewers/afc_cogongrass_viewer.aspx)

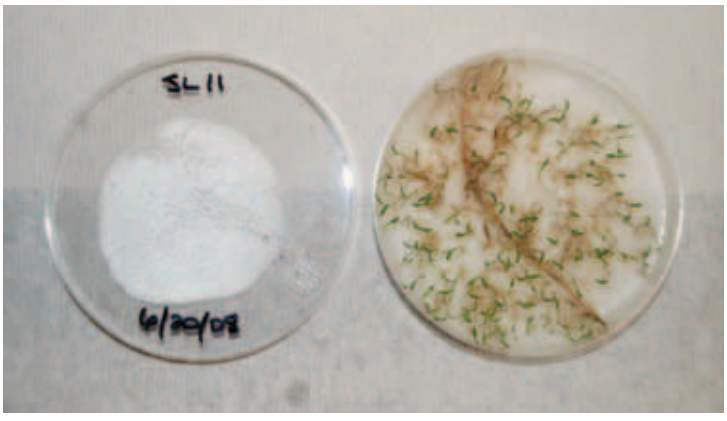

Figure 3 – Germinated cogongrass seed in petri dish.

Cogongrass infestations from within the heart of the "occupied zone" in Mobile and Baldwin counties in southwest Alabama produced considerably more viable seed than did populations from further north, in both 2008 and 2009 (Figure 4). However, the variability within and between infestations was quite high. For example, in samples collected from ten sites in Mobile County during 2009, the percentage of viable seed on individual panicles ranged from 0 to 80%, and the overall percentage of viable seed from all panicles collected from a site ranged from 0 to 47.7% (Table 1).

Despite the relatively high number of cogongrass infestations in the counties just north of Mobile and Baldwin counties, the number of viable seeds tended to be lower, and fewer of the sampled sites produced viable seed. However, the number of viable seed at some infestations was comparable to those of the fertile sites in Mobile and Baldwin counties. For instance, 37% viable seed was measured for one infestation in Clarke County in west central Alabama.

The number of viable seeds in samples from infestations along the advancing front was low (< 0.5%), but at least half of the infestations along the front in Alabama produced some viable seed. Similarly, five of the eight infestations sampled in Georgia during 2009 produced one or two viable seeds. Outlying infestations located well beyond the advancing front did not produce any viable seed.

Sources of variation thought to impact seed production include phenological differences in flowering within and between infestations (Figure 5), genetic composition of infestations, and distance between infestations. Weather and other environmental conditions could also impact timing of flower development and pollen dispersal. Unfortunately, we do not have

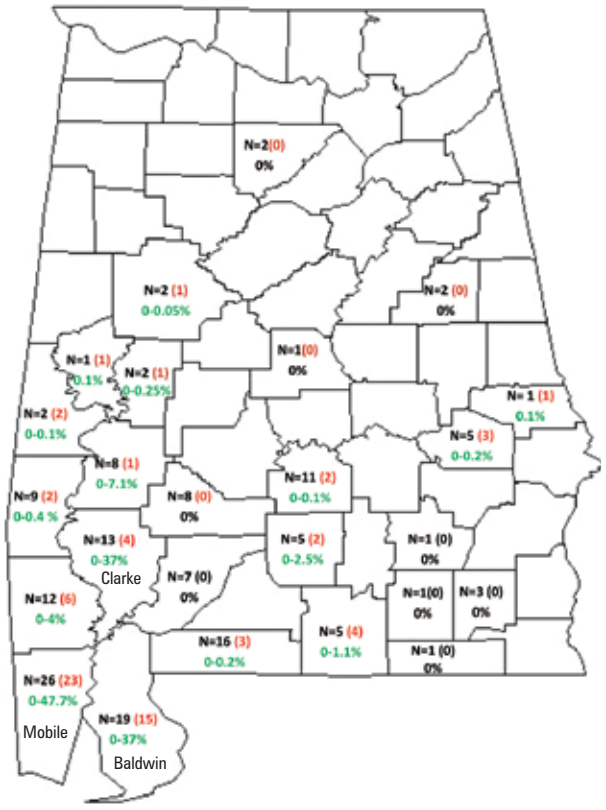

Figure 4 – Survey of cogongrass seed viability across Alabama, showing combined data from 2008 and 2009. The number of infestations sampled (N) in each county is indicated in black; number of infestations that produced viable seed is within parenthesis; the range in percent viable seed for the sampled infestations within the county is indicated in green. For example, only 15 of the 19 infestations sampled in Baldwin County produced viable seed, and the highest percentage of viable seed at any of the sampled infestations was 37%.

	Percent Viable Seed on Individual Seed Heads (number of viable seed in parentheses)										Mean
site 1	0	0	0	1.1 (2)	0	1.1 (2)	0.5 (1)	0	0	0	**0.3% (5)**
site 2	0	0	0.5 (1)	0	0	0.6 (1)	0	0	0.8 (2)	0	**0.2% (4)**
site 3	0	0	0	0	0	0	0	0	0	0	**0% (0)**
site 4	7.4 (13)	57.2 (93)	28.0 (56)	20.3 (33)	1.3 (2)	27.4 (48)	24.8 (31)	20.7 (31)	3.4 (6)	6.8 (11)	**19.7% (342)**
site 5	1.6 (3)	0	0	0	0	0	0.8 (2)	2.1 (5)	1 (2)	10.8 (23)	**1.6% (35)**
site 6	0.7 (1)	0	0	0	0	0	0.5 (1)	0	0	0	**0.1% (2)**
site 7	46.5 (93)	27.8 (59)	56.0 (105)	19.7 (32)	69.3 (130)	36.0 (54)	40.8 (107)	46.8 (117)	59.5 (119)	52.2 (111)	**45.5% (927)**
site 8	0	0.5 (1)	0	0	0	0.4 (1)	0.5 (1)	0	0	0	**0.1% (3)**
site 9	0	0	0	0	0	0	0	0	0	0	**0% (0)**
site 10	70.0 (105)	60.6 (106)	37.8 (104)	25.1 (47)	80.5 (151)	76.4 (86)	64.0 (104)	20.0 (25)	31.5 (63)	11.3 (17)	**47.7% (808)**

Table 1 – Percent viable seed on each of ten seed heads collected from ten cogongrass infestations in Mobile County, AL in 2009. The actual number of germinants is shown in parentheses. Percent germination is a function of the number of germinants and the length of the seed head. Means are shown in the last column.

Figure 5 – Example of phenological differences in flowering within cogongrass infestations.

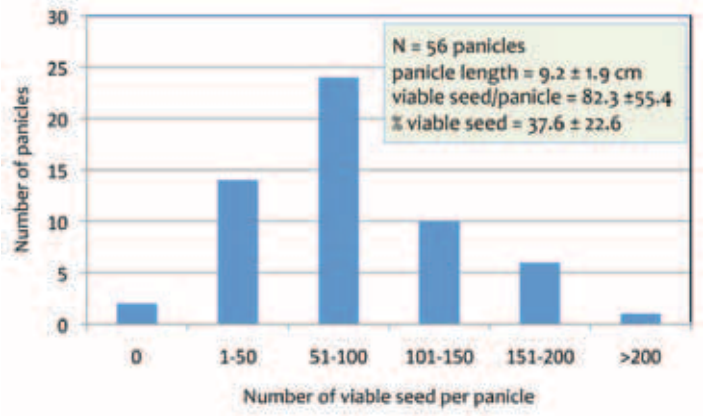

Figure 6 – Distribution of viable cogongrass seed on panicles collected within a quarter meter square plot at an infestation in southern Mobile County, AL.

the genetic, spatial and weather data required to test the impact of these sources of variation on our data.

A bell-shaped distribution in number of germinants per panicle was observed in a germination trial of all panicles (n=56) collected from a quarter meter quadrat in a site with high seed viability (Figure 6). In addition to inherent variation, this could reflect variation in flower age within the infestation and seed maturation within a panicle.

In conclusion, while production of viable cogongrass seed in Alabama and Georgia was variable across and within subregions, a significant number of viable seeds are produced by some infestations. For instance, an infestation with 937 viable seeds per 10 panicles (~45% germination) and a moderate 100 panicles/m^2 would produce 93.7 million seeds/hectare (37.9 million seeds/acre). Even an infestation with only 1 viable seed per 10 panicles (~0.1% germination) and a lower flowering rate of 50 panicles per square meter could produce 50,000 viable seeds per hectare (20,242 seeds/acre). Although spread of cogongrass by seed production from outlying infestations is not highly likely at this time, some seed production is occurring along the advancing front and seed dispersal cannot be ignored. This is especially true within the "occupied zone" where, to be safe, all seed should be considered viable. Steps to reduce spread by seed include spraying glyphosate just before flowering, not entering infestations during flowering and seed dispersal, and minimizing soil disturbance near infestations, as it is supposed that seed require bare soil for germination.

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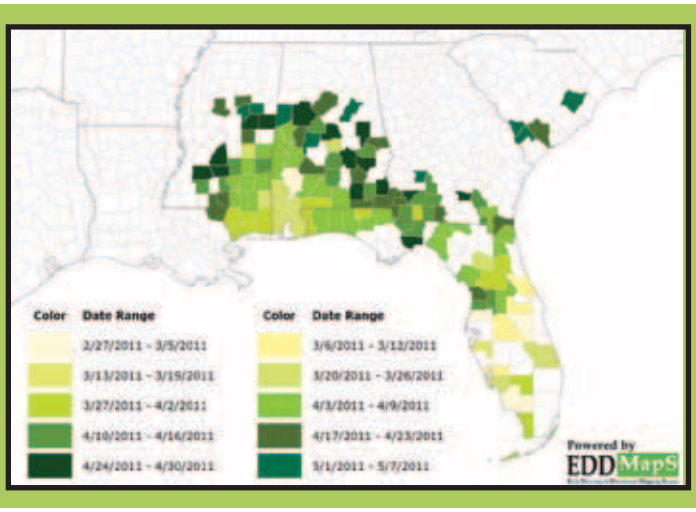
New Website Maps Flowering Cogongrass

Owing to the threat posed by the spread and occupation of cogongrass in the South, it is imperative that we learn more about the progression of flowering in the region. Chuck Bargeron, Technology Director, University of Georgia's Center for Invasive Species and Ecosystem Health, has created a reporting website where flowering sightings can be entered and mapped. The Website is: http://www.cogongrass.org/flowering

As of May 10, 2011, there have been 293 reports covering 132 counties by 174 people. Please continue to assist in this project as spring and summer progress.



Reporting Invasive Species on Your Smartphone – http://mobile.eddmaps.org

by Chuck Bargeron

Smartphones have changed the way we work and play. Currently the Apple iPhone and phones running the Google Android operating system dominate the smartphone market. Apple has sold over 100 million iPhones since its launch in 2007[1] and sold a total of 5.8 million[2] in the first quarter of 2011 to AT&T and Verizon customers. There were 67.2 million[3] Android phones sold in 2010 on all four major U.S. cell phone providers. Most of these smartphones feature high-resolution cameras, GPS and Internet connectivity, making them ideal devices for reporting sightings of invasive plants and animals.

The Early Detection and Distribution Mapping System (EDDMapS) was launched in 2005 by the University of Georgia, Center for Invasive Species and Ecosystem Health (Bugwood) to support mapping of invasive plants in the Southeast. EDDMapS is now being actively used in 36 states and includes over 1 million reports from over 700 reporters. The primary purpose of EDDMapS is to provide a tool for easy early detection reporting and to provide a mechanism to enable aggregation of data to display complete county distribution maps for invasive species in the U.S. Bugwood has received funding and support from the U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service. However, EDDMapS has been limited by the fact that users must report infestations from their home or work computer.

To facilitate rapid reporting of invasive plants and animals, Bugwood developed EDDMapS Mobile to run on a smartphone, currently being tested on iPhones and Androids. It is a scaled-down version of EDDMapS designed to fit the smaller screen size and other limitations of mobile web browsers. Although smartphone browsers have many limitations, one major advantage is the browser can access the GPS built into the smartphone with the user's permission. Thus the user can allow EDDMapS Mobile to access the GPS and then complete the location information required for an EDDMapS report. Other key features of EDDMapS Mobile:

- Login and complete an abbreviated EDDMapS Report Sightings form
- View point distribution maps of invasive species (Note: Animal distribution currently available in Florida only)
- View species information for selected invasive plants from the Invasive Plant Atlas of the U.S., including images scaled for a mobile web browser screen
- Manage and edit your recent reports via the My EDDMapS interface
- Instant access: no need to download and install an App

EDDMapS now runs on a smartphone so users can enter data from the field.

EDDMapS Mobile allows users of Android-based smartphones to upload images directly from their phones. iPhone users will have to upload images from their desktop computers because of a limitation of the iPhone operating systems. Bugwood is currently developing two iPhone Apps to help solve this limitation. The first App, funded by the National Park Service—Everglades National Park, will allow reporting of invasive animals in Florida and will feature an interactive field guide. The second App, funded by the U.S. Forest Service—Southern Research Station, will convert the publication *"A Field Guide for the Identification of Invasive Plants in Southern Forests"*[4] by Jim Miller, Erwin Chambliss, and Nancy Loewenstein into an interactive iPhone App and allow for reporting of the plants featured in the publication. These two Apps will solve two of the major limitations of the web application – image uploading and offline reporting.

We view EDDMapS Mobile as another tool in the fight against invasive species and an important step in simplifying the reporting process. To learn more about EDDMapS, visit www.eddmaps.org or start reporting now from your smartphone at http://mobile.eddmaps.org/

Chuck Bargeron, Technology Director, Center for Invasive Species & Ecosystem Health, University of Georgia, cbargero@uga.edu

[1]http://mashable.com/2011/03/02/100-million-iphones/
[2]http://www.infosyncworld.com/reviews/cell-phones/apple-sales-and-revenue-charts-2007-2011/11957.html
[3]http://topics.nytimes.com/top/reference/timestopics/subjects/a/android/index.html
[4]http://wiki.bugwood.org/Archive:IPSF

Mississippi EPPC IPAMS Training

by Julie Marcy, MS-EPPC Treasurer

Mississippi Exotic Pest Plant Council President Chris Bryan hosted the fall chapter meeting in Hattiesburg, MS at the Mississippi Department of Transportation offices. Twelve members of the chapter gathered to be trained on the Invasive Plant Atlas of the MidSouth (IPAMS) program. IPAMS is supported by a grant from the Cooperative State Research, Education and Extension Service of the U.S. Department of Agriculture. Additional cooperators include: U.S. Geological Survey (Invasive Species Program), National Biological Information Infrastructure, Invasive Species Information Node; MS Department of Agriculture and Commerce; MS Cooperative Weed Management Area, MS Master Gardeners Program; MS-EPPC; Southeast Exotic Pest Plant Council; and the Invasive Plant Atlas of New England.

The training was presented by Dr. John Madsen and Dr. Victor Maddox of Mississippi State University's Geosystems Research Institute. IPAMS is designed to train lay volunteers to identify 40 common invasive weeds, with a primary focus on the MidSouth states of Alabama, Arkansas, Louisiana, Mississippi and Tennessee. Species are grouped into categories: Row Crop, Pasture, Managed Forest, Rights-of-Way, Wildland and Aquatic. Citizen scientists locate examples of the species and then submit photos and online field survey forms that include the GPS coordinates for the site. This information is then used to produce distribution maps and improve rapid response capabilities for species of interest in the region.

After exercising their brain cells during the training, and prior to their business meeting, the MS-EPPC members enjoyed a delicious Gumbo luncheon prepared by Patty Rogers of the Natural Resources Conservation Service's Gulf Coastal Plain Resource Conservation and Development Council.

IPAMS is looking for additional volunteers. To volunteer or learn more, visit http://www.gri.msstate.edu/ipams/

Julie.B.Marcy@usace.army.mil

Alabama IPC Update

by Nancy J. Loewenstein, Executive Director

Nearly 150 people attended ALIPC's 9th Annual Conference, held on April 20th in Auburn, AL. The morning session included a keynote address focusing on links between biofuels and invasive plants, an update on NPDES permitting, information on new herbicides, and several other interesting talks. Afternoon field workshops covered invasive plant ID, cogongrass look-alikes, kudzu control, box-store herbicides, and eye protection during herbicide applications. Curtis Hansen, serving as ALIPC treasurer since chapter initiation, retired his post during the business meeting. Many thanks, Curtis, for your nine years of dedication! Andrew Price is serving as ALIPC's new Treasurer.

Curtis Hansen, Curator, The Freeman Herbarium, Auburn University

The 2nd annual ALIPC Education and Outreach Grant was awarded to Elizabeth Johnson with the Alabama Wildlife Federation. The $1000 grant was used to conduct training classes for the Alabama Nature Center (ANC) staff on invasive species identification and management. The ANC staff will in turn teach about invasive plants to the nearly 10,000 children, parents and teachers who visit the ANC facility annually. Additional information on ALIPC's grant program can be found on the ALIPC website (www.se-eppc.org/alabama) under "Request for Proposals." Grant proposals for next year's award are due by October 31st, 2011.

ALIPC continues its partnership with the Alabama Plant Conservation Alliance, working on a project to control invasive plants in Haines Island Park. The park is located in the Southern Red Hills region of the Gulf Coastal Plain, which is home to several rare plant and animal species, including the Red Hills salamander.

ALIPC is also supporting the Flint River Conservation Association (FRCA) in its ongoing effort to control purple loosestrife (*Lythrum salicaria*), which is infesting a tributary within the Flint River watershed near Huntsville, AL. After renewed control efforts using Habitat herbicide and the help of numerous volunteers, the infestation is 90% controlled. Control efforts will continue this year.

Nancy J. Loewenstein, Auburn University, loewenj@auburn.edu

North Carolina EPPC Update

by Rick Iverson, NC-EPPC President

The EPPC mission in North Carolina continues to build momentum as old programs are enhanced and new programs are added. This year's annual meeting was held jointly in cooperation with the North Carolina Vegetation Management Association. Over 200 people attended the meeting; thereby providing an excellent opportunity for NC-EPPC to reach those who manage nuisance vegetation for a living and to provide an overview of NC-EPPC's Early Detection and Rapid Response effort. New officers and board members were elected during the meeting. The NC-EPPC board is pleased to welcome Maggie Porell as the new Vice President.

The formation of the NC-EPPC Communications Committee has energized our outreach effort. The committee drafted a communication plan that was approved by the Board of Directors and then implemented. The first project resulted in the proclamation by Governor Perdue that the week of April 4–10 be designated as Invasive Plant Awareness Week in North Carolina. Vice president, Maggie Porell, and Communications Committee chairperson, Margaret Fields, enabled activities and awareness for the week by designing a web site where others could register events and/or participate in activities (https://sites.google.com/site/nceppcinvasivesweek/). Several articles regarding the need for invasive plant awareness were published in the local media, and both television and radio interviews were done with Rick Iverson and Debbie Crane. NC-EPPC was pleased with their first Invasive Plants Awareness Week and our chapter is looking forward to applying lessons learned for implementation of an even better week in 2012.

NC-EPPC has facilitated several Early Detection and Rapid Response presentations including one hosted by the Sandhills Weed Management Area, one hosted by New Hanover County Extension and one hosted by the Sandhills Natural History Society.

NC-EPPC is currently involved in the dialogue concerning proposals to use potentially invasive feedstocks for biofuel production. A recent summit meeting, with invited participants, was organized by the North Carolina Department of Agriculture and the Biofuels Center of North Carolina to discuss feedstock invasiveness and to encourage evaluation before thousands of acres are planted with potentially invasive plants. The meeting resulted in the formation of a committee that will propose written recommendations and practices for the production of potentially invasive biofuel feedstocks, such as *Arundo donax*.

The next annual meeting of NC-EPPC will be held at the North Carolina Arboretum in Asheville, NC on November 17th.

Rick Iverson, Weed Specialist, NCDA&CS, Plant Industry Division, Rick.Iverson@ncagr.gov

PAMPAS GRASS:
Alarming Observations in Southwest Alabama

photo and story by Gena Todia

◂ *Pampas grass, The Nature Conservancy Archive, Bugwood.org* ▴ Cortaderia selloana *south of CR 321.*

One of the most popular and commonly used landscape plants in my part of the world, southwest Alabama, is pampas grass (*Cortaderia selloana*). This large tussock grass with a cream-colored, showy, plume-like inflorescence seems to be present in every neighborhood and practically every other yard.

The Global Invasive Species Database (GISD) says the following about this species: "In its native range in South America, *Cortaderia selloana* grows in relatively damp soils and along river margins. *C. selloana* is found along streams and in the low wet areas of Argentina and southern Brazil. In its introduced range *C. selloana* can be found in sub-humid and semi-arid subtropical regions. Pampas is capable of becoming established on a wide variety of soil types. Deep soil with good drainage gives best growth results. It is often found in open sunny places which receive added moisture, becoming naturalised as a weed in damp places, depressions, along stream banks, the margins of mangrove swamps and, in particular, disturbed areas associated with roads, pipeline cuts and walking trails in forest areas and waste places."

With the above information and considering how residential and commercial landscapes in the area have been saturated with this species, I should not have been too surprised to see it growing in areas where it was obviously not planted. While I was aware that pampas grass is a serious invader in parts of California and other places, I had not seen it as an escapee in south Alabama or surrounding areas until about four or five years ago.

Imagine my surprise to see multiple pampas grass clumps growing in the dunes among the sea oats and scrub oaks while driving through Gulf State Park in Gulf Shores, Alabama. So far, pampas grass occurs only on the north side of the highway that runs parallel to the beach, and not on the beach proper. I have observed it in other areas along our coast, such as near the edges of tidal marsh, in recently-used as well as long-abandoned dredge disposal areas near the Gulf Intracoastal Waterway, fallow farm fields away from the coast, and along forest edges. Soil type varies widely, ranging from nearly pure sand near the beach to sandy loam and sandy clay loam away from the coastline. The common denominator for all occurrences is disturbance, either recent or historic. I first noticed escaped pampas grass shortly after major hurricanes in our area (Ivan in 2004 and Katrina in 2005), although I cannot confirm a connection between these storms and the seemingly sudden appearance of pampas grass outside of cultivation.

The GISD goes on to say, "*Cortaderia selloana* can form dense stands that exclude other plants. Its sharp leaves cut skin and can limit recreational use of areas, and it can form dense colonies that can become or increase fire hazards (May *et al.,* undated). Once seedlings become established, it is a substantial threat to the ecological quality of preserves, particularly in coastal and grassland sites due to competition with native plants. Its rapid growth and accumu-

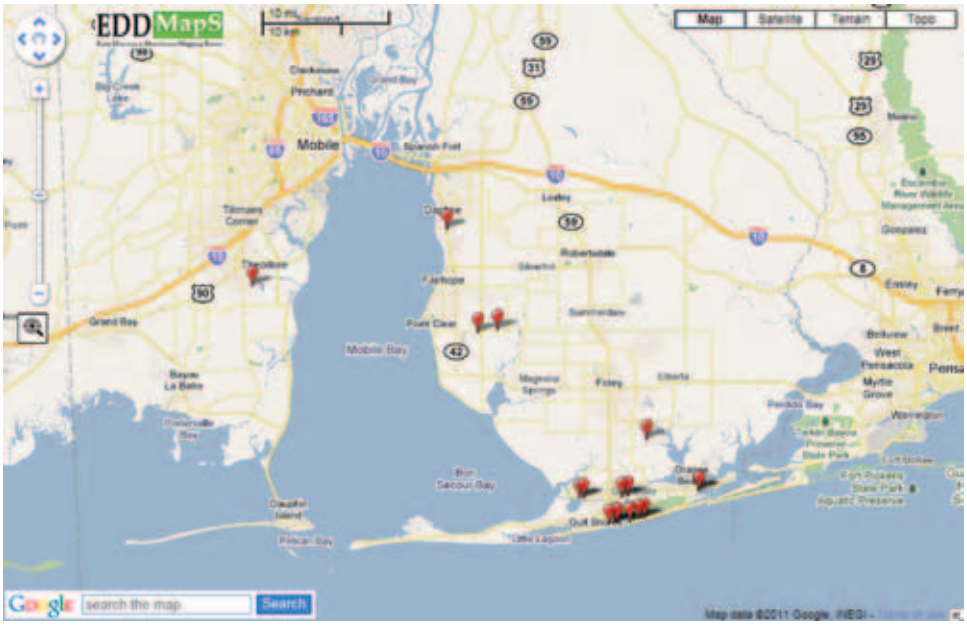
Imagine my surprise to see multiple pampas grass clumps growing in the dunes among the sea oats and scrub oaks while driving through Gulf State Park in Gulf Shores, Alabama.

lation of above ground and below ground biomass allow it to acquire light, moisture, and nutrients that would be used by other plants. It can be damaging even at low densities because of the amount of cover it can occupy (Starr *et al.*, 2003)."

The occurrence of *C. selloana* outside of cultivation in southwest Alabama seems widespread and is becoming more common. Locations where I have found pampas grass have been entered in EDDMapS (http://www.eddmaps.org/). If you see this species in areas where it has not been planted, I would encourage you to do the same.

If we believe that this species is, or may become, yet another invasive exotic plant in the southeastern U.S., then what is the next step? Is there action that can be taken by state and regional exotic pest plant councils (and individual members) to bring about awareness, educate the public, work with the nursery industry, and nip this one in the bud before it's too late? As individuals, we can start by removing this species from our own properties. As professionals, we can share information with our clients and colleagues and make recommendations on control and prevention. State and regional EPPCs can evaluate this species to determine whether it belongs on their respective invasive exotic plant species lists. They can also educate members and other annual meeting attendees about the invasive tendencies of this species. We as individuals can inform resource managers of public lands when we observe this species and provide them with information on control methods if needed. Ultimately, we cannot ignore the nursery industry and the role that they can play in helping to prevent pampas grass from becoming another widespread invasive exotic plant in the southeast. EPPCs can work cooperatively with the nursery industry to determine an environmentally responsible course of action that is not economically detrimental to nurserymen who grow this popular species. Working together, perhaps we can indeed prevent establishment of this particular species within our southeastern natural landscape.

Gena Todia, Wetland Resources Environmental Consulting, Daphne, AL, (251) 928-6157, jaget@zebra.net



Pampas grass distribution map, courtesy of EDDMapS, showing its expansion in southern Alabama.

Layer Elementary Goes Native to Help Restore Our Wetland Backyard:

The Spring Hammock Preserve

by Linda Lyster

At Layer Elementary, we can boast about our wondrous wetland backyard, but without the support of community partners and generous organizations we would never have accomplished our goal of making the most of our natural environment. The "Kathy Craddock Burks Education and Outreach Grant" from FLEPPC provided the funding to restore and enhance our school backyard. We would like to share how our outdoor classroom has developed over the past few years and provides a rich project-based curriculum for all students.

Background

Layer Elementary was constructed in 2004 on property which backs up to the Spring Hammock Preserve, a well-known landmark in Seminole County, Florida. The Spring Hammock Preserve is Layer Elementary's backyard. It includes Lake Jesup and is surrounded by 1,500 surrounding acres of wetlands made up of hardwood swamps and hydric hammocks. The wetlands are truly a gem in the middle of a rapidly growing urban region. One must see the land to fully realize its beauty and biodiversity. This wetland community is abundant with a variety of plants and animals, making it a wonderful opportunity to develop an outdoor classroom and to teach students the importance of being good stewards of our environment and planet. Unfortunately, construction of the school in 2004 resulted in a disruption of the natural ecosystem and the invasion of non-native plant species including ludwigia, skunk vine, air potato, cogongrass, and Chinese tallow.

A. COPELAND.

Community volunteers remove invasives.

Vision, Plan, and Action

Within our first year, we realized what a great resource we had in our backyard. Our staff began brainstorming on how we could use the environment for teaching and learning. We needed to make the grounds safe and accessible. We also needed advice on trail construction, plant and animal species, and curriculum. We partnered with several environmental consultants and teachers, the Florida Fish and Wildlife Conservation Commission, St. Johns River Water Management District, and Winter Springs Rotary Club. All parties were invited to take part in our vision and provide advice for our action plan.

Our partners dedicated many hours to assist us with planning. It was strongly suggested that the invasive plants be removed and replaced with native plants, and that plants should be added to barren areas for shade and soil stabilization. It was at this time we learned about the FLEPPC Education and Outreach grant. We sent in our application and were thrilled to be selected to receive funding.

We realized that this FLEPPC grant project could be a rich learning opportunity for students. We decided to have the students identify the invasive non-native plants and decide which tree would benefit the environment as a replacement. We enlisted the help of Biosphere, a native tree nursery and consulting firm specializing in the restoration and creation of natural systems. They helped us narrow down the trees and shrubs best-suited for our wetland backyard. Rotary Club of Winter Springs was quick to volunteer, too. They provided us with the manpower to remove many of the larger and widespread invasive trees and plants, such as Chinese tallow, ludwigia, and cogongrass. This opened the area for trees provided by FLEPPC funding to be planted.

Funding helped to provide gardening tools, plant identification guides, and native trees and shrubs. Students researched the trees recommended by Biosphere. They compared sunlight and moisture needs to determine the most suitable location for planting. Other considerations included rate of growth, size, and maintenance over time. The students also created a wiki at http://layerwetlandwiki.pbworks.com. Clicking on Student Projects and 4th grade Habitat Restoration will take you to several videos highlighting what they learned during this project, as well as other grade level projects utilizing our backyard.

A Place of Learning

What began as a project for fourth graders has slowly grown to incorporate every grade. All Layer Elementary students enjoy a rich curriculum that incorporates field studies in the school backyard and targets Sunshine State Standards. Teachers facilitate project-based and inquiry-based projects and students learn the nature of science as they put their observation skills to work. Kindergarteners enjoy discovering the likenesses and differences of plants and animals in the backyard wetland habitat. First grade students use their five senses to experience living things in their environment and understand the basic parts of a plant. Second graders learn about the life cycle and survival needs of plants and animals. Third grade students study structures of plants and animals and their responses to the seasons. Fourth grade students explore the food chain and energy flow of plants and animals. Fifth graders discover adaptations and interactions of plants and animals.

L. LYSTER

Students measure depth for the root ball.

The Future

Our goal has always been for our students to become problem-solvers in their community and to develop global awareness. They learn that people can impact their environment both positively and negatively. In the past few years, we have seen our vision become a reality. Our backyard has become a place where students can experience authentic learning. Layer Elementary School continues to take on challenges and explore ways to enrich learning, such as utilizing a GPS to create school tours and using handheld devices to investigate water and soil quality. We also continue to seek grant funding and partners to assist us with creating new trails and boardwalks to make even more areas accessible. Currently the Rotary Club and Home Depot are assisting us with constructing a bridge over a spring-fed pond and signage to help identify plant species. Boy Scouts have helped build observational bench seating among the newly planted trees. Lowes provided field guides and classroom resources as well as a covered area for an entire class to be shaded from the sun. Developing our backyard classroom has been a multi-year process and each year we see growth, with students and teachers embracing this learning and teaching experience. We estimate no less than 1,000 people have been impacted by this project and, since we have many of our projects posted to our wiki, a global audience is able to learn about plants and animals in the Spring Hammock Preserve. Our wetland backyard learning experiences for students have become embedded in the curriculum. Students look forward to the unique experience planned for their grade level. We are thankful for opportunities from generous partners and sources such as the "Kathy Craddock Burks Education and Outreach Grant" from FLEPPC to help make our dream a reality.

Linda Lyster, Educational Technology Facilitator and Outdoor Classroom Consultant, Linda_lyster@scps.k12.fl.us; http://teachercenter.scps.k12.fl.us/layer

State Day at National Invasive Species Awareness Week

by Chuck Bargeron, NA-EPPC Chair

National Invasive Species Awareness Week in Washington, DC included a State Day this year. As part of State Day, a panel discussion was held on "Strengthening Grassroots Partnerships — CISMA/PRISM/CWMA — What are our next steps?"

There were many participants in the audience and many of those who were not able to travel to Washington, DC, joined online through the national Webcast. For more information about the NISAW panel discussion in March — including the archived webinar — go to http://www.nisaw.org/2011/webinar.cfm.

There was a lot of great information and discussion during the session and we would like to keep the ball rolling. We have created a short survey to gather responses from people all over the nation who are participating, or interested in, these types of invasive species partnerships.

The survey can be found at http://www.surveymonkey.com/s/BSJFCPL

It should take about 10-15 minutes to complete. Please respond by June 3, 2011.

Internodes

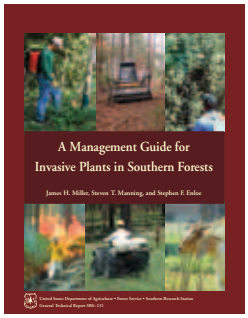
Calendar

Southeast Herbicide Applicator Conference (SEHAC), October 3-5, 2011, Panama City Beach, FL. University of Florida-IFAS Extension. Training and CEUs in Aquatics, Natural Areas, Forestry, Right-of-Way, and General Standards (CORE) in Alabama, Georgia, Florida, Louisiana, Mississippi, North Carolina and South Carolina. www.conference.ifas.ufl.edu/sehac

Natural Areas Conference and National Association of EPPCs – Adaptation and Protection of Biodiversity in a Changing World, November 1-4, 2011, Tallahassee, Florida. Special sessions include a cogongrass workshop, and state and federal natural area roundtables. www.naturalarea.org or www.naeppc.org

Publications

- **A Management Guide for Invasive Plants in Southern Forests** by J.H. Miller, S.T. Manning, and S.F. Enloe. U.S. Dept. Agriculture, Forest Service, Southern Research Station, General Technical Report SRS-131, 2010. 120 pp. "The guide provides the latest information on how to create and carry out prevention programs, implement management practices, and rehabilitate and restore land," said Jim Miller, Ph.D., an emeritus SRS research ecologist based in Auburn, Ala., and lead author of the book. "The guide serves as a staple for foresters, natural resource managers and others who want to remove invasive plants that have become a serious problem in the 13 southern states." The guide is a companion book to "**A Field Guide for the Identification of Invasive Plants in Southern Forests**," which SRS published in August 2010. Request free copies by sending name and complete mailing address, along with book title, author and publication number GTR-SRS-131 to: pubrequest@fs.fed.us, or by calling 828-257-4830. A PDF file may be downloaded at http://www.srs.fs.usda.gov/pubs/36915.



- **Encyclopedia of Biological Invasions** by D. Simberloff and M. Rejmanek, Editors. University of California Press, 2011. 792 pp. $95. ISBN 978-0-520-26421-2. One in the **Encyclopedias of the Natural World** series, this book addresses all aspects of this subject at a global level—including invasions by animals, plants, fungi, and bacteria.
- **Bioinvasions & Globalization—Ecology, Economics, Management, and Policy** by C. Perrings, H. Mooney and M. Williamson. Oxford University Press, 2010. 288 pp. $65. (paperback) $140. (hardback) ISBN 10 0199560161. A graduate-level text aimed at students, professional researchers, and practitioners in the fields of ecology, invasion biology, conservation biology, and the economics of the environment. May be of particular relevance to the policy and management community.
- *Assessing the invasive potential of biofuel species proposed for Florida and the United States using the Australian Weed Risk Assessment*, by D.R. Gordon, K.J. Tancig, D.A. Onderdonk, and C.A. Gantz. Biomass and Bioenergy 35(2011):74-79. "Twelve taxa under exploration as bioenergy crops in Florida and the U.S. were evaluated for potential invasiveness using the Australian Weed Risk Assessment system (WRA) modified for separate assessment at the state and national scales." "The WRA has now been sufficiently tested, both for screening of new species and for identification of species already in cultivation that may become invasive, to allow the risk of invasion to be incorporated into bioenergy crop selection criteria. However, no such consistent risk/benefit criteria have been developed at either the national or local scale in the U.S., and entrepreneurial efforts coupled with incentives appear to be driving cultivation efforts. Across most of the U.S. and elsewhere, any species not already regulated may be cultivated over vast acreages."
- *Genetic control of invasive plants species using selfish genetic elements* by K.A.Hodgins, L. Rieseberg, and S.P. Otto. Evolutionary Applications 2(4):555-569 (2009). "…we explore the possibility that a selfish genetic element found in plants called cytoplasmic male sterility (CMS) could be exploited for weed control."
- *Hybridization of invasive* Phragmites australis *with a native subspecies in North America* by L.A. Meyerson, D.V. Viola, and R.N. Brown. Biological Invasions (2010) 12:103-111. "Our results imply a mechanism for the further decline of native *Phragmites* in North America and a potential for the formation of aggressive hybrid offspring."
- *Suitability of a new plant invader as a target for biological control in Florida* by V. Manrique, R. Diaz, J. P. Cuda and W. A. Overholt. Invasive Plant Science and Management (2011), January-March, Vol. 4(1):1-10. doi: 10.1614/IPSM-D-10-00040.1 "The suitability of a target weed for classical biological control should be considered early in the process of plant invasion. Concerns have been raised about the recent arrival of *Mikania micrantha* Kunth in south Florida and its potential to spread and invade natural and managed ecosystems."
- *Multi-level driving forces of biological invasions* by B. Rodriguez-Labajos, R. Binimelis, and I. Monterroso. Ecological Economics 69(2009):63-75. Primary driving forces: Anthropogenic activities include transport practices, trade activities, travel and tourism, and changing agricultural practices. Anthropogenic pressures include: changes in donor regions or emergence of new ones; arrival of propagules and accumulation of propagule banks; landscape fragmentation; changes in disturbance regimes (e.g., fire or pollution); changes in limiting factors; creation of invasion corridors (aquatic, terrestrial).
- *Are mangroves in the tropical Atlantic ripe for invasion? Exotic mangrove trees in the forests of South Florida,* by J.W. Fourqurean, T.J. Smith, J. Possley, T.M. Collins, D. Lee, and S. Namoff. Biological Invasions. Published online: 28 November 2009. "Two species of mangrove trees of Indo-Pacific origin have naturalized in tropical Atlantic mangrove forests in South Florida after they were planted and nurtured in botanic gardens."
- **USDA Do No Harm FY 2010 Report to the Invasive Species Advisory Committee (ISAC) and the National Invasive Species Council (NISC).** Eight U.S. Department of Agriculture (USDA) agencies work on invasive species issues: the Agriculture Research Service (ARS); Animal Plant Health Inspection Service (APHIS); Cooperative State Research, Education and Extension Service (CSREES) (now the National Institute for Food and Service Agency (FSA)); Foreign Agricultural Service (FAS); Forest Service (FS); and the National Resources Conservation Service (NRCS). Agencies are expected to perform research programs and projects in a manner that does not cause or promote the introduction or spread of invasive species in the U.S. or elsewhere, ensuring that all feasible and prudent measures are taken to minimize risk of harm. The FY 2010 "USDA Do No Harm Report" to the ISAC and NISC may be accessed at: www.invasivespeciesinfo.gov/resources/orgfedusda.shtml Or go to Resource Library from the homepage, click on Agencies and Orgs, then Federal, then U. S. Department of Agriculture, then FY 2010.

- **The Emergence of the "Invasivore" Movement** *From Protect Your Waters*
"'If you can't beat 'em, eat 'em.' That's the mantra of an emerging group of environmentally conscious foodies dubbed "invasivores." They are applying their interests to lionfish, Asian carp and other harmful, nonnative species. On one level, eating invasive species that are harming our environment seems to make perfect sense. After all, the human race has a good track record of over-harvesting species for food consumption. And on another level, it seems like a relatively benign response to a very complex environmental issue. If a nonnative species is able to become established, more than likely, the species has the reproductive capabilities to become problematic; thus, harvesting these species to eat them will probably not be effective enough to impact the numbers of an invasive population. [However], the legitimacy and sustainability of this strategy concerns biologists because if this movement gains enough traction, in our sluggish economy, will economic opportunists then try to hide behind the jobs creation concept to cultivate invasive species much like other food staples are developed? The bottom line is that any type of harvesting and subsequent formalized market development of an invasive species needs to always consider its overlap with conservation and the biological underpinnings for employing such a strategy. If creating a consumptive market for an invasive species is the only viable way to control it, then this step should be seriously considered. But, if other viable tools exist to control an invasive population, relying on developing a market needs to be scrutinized much more closely to ensure that market incentives aren't being used to maintain an invasive species population." January 24, 2011. For additional information, visit: www.protectyourwaters.net/news/display.php?id=13940

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