Wildland Weeds

SPRING 2003

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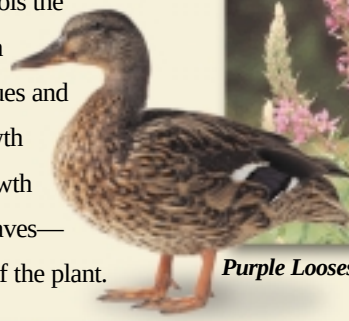

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Wildland Weeds

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On the Cover:
Pretty, but a pest, Chinese privet (*Ligustrum sinense*). See article on page 6. Photo by Jim Allison.

editor's note

Spring 2003 represents the first issue of *Wildland Weeds* that is being published by the **Florida Exotic Pest Plant Council**. We thank David and Debra Tarver of Outdoor Tech, Inc., for their assistance in getting *Wildland Weeds* off the ground and running for the past five years. The FLEPPC board of directors now has decided to take the reins in hand and publish future issues on our own.

We hope you will continue to enjoy *Wildland Weeds* and support the mission of the **Florida Exotic Pest Plant Council**. We recognize that budgets are tight now and appreciate even more the support we receive for this publication.

In spite of tight budgets all around, work on exotic pest plant issues marches on as exotic pest plant councils and other organizations develop, hold symposia, form liaisons and take action. Volunteers join the battle with privet pulls, *Microstegium* massacres, and other restoration efforts. Southern state departments of agriculture join forces against cogongrass while environmental groups focus educational efforts on introduced species and their effects on biodiversity. Meanwhile, workers out in the field continue the fight against well-known exotic pest plants such as Old World climbing fern, while others help us maintain our sense of humor in the face of overwhelming odds. There are so many ways to participate and, as editor, it is gratifying to see the hard work and enthusiasm of our contributors, as evidenced in this issue.

— Karen Brown, Editor

WELCOME
Mark Garland!

by Andrea Van Loan

In September, 2002, Mark Garland became the new Biological Administrator and Botanist for the Florida Department of Agriculture and Consumer Services, Division of Plant Industry (DPI). In this position, Mark curates the Division of Plant Industry's herbarium, tracks the latest nomenclatural changes involving plants, and assists DPI personnel in field surveys for noxious weeds and prohibited aquatic plants. Mark also provides support to the Endangered Plant Advisory Council (EPAC), which recommends changes to Florida's list of endangered, threatened, and commercially exploited species of plants. Mark is looking forward to supporting and contributing to the new decision making process for listing plants as noxious weeds in Florida under FDACS Rule 5B-57.

An "Army brat" who grew up in Georgia, Mark earned a bachelor's degree in botany from the University of Georgia, attended graduate school at Georgia and at Florida State University, and is now pursuing a Ph. D. at the University of Florida. Mark has been working with native and cultivated plants in Florida for 20 years. For 10 of those years, Mark worked for the Florida Department of Natural Resources and the Florida Department of Environmental Protection, assessing the natural resources of lands proposed for purchase under the CARL program, and setting legal boundaries of wetlands throughout Florida. These years working with plants in natural areas in Florida, have reinforced to Mark the importance of both preventing the spread of invasive plants and controlling those plants in sensitive ecosystems.

When Mark visits a site, he focuses first on identifying the natural community and disturbance history, and then moves on to the question of "What are the species that are there?" As he says in the study and exploration of botany, "I like being mystified, because that's when you learn things."

Mark's particular interests include the taxonomy of the genus *Hieracium* (hawkweeds) in the family Asteraceae (Compositae) and the genus *Hymenocallis* (spider-lilies) in the Amaryllidaceae. In his spare time he translates descriptions of new plant species into Latin, and enjoys drawing, hiking and exploring natural areas.

Please join us in welcoming Mark to his position and to continued exploration of the ever-changing and mystifying world of botanical Florida.

Resolution of the Southern Association of State Departments of Agriculture (SASDA) Expressing Cooperative Support for a Regional Approach toward the Research, Control and Eradication of Cogongrass, a Noxious Weed Common in the Southeastern Region of the United States

Whereas, Cogongrass is an established noxious weed in many counties of the southeastern states. Cogongrass was accidentally introduced into Mobile, Alabama in 1912 as packing material. It was intentionally used as a potential forage crop in several southern states during the 1920's and later used in soil reclamation projects. Even today, cultivars of this plant are being sold by nurseries and distributed throughout the region.

This plant has been very successful due to its wide range of habitats (poor sands to rich sandy loams, full sun to deep shade, and extreme drought to water logged soils). It is extremely fire tolerant and may reproduce both sexually and asexually.

Cogongrass is a threat to native plant communities where it competes intensely for available light, water, and nutrients, thus displacing indigenous species. It is also allelopathic and creates such a physical barrier that it is difficult for seedling establishment of native plants, including pine trees. Forage value is negligible because of high silica content. The young shoots are sharply pointed, and they may damage the mouths of grazing livestock.

Cogongrass negatively impacts numerous wildlife species including the threatened Gopher tortoise, wild turkey, Bobwhite quail, songbirds, white-tailed deer, and even waterfowl that depend on shallow water areas.

Its distribution has spread rapidly in the past few years and is now known to be present in seven southeastern states. Locally, this weed may reproduce and advance at a rate of 43 square feet per eleven weeks of conducive environmental conditions. Therefore, this pest will, in turn, out-compete many native and indigenous species. There are many vectors for the spread of Cogongrass including the unintentional movement by highway maintenance crews, fire equipment, and wind dispersal of seeds, and a host of less obvious means. The sale of Cogongrass cultivars which are being sold under the trade names of "Japanese Bloodgrass," "Rubra," and "Red Baron" is also another means of spread.

Be it resolved, only with a collective and coordinated effort among the States in the affected region, and in additional coordination with the United States Department of Agriculture (USDA), can we maximize our efforts and resources, to include a control/eradication program in place to combat this pest.

Be it further resolved, due to the rapid rate of spread for this noxious weed, it is very important to act immediately in order to minimize the threat and maximize our resources.

Be it further resolved that the SASDA meeting in Lexington, Kentucky, October 5, 2002, hereby expresses its strong support for a cooperative effort among the southern states affected, toward the research, control and eradication of Cogongrass.

Be it also resolved that the SASDA call upon Congress and the USDA to support these efforts to control and eradicate Cogongrass, with their policies and all other available resources, including funds for a control/eradication program.

Signed by SASDA member state representatives in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia and West Virginia.

FLEPPC applauds the Cogongrass Resolution adopted by the Southern Association of State Departments of Agriculture (SASDA) since it will heighten awareness and focus further attention upon this severely invasive plant in our continent. Cogongrass adversely impacts diverse plant communities and many animals in Florida and other southeastern states by severely altering fire ecology, community diversity and wildlife forage quality. Its invasiveness stems from its capabilities to tolerate and flourish under wide ranges of conditions, rapidly reproduce by sexual and asexual means, and be spread by numerous pathways.

Hopefully, outreach like the SASDA resolution will lead to effective local and regional management of cogongrass. It already is listed amongst this country's Federal Noxious Weeds, so interstate commerce in the species is illegal. However, it reportedly is still available for sale in North America. Florida is the apparent sole state, to date, to declare it a State-prohibited plant. All affected states, governmental entities and land managers need to recognize the adverse impacts of cogongrass everywhere it occurs in North America and support its management by every means possible.

— Mike Bodle, FLEPPC Chair

2002 PRIVET PULL & MICROSTEGIUM MASSACRE

by Jim Allison
Past President, Georgia Exotic Pest Plant Council

Rivers Alive is Georgia's annual volunteer river cleanup event, held throughout the month of October and sponsored by the Adopt-A-Stream Program of the Georgia Department of Natural Resources, and the Keep Georgia Beautiful Program of the Georgia Department of Community Affairs. This past October, in return for free commemorative T-shirts, some 15,764 volunteers collected more than a quarter of a million pounds of trash from in and along the state's waterways. And for the third year in a row, some of the solid waste removed was of the biological kind: Chinese privet (*Ligustrum sinense*).

Chinese privet was introduced to the US from China in 1852 for use as a hardy, fast-growing, evergreen hedge and privacy screen (the words *privet*, *privacy*, and yes, *privy*, all derive from the same Latin root). It quickly began to spread beyond anyone's control, as its fruits—like miniatures of its relative, the olive—were eaten by songbirds and spread far and wide. Over time, it forms very dense stands and out-competes virtually all other species. Typically it gradually forms a solid understory beneath a forest canopy, but without intervention eventually even the canopy trees are doomed, as they—like wildflowers and native shrubs—cannot reproduce in the dense shade of privet's evergreen foliage. Today it is infesting stream banks and woodlands, even rock outcrops, at least as far west as Texas and as far north as Connecticut (the PLANTS Database: http://plants.usda.gov/plants/).

October 2000: On the morning of Saturday, October 14, 2000, the Georgia Exotic Pest Plant Council and Chattahoochee River National Recreation Area (CRNRA - National Park Service) held the first annual **Rivers Alive** *Privet Pull*, at one of the CRNRA units in Cobb County, Paces Mill Park. In inviting the GA-EPPC membership to the event, I cautioned, "No, we will not end the problem of invasive species. Would picking up trash mean an end to our problems with litter? That is not the goal! But . . . we can make a real difference at this first—demonstration—site. The privet is spaced far enough apart that we can hope to effect some release of native vegetation, once the competition from the evil evergreen is removed. What's more, we can hope to inspire others to do something similar or better in the future, there and elsewhere. We can help get the message out that more than one exotic plant is taking over our state (not just kudzu!). We can make a few more people recognize that pollution is not only things like solid waste, but also takes the form of *biological* pollution."

Our first *Privet Pull* was successful: we had [exactly!] enough T-shirts to go around. An even better sign of success: *Privet Pull 2000* served as the inspiration for multiple similar events, beginning the following February at Panola Mountain State Conservation Park, the month after that at a park in the City of Decatur, and new "pulls" every year since (such as at Rock and Shoals State Natural Area and the Chattahoochee Nature Center). Paces Mill Park has been the site of a GA-EPPC/CRNRA **Rivers Alive** *Privet Pull* on a Saturday morning each of the last three Octobers and the reduction of the privet component there has been dramatic.

October 2001: While the limited goals of the premiere *Privet Pull* were clearly accomplished, a site inspection prior to the 2001 event showed that not all the results were salutary. Although it was a pleasure to note several native wildflowers we had not noticed the year before, probably rebounding due to more sunlight reaching the forest floor, it appeared that one of the prime beneficiaries had been a different alien pest plant: *Microstegium vimineum*. This is an Asian grass graced with an amazing number of common names, none of them quite as well known as its scientific name (see the Winter 2002 issue of *Wildland Weeds* for an article on this shade-tolerant exotic). During the 2001 event we added the bag-

ging of *Microstegium* as an alternate activity and removed a large quantity. But, knowing the large number of seeds that would have been retained in the seed bank, we decided that in 2002 we would begin to mount a more systematic attack on this noxious annual.

In the summer of 2002 I helped an intern with the CRNRA, Michelle Aldizer, to locate some populations, within the CRNRA and along the Chattahoochee River, of two native, shade-tolerant perennial grasses in the genus *Chasmanthium*, *C. latifolium* and *C. sessiliflorum*. The former is familiar to many as "river oats" and the latter is a smaller-flowered cousin. Both are common species in habitats similar to those at Paces Mill Park. Prior to the 2002 *Pull*, Michelle collected some live plants of each *Chasmanthium* by thinning some of the densest natural colonies we had found. She also collected seed, which the Atlanta Botanical Garden has agreed to grow up for planting during the 2003 event. Because the two native grasses are good competitors in low woodlands, are perennial, start growth early in the season and are much taller than *Microstegium*, they should be able to at least hold their ground against it, and as more and more of the native is planted and, I hope, reseeds, the *Microstegium* should dwindle proportionately.

October 2002: On the morning of Saturday, October 19, 2002 more than 40 volunteers showed up to pull privet, bag *Microstegium*, and plant *Chasmanthium*. As with the previous *Pulls*, a major share of the credit goes to Dr. Wayne Morris and his students at North Georgia College and State University, who constituted a core of young people full of energy and with strong or at least still-flexible backs (those of us over 50 remember those days). In 2002 they were joined by an equally dedicated contingent from Georgia Tech, by staff from the CRNRA, and by some concerned citizens. In just a few hours we removed a record amount of privet (destined to be chipped into mulch), bagged a truckload of *Microstegium*, and made a start toward native grass restoration. Everyone found it fun and rewarding (well, at least no one had a word of complaint). I hope you'll consider joining in during next October's *Privet Pull and Microstegium Massacre*, or better yet, organize a similar event closer to your own neighborhood!

You can contact Jim Allison, Past President, Georgia Exotic Pest Plant Council at the Georgia Natural Heritage Program, Georgia Department of Natural Resources, 2117 U.S. Highway 278, SE, Social Circle, GA 30025 or by e-mail at Jim_Allison@dnr.state.ga.us

Uprooted Chinese privet.

Trading a native for a nuisance: *Chasmanthium* for *Microstegium*.

Planting *Chasmanthium*.

CONTROL Invasives, IMPROVE the Neighborhood and RECLAIM the Park

by Roy Alexander

Exciting changes are in the works for three-acre Shamrock Park in urban Charlotte, NC. The lower third of the site is being converted from a "waste-land" heavily overgrown with exotic invasive plants into a demonstration garden for native plants and wildlife-friendly landscaping. The area includes a small creek that collects water from both springs and seeps in the upper part of the park as well as runoff from streets and fifty-year-old residences in this central-city neighborhood. The creek was dubbed "Vanishing Creek" because it emerges from a culvert beneath the upper portion of the park and disappears into another culvert as it exits the park.

Experts from Mecklenburg County Park & Recreation removed woody invasive species on September 13, 2002. The process involved cutting out dense growth of invasives such as ligustrum, mulberry, and Russian olive, as well as thinning of poplar, cherry, and black gum. Cut stumps were treated with Rodeo and poison ivy was sprayed to allow access to the creek by children. This access was facilitated by a crew of neighborhood residents who constructed a footpath along the creek complete with crossing logs and a stairway at the south end.

On the advice of Dr. Larry Mellichamp, neighborhood member, UNC Charlotte botanist and Director of the Cullowhee Conference on Native Plants, a native plant garden in the lightly wooded adjoining area

is proposed. The garden will demonstrate the advantages of using native shrubs, herbaceous plants, and ground covers in landscaping. Signage is being developed detailing the benefits of native plants such as water conservation, reduced pesticide usage, etc.

Funding and materials for these improvements are to be provided by the Mecklenburg County Park and Recreation Department and the UNC Botanical Garden. Additional funding may come from Mecklenburg County Land Use and Environmental Services Agency.

Roy Alexander, neighborhood representative for the project, is enthusiastic about the payoffs from the undertaking and stated, "We not only get more usable recreation space in our little park, but we get an ongoing educational resource to help us learn how to landscape our homes according to environmentally sound principles."

You can contact Roy Alexander of the Charlotte, NC Weed Team at sueroy@prodigy.net

Monitoring Ground Treatments of Old World Climbing Fern *(Lygodium microphyllum)* on the Arthur R. Marshall Loxahatchee NWR

by Bill Thomas, Jr. and Laura A. Brandt, U.S. Fish and Wildlife Service

Introduction

Lygodium microphyllum is a fern native to Australia, Southeast Asia, and tropical Africa that has become established in South Florida since 1950 (Beckner 1968, Nauman and Austin 1978, and Pemberton and Ferriter 1998). It has become established in wet pine flatwoods, Everglades habitats, and in cypress swamps. *L. microphyllum* impacts native vegetation community structure (Brandt and Black 2001) and appears to suppress native plant growth by smothering native vegetation and depriving it of sunlight. Additionally, thick fern mats prevent the germination of native plant seeds, restrict the growth of native plant seedlings, alter water flow, and can affect fire behavior by increasing the chances of crown and spot fires (SFWMD 1997).

The Arthur R. Marshall Loxahatchee National Wildlife Refuge (the Refuge), 59,894 ha of remnant northern Everglades wetland, is comprised of four main habitat types: slough, wet prairie, sawgrass marsh, and tree islands. The thousands of tree islands are one of the features that make the Refuge unique. *L. microphyllum* was first reported on the Refuge in the late 1980s. Currently it is estimated that *L. microphyllum* infests over 10,100 ha, primarily bayhead and strand tree islands in the north-central marsh interior. *L. microphyllum* also has been reported as growing in sawgrass and on fern tussocks, in cypress swamps and domes, and has even been reported as growing freely in wet prairies in the northern portions of the refuge interior (L. Brandt pers. comm.).

With over 10,117 ha being impacted by *L. microphyllum*, the Refuge has the worst infestation of this species in southern Florida. The management of invasive exotic pest plants is one of the highest management priorities for the Refuge. The purpose of this study is to monitor the effectiveness of herbicide treatments on *L. microphyllum* on tree islands, document the regrowth of *L. microphyllum,* and document the response of native species richness and composition in response to the treatments.

Methods

Treatments of *L. microphyllum* were performed by a contractor (Enviroglades, Inc.) assigned by the Florida Department of Environmental Protection (DEP) during August - December 1999. Approximately 140 individual tree islands were treated on 125 ha in the north-central interior of the Refuge (Figure 1.). Most of the tree islands within the delineated treatment area were moderately to severely infested with *L. microphyllum* including the edges of the tree islands, and surrounding sawgrass and fern tussocks. The preferred treatment method was for crews to cut the ascending portion of the fern at waist or knee level followed by the application of a 5% solution of glyphosate plus surfactant in water as a foliar spray to the remaining portion of the *L. microphyllum* rooted in the ground. To prevent additional spread of the spores, the ascending portion of the fern biomass, or fern ladders, were left on site hanging or clinging to native vegetation. The DEP provided funding for re-treatments during November 2000 to January 2001.

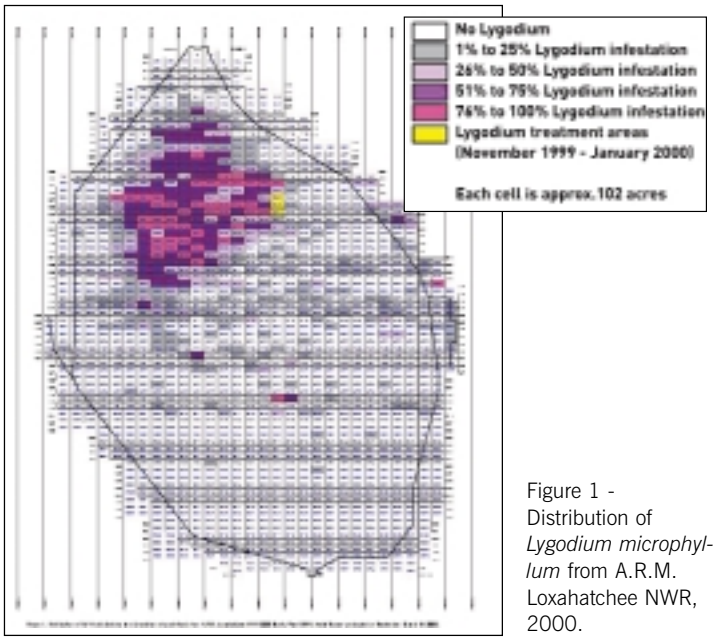

Figure 1 - Distribution of *Lygodium microphyllum* from A.R.M. Loxahatchee NWR, 2000.

Ten of the treated tree islands were randomly selected for study. Random points were picked from a grid map of the 125 ha area, and when located in the field, the nearest treated tree island was selected. Data were collected for percent coverage of live *L. microphyllum* and native vegetation in the ground (0-1 m), mid-story (1-2 m), and overstory layers (>2 m) within a 4 X 5 meter quadrat placed in the center of each island. Coverages were visually estimated to the nearest 5%, and all plant species were identified. Data collected allowed for development of a species list for each layer and the total percent cover of all vegetation within each layer. Quadrat size and quadrat location were used to provide consistency with other studies being conducted on tree islands on the Refuge (Brandt *et al*. in prep.). In addition, photo points were established on each selected island. The northwest corner of the quadrat served as the interior photo point, and an exterior photo point was placed on the east side of each tree island to help document regrowth of *L. microphyllum* and native vegetation over time. Data and photos were collected twice annually for three years post-treatment.

Results and Discussion

During initial sampling in May and August 2000 (6 and 8 months post-treatment), percent coverage of live *L. microphyllum* ranged from <5% to 10%, <5%, and <5% to 10% for the ground, mid-story, and overstory layers respectively. Live *L. microphyllum* was detected in the ground layer in all ten plots, within the mid-story layer in one plot, and in the overstory layer in two plots. Live *L. microphyllum* located in the mid-story and overstory layers was likely missed during original treatments. Only a small portion detected in the ground layer appeared to be new growth from spore. After the fifth visit (3 years post-treatment), *L. microphyllum* percent coverage in the ground layer ranged from 0% to 40%, within the mid-story layer 0% to 10%, and within the overstory layer 0% to 10% respectively. *L. microphyllum* was detected in the ground layer in nine of the ten plots, within the mid-story layer in six plots, and in the overstory layer in three plots, indicating this species was slowly increasing in all vegetative layers. This was expected and is consistent with monitoring post-treatments of other Category 1 invasive pest plants.

Figure 2. Top – Typical *L. microphyllum* infested tree island. Bottom – Tree island 2217D immediately following treatment, November 1999.

Nineteen native species were recorded in the study plots. The native species list was similar to that reported on other refuge tree islands (Brandt and Black 2001, Brandt *et al.* in prep, USFWS 2001). The dominant native species in the ground layer were ferns (swamp, chain, and shield) and herbs and forbs such as marsh beggar's-tick and bog hemp. Native species in the shrub layer included wax myrtle, buttonbush, some ferns, and vines such as wild grape and bamboo vine (*Smilax sp.*). The dominant native overstory trees were red bay, dahoon holly, and wax myrtle. The number of native species in the ground, shrub, and overstory layers ranged from three to eight, three to four, and three to four respectively.

The percent cover of native species in the ground layer within study plots increased during summer visits and decreased during winter visits indicating that some herbs and forbs experienced die-back, or were susceptible to cold temperatures. This was particularly evident during the the second visit (1.5 years post-treatment) during an extended period of cooler temperatures where a lower percent cover of and less native species were documented in the ground layer in 6 of the 10 plots. Flights over the Refuge at this time showed considerable browning of *L. microphyllum* on severly infested tree islands indicating that this species too experienced die-back from extended cold snaps.

After three years, the percent cover of native species had increased in the ground, mid-story, and overstory layers in 8, 5, and 6 of the 10 study plots respectively. The increase in the percent cover of native species after treatment of *L. microphyllum* illustrates that tree islands can recover from severe *L. microphyllum* infestations.

Very minimal non-target damage to native species was observed on treated tree islands during the study. Only when laborers failed to cut the fern trellises, and instead, utilized a single foliar application to *L. microphyllum* extending into the shrub layer, was damage to native wax myrtle and sawgrass observed. This was most evident on the edges of tree islands. There was also some damage to native ferns in the interior of tree islands where foliar applications of glyphosate were performed to *L. microphyllum* rooted in the ground.

Figure 3. Top – Tree island 2217D plot (9 months post-treatment). Note dead fern trellises hanging in foreground. Bottom – Tree island 2217D exterior photo point (20 months post-treatment).

Many of the treated *L. microphyllum* islands remain relatively *Lygodium* free nearly three years after original treatments, indicating that although ground treatments are extremely expensive, they can effectively control this species on a small scale over a short-term period if performed correctly. However, it was noted that a number of the tree islands, which supposedly had been treated, were once again moderately to heavily infested with *L. microphyllum*. This appeared to be a faulty treatment technique by the contractor. It may be that the fern trellises were cut and that the subsequent spray crews failed to treat the portion rooted or that the islands were not treated at all. Also, a faulty herbicide mixture may have been used, or the herbicide may have been washed away in a rain event. A better means of marking the individual islands needs to be developed if future treatments are going to be conducted in this same manner.

The dead fern biomass appears to be degrading slowly, but signficant amounts remain on the ground and in the shrub and overstory layers. Prescribed fire will be tested on several islands as a means to remove dead fern biomass and restore tree island plant community structure.

Figure 4. Improperly treated *L. microphyllum* on tree island 2217A adjacent to plot. This *Lygodium* was brown and appeared to have been treated during initial visits but had recovered fully as of March 2002. This island would be an ideal candidate for immediate re-treatment to prevent reinfestation of other successfully treated islands in close proximity.

Implications For Management and Control

The preferred management strategy for most agencies, including the U.S. Fish and Wildlife Service, is to contain and treat small and/or outlier populations of *L. microphyllum* before they become unmanageable (Ferriter 2001). The most promising method to control *L. microphyllum* to date, implemented on the Refuge and throughout South Florida, remains herbicides, but their application is difficult due to the vertical and horizontal growth of this species. This study has confirmed that ground treatments, when conducted properly and when using the most effective herbicides and surfactants, are an extremely effective method of controlling *L. microphyllum*. Unfortunately, because of the extent of the problem as it relates to the infestation levels, locations, and size of the Refuge, ground treatments may not be the most cost effective or logistically feasible long-term method for controlling *L. microphyllum*.

Original treatment costs totalled $155,000 for a time and materials contract which was completed in approximately 3.5 months. Assuming that each treated tree island averaged 0.30 ha in size, ground treatments cost approximately $3,690.50 per hectare and $1,107.15 per tree island. These costs are comparable to those obtained for initial experimental treatments conducted at Jonathan Dickinson State Park ($3,642.30/ha) in the mid-1990s using the same herbicide and a similar treatment technique (Pemberton and Ferriter 1998). If calculating the total cost for the delineated treatment area (125 ha), which included a significant proportion of uninfested wet prairie, total treatment costs were $1,240.00 per hectare. Using the conservative total treatment cost mentioned above, it is estimated that it would take nearly $12.5 million and approximately 9.6 years to perform initial treatments for *L. microphyllum* on the Refuge. Ground treatment costs for *L. microphyllum* are astronomical when compared to those for melaleuca, where costs range from approximately $24 to $202 per hectare for light to dense infestations respectively. However, aerial treatments for *L. microphyllum*, dependent upon the herbicide used, can cost as little as $30 per hectare (A. Ferriter pers. comm.). Effective aerial treatment methods need to be developed for the Refuge.

The results of this study have direct implications on future expenditures and control operations for the long-term management of *L. microphyllum* on the Refuge. Results show clearly that islands that were correctly treated experienced little *L. microphyllum* regrowth within 3 years. In fact, the native vegetation in all layers on these islands appears to be responding favorably. For cases like the Refuge, re-treatment prior to the third year may be unneccessary and funds could be directed for treatment of more severe infestations. Unfortunately, other islands that appear not to have been treated correctly are experiencing rapid reinfestation. Monitoring both herbicide treatments and contractors is a key component to implementing a successful *L. microphyllum* management strategy. Yearly follow-up treatments are probably logistically feasible and cost effective for smaller infestations on smaller parcels, but in the case of the Refuge where there are thousands of acres of heavy infestations, longer re-treatment intervals will allow resources to be focused on the most heavily infested areas first. Findings also show that it is theoretically possible to achieve maintenance control of this species on the Refuge, or at least, to achieve a level of control where *L. microphyllum* is no longer impacting the ecological function of tree islands.

Acknowledgements

We would like to thank everyone who assisted with field vegetation sampling. Special thanks go to Greg Jubinsky and Mark Zeller, DEP, for providing the Refuge with initial funding to test the effectiveness of ground application treatments for *L. microphyllum* on the Refuge.

Bill Thomas, Jr. is a part of the U.S. Fish and Wildlife Service. He can be reached at A.R.M. Loxahatchee NWR, 10216 Lee Road, Boynton Beach, Florida, 33437 or via e-mail at william_g_thomas@fws.gov

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Invasive Plants: Global Issues, Local Challenges

Chicago Botanic Garden, 7th Annual Janet Meakin Poor Research Symposium, October 27-30, 2002

The Chicago Botanic Gardens hosted the 7th annual Janet Meakin Poor Research Symposium "Invasive Plants: Global Invasions, Local Challenges" on October 27-30th in downtown Chicago. Dan Simberloff gave the keynote address, "Invasive introduced species: we can win this war!" In addition, there were two plenary sessions. The first session, "Mechanisms of invasion, competition and spread of unwanted plants," included the following talks: "What makes a species invasive," by Sarah Reichard; "Nature out of place: Biological invasions in the Global Age," by Jason Van Driesche; and "Role of the National Invasive Species Council," by Lori Williams, Executive Director of the National Invasive Species Council.

The second plenary session, "Measures to Control Invasive Plants," included the following presentations: "Assessing exotic plant species for large-scale control/eradication: Kudzu (*Puerarei lobata*) and Chinese yam (*Dioscorea oppositifolia*) as examples," by Jodi Shimp; "Changes due to invasion," by Liam Heneghan; "Biocontrol - pros and cons," by Bernd Blossey; "The promise and the peril of biological weed control," by Peter McEvoy; "Restoration," by John Randall; and "How can the nursery industry get involved?" by Craig Regelbrugge. In addition to plenary sessions, the symposium included a poster session, workshops and other presentations.

EPPC/Invasive Plant Councils: Organizing resources to protect natural areas

Brian Bowen, President, Southeast – EPPC, chaired a workshop on "EPPC/Invasive Plant Councils: Organizing Resources to Protect Natural Areas." The workshop was similar to the forum held at the Natural Areas Association annual conference in Asheville, North Carolina on October 3, 2002 (see page 14). Bowen provided an overview of EPPC organizations including the national, regional, and state councils. The session included presentations from California - EPPC by John Randall, Mid-Atlantic EPPC by Lisa Smith, the Invasive Plants Association of Wisconsin (IPAW) by Kelly Kearnes and Nancy Braker, and the Invasive Plant Council of New York State (IPC NYS) by Suzanne Maloney. The session was very informative and included a 20-minute open discussion. It was a great primary for the Midwest regional organization meeting held that evening to consider formation of a regional group.

Organizing Meeting: Invasive plant network for the Midwest

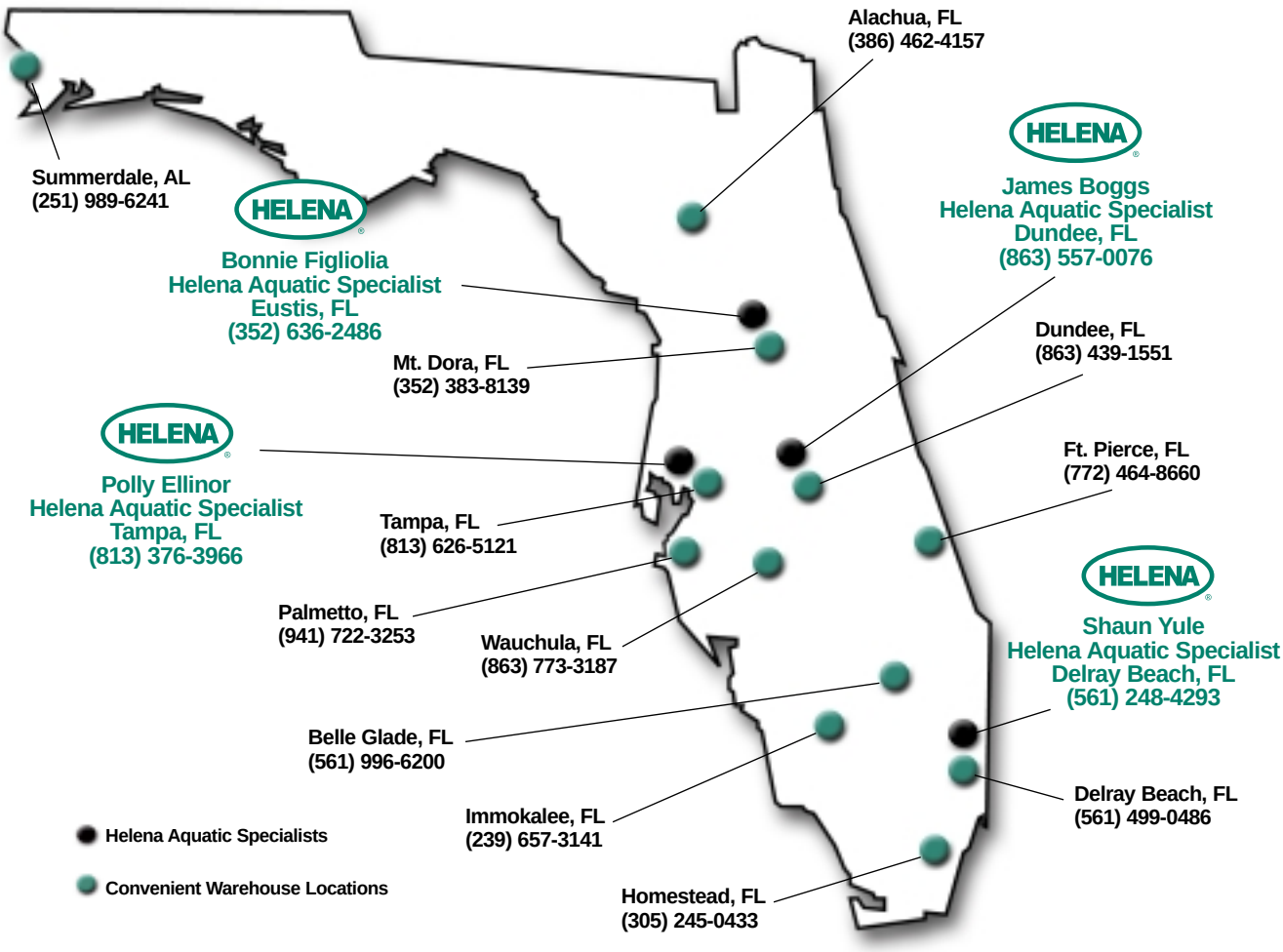
Following the sessions on the evening of October 29, more than 60 interested participants met to consider forming a Midwest regional EPPC\Invasive Plant Council. Various EPPC speakers from the morning session attended to lend their expertise. Kelly Kearnes of the Invasive Plant Association of Wisconsin and the Wisconsin Department of Natural Resources chaired the meeting. While there appeared to be interest in pursuing a regional organization, it was determined that the greater need was to develop more state organizations where efforts are ongoing in Illinois, Indiana, and Ohio. There was discussion of forming a working group of representatives from Midwest states to meet again and continue the dialogue in Madison at the Natural Areas Conference September 24-27, 2003. **Note:** A full day (September 27) will be dedicated to invasive plant issues at the conference.

Linking Horticulture and Ecology to Prevent Plant Invasions: Workshop #2 (St. Louis Declaration Working Group)

On the day following the symposium (October 31, 2002), the original participants of *The Workshop on Linking Ecology and Horticulture to Prevent Plant Invasions* and invited guests reconvened. This group of experts from across the globe originally met in St. Louis, Missouri in December 2001 to explore and develop workable voluntary approaches for reducing the introduction and spread of non-native invasive plants. That workshop was convened by the Missouri Botanical Garden and the Royal Botanic Gardens, Kew. The outcome of the original workshop was the **St. Louis Declaration** (February 2002), which included "Overarching Findings and Principles" and "Draft Voluntary Codes of Conduct" that outlined the concerns and proposed guidelines for addressing the problems of invasive plant species that are introduced through horticulture related activities (see Wildland Weeds, Winter 2002). The declaration, as well as a list of participants and other related information, can be found at the Missouri Botanical Garden website: http://www.mobot.org/iss/

The second workshop focused on four main areas: 1) an evaluation of the entities that have provided endorsement of the "Draft Voluntary Codes of Conduct" and a discussion of how to better advertise the efforts of the St. Louis working group; 2) a review of case studies on how the codes are being implemented; 3) two break-out sessions that focused on the development of alternative plant lists and a discussion of the issue of regionality when creating invasive plant lists and, 4) developing criteria for creating invasive plant lists. The proceedings from this follow-up workshop will be posted on the Missouri Botanical Garden website early in 2003. Future steps for the working group are being discussed.

Lisa Smith, Vice-President, Mid-Atlantic Exotic Pest Plant Council, wildflower@laurelweb.net



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EPPC Forum, NAEPPC MOU, and Annual Meeting

By Brian Bowen, SE-EPPC President

The **National Association of Exotic Pest Plant Councils (NAEPPC)** held its annual meeting in Asheville on October 3 at the 29th Natural Areas Association Conference. It also hosted an EPPC Forum as a concurrent conference session.

The Forum featured Southeast EPPC organizations, which was appropriate considering the conference location in the heart of the Blue Ridge. The Mid-Atlantic EPPC also participated, providing even greater regional representation. The Forum focused on various organizational activities of SE-EPPC and the Tennessee, Florida, and Mid-Atlantic chapters.

A purpose of the Forum was to share information about EPPC, encourage membership participation, and to create interest for others who might want to establish an EPPC chapter elsewhere. A participant from Ohio expressed great interest in working to establish a chapter in that state.

The annual meeting focused specific attention on a Memorandum of Understanding for Participation in NAEPPC. The MOU was circulated for signature during the past year among EPPC organizations formed since NAEPPC inception in 1996. This MOU supplements the original developed by Florida, California, Pacific Northwest, and Tennessee at the CALEPPC 1996 Annual Symposium. The 2002 MOU addresses basic organizational structure such as representation and voting privileges and authority of the NAEPPC Chair (selected by representatives) to enlist volunteers and form committees.

Also during the meeting, it was agreed that NAEPPC would pursue 501C3 status by reviewing at least two different organizational models as possible structures. There were other discussions relating to growth and development, announcements of upcoming events where NAEPPC participation is desirable including Weeds Awareness Week, and discussion about obtaining liability insurance for all EPPC Boards under NAEPPC.

NAEPPC will meet again on September 25th in Madison, Wisconsin at the next Natural Areas Conference. NAEPPC will host another EPPC Forum at the conference and will cosponsor the 2003 Symposium on Invasive Plants in the Upper Midwest.

Current NAEPPC members include the Florida, Tennessee, California, North Carolina, Kentucky, Mississippi, Southeast and Mid-Atlantic EPPCs, the Michigan Invasive Plant Council, the Invasive Plant Council of New York State, and the Invasive Plants Association of Wisconsin.

Brian Bowen is the president of SE-EPPC. He can be reached via e-mail at Brian.Bowen@state.tn.us.

SILENT INVADERS:
Plants Out of Place

TECHNO 2100

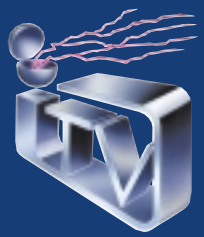
A 30 MINUTE TELEVISION SPECIAL

Invasive plants already infest an estimated 100 million acres, aggressively displacing native species by eight to 20 percent each year. This quiet invasion of ecological enemies is costing landowners and the government billions of dollars in lost revenues and control costs.

***SILENT INVADERS: Plants Out of Place** is an upcoming episode of the award-winning television series TECHNO 2100. This program features interviews with a variety of landowners, respected plant experts, and federal agencies working together to manage, control and prevent the spread of invasive plants (both terrestrial and aquatic) through successful and effective biological, mechanical and chemical initiatives.*

This 30 minute TV special will help raise public awareness of the ecological and economical impact invasive plants are having on our country, and will reflect the need for ongoing scientific research and cooperation between agencies and related industries.

SPECIAL THANKS: This program is made possible by educational grants from BASF Vegetation Management Group, Bureau of Land Management, Gulf of Mexico Program, Syngenta Professional Products, U.S. Geological Survey, and U.S. Fish & Wildlife Service, (National Wildlife Refuge System and Fisheries and Habitat Conservation.)



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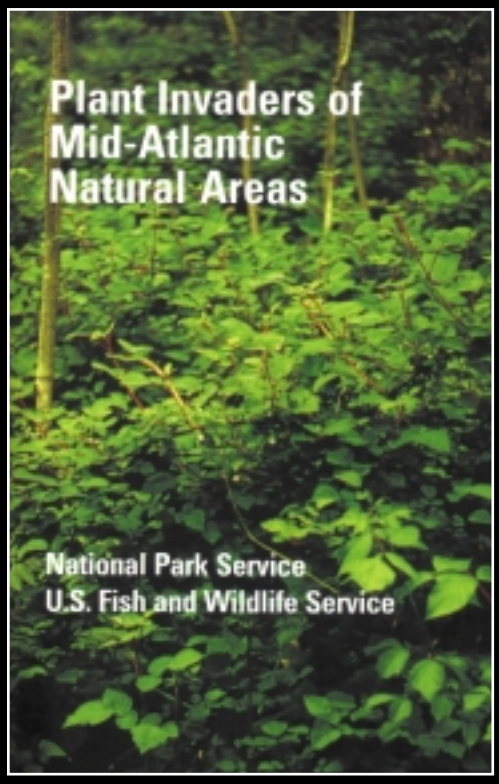

"Plant Invaders of Mid-Atlantic Natural Areas"

This new guidebook provides color photographs and information on 49 species of highly invasive plants affecting aquatic and terrestrial natural areas in the mid-Atlantic region (i.e., Delaware, Maryland, New Jersey, Pennsylvania, Virginia, West Virginia, and the District of Columbia). Many of these are popular plants used frequently for landscaping, roadside plantings, restoration projects, and other purposes.

The manual includes an introductory section explaining the invasive species problem; write-ups on each species organized by type of plant (i.e., aquatic, herb, shrub, tree, vine) and including native origin, history of introduction, distribution and habitats impacted, description, biology, and method of spread, look-alike plants and native alternatives, prevention and control, and ecological threat; a glossary; references; and sources for more information.

To request a copy, call the U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, 410-573-4500, or the National Park Service, Center for Urban Ecology, 202-342-1443, ext. 218 (Jil Swearingen); or email mary_cordovilla@fws.gov

Swearingen, J., K. Reshetiloff, B. Slattery, and S. Zwicker. 2002. Plant Invaders of Mid-Atlantic Natural Areas. National Park Service and U.S. Fish & Wildlife Service, 82 pp.

FLEPPC Education Grant Enables Nature Coast Envirothon

by Jeanne Brown, Hernando Audubon Society

Background

The 2002 Nature Coast Regional *Envirothon* was held on Thursday, January 31, at the Chinsegut Nature Center near Brooksville. A **$400 Education and Awareness Grant** from the **Florida Exotic Pest Plant Council** enabled the **Hernando Audubon Society** to produce the program. Over three hundred students and sponsors, representing nine public high schools, one charter school, and a Boy Scout Troop, participated. The winning team from the Academy of Environmental Sciences, a Citrus County Charter school, represented the region in the State competition at Silver Springs on April 16, 2002. The Nature Coast event was well covered by the St. Petersburg Times, the Citrus County Chronicle, and Fox TV Channel 13.

The *Envirothon* is a field oriented, natural resource education program for high school students. The program develops critical thinking, problem solving, communication, and team building skills through hands-on environmental learning sessions. The *Envirothon* focuses on five areas of study: aquatics; forestry; soils; wildlife; and a current environmental issue. This broad program encourages a holistic approach to natural resources education. It promotes sound environmental practices, advocates good stewardship of the land, and can be easily incorporated into a teaching curriculum. The theme of the 2002 *Envirothon* was **Introduced Species and Their Effect on Biodiversity**.

The Nature Coast *Envirothon* is a collaborative effort. Hernando Audubon provided oversight, volunteers, materials, and funding to conduct the competition. The following agencies administered different portions of the program: the Florida Fish and Wildlife Conservation Commission (wildlife); the Southwest Florida Water Management District (water resources); the Florida Division of Forestry (forestry); the Environmental Section of the Hernando County Planning Department (aquatics); the U. S. Department of Agriculture, National Resources Conservation Service (soils). These agencies developed reference materials for each study area which were then printed, bound, and distributed to faculty advisors approximately two months before the competition.

The winning team!

Target Plants

Participants were provided with materials describing the appearance, ecology, and management of 10 FLEPPC Category I introduced invasive plants commonly found in west central Florida. These were: **Air potato** (*Dioscorea bulbifera*); **Brazilian pepper** (*Schinus terebinthifolius*); **Camphor tree** (*Cinnamomum camphora*); **Chinese Tallow tree** (*Sapium sebiferum*); **Cogongrass** (*Imperata cylindrica*); **Hydrilla** (*Hydrilla verticillata*); **Tropical Soda Apple** (*Solanum viarum*); **Water hyacinth** (*Eichhornia crassipes*); **Water lettuce** (*Pistia stratiotes*); and **Wild Taro** (*Colocasia esculenta*).

During the *Envirothon* students rotated through stations corresponding to the five study areas. Teams were allowed thirty minutes to complete written exams testing their knowledge of invasive plant biology, ecology, and management as applied to each discipline. A hands-on component, using numbered samples of invasive species presented in sealed transparent plastic bags, tested participants' ability to identify the target species. The students were required to match the samples with a list of plant names.

Program Goals and Evaluation

There were three learning goals for the 2002 Nature Coast *Envirothon*. It was expected that students would be able to (1) discuss how Florida's ecology is effected by non-native invasive plants; (2) exhibit a knowledge of the management measures used to protect and restore native plant communities; and (3)

identify 10 common non-native invasive plants found in west central Florida.

The subject area tests were the primary tools used to measure goal accomplishment. The results were somewhat disappointing. On average, students scored only 50 percent on the written portion of the exam and only 48 percent on the hands on plant identification exercise. There were five possible choices on the multiple choice format test, so, even though scores were low, they were better than would be expected by chance. This leads us to believe that the students did not devote sufficient time to learning the material. This view is supported by the fact that 2nd and 3rd year teams typically scored higher than first year teams, demonstrating that experience and additional study prepares students for greater success in the *Envirothon*.

In addition each teacher/advisor was asked to complete an evaluation of the study materials and explain how they integrated *Envirothon* subjects into their curriculum. The sponsor evaluation forms indicated that while teachers felt that the training material was useful and that the *Envirothon* increased student environmental awareness, they could not allocate additional time to environmental subjects.

This year some study materials were provided on CD. The *Envirothon* Committee had hoped to reduce costs and incorporate technology into the program. Several schools, however, could not load the CDs or recover files from them, requiring hard copies of the study guide to be delivered at a later date. If CD's are used next year, the Committee will perform quality control checks and investigate system compatibility before sending discs to a school.

A problem with the plant identification portion of the competition was that a recent freeze had defoliated local populations of Skunk Vine, Chinese Tallow, and Air Potato so that leafy samples of the plants could not be provided. As a result the identification quiz consisted of only 7 species rather than the 10 we had originally intended to use. We suggest that specimens be procured before the onset of winter or that species not affected by the weather be included in the quiz.

Conclusion

The Hernando Audubon Society thanks the **Florida Exotic Pest Plant Council** for its support of the Nature Coast *Envirothon*. The 2002 theme of **Introduced Species and Their Effect on Biodiversity** was consistent with FLEPPC's goal of building public awareness of the dangers invasive plants pose to Florida's native ecosystems. This timely alignment of interests was the perfect opportunity for our organizations to develop a shared project. The result was a cost effective and successful youth education program.

Jeanne Brown of the Hernando Audubon Society can be contacted by writing to PO Box 1678, Brooksville FL 34605.

Be sure to attend the 5th Annual Meeting of the

SOUTHEAST EXOTIC PEST PLANT COUNCIL

May 15-17, 2003 • Campbell House Inn - Lexington, Kentucky

See old acquaintances, rub shoulders and compare notes with land managers and weed warriors from states outside of the SE region as we reach beyond borders to invite our neighbors to attend.

- Presentations on weeds known to the southeast as well as new ones poised to invade will be featured on May 15th and 16th. Topics include:
  - **research** on *Microstegium* and Chinese yam;
  - **predicting** invasion in forests;
  - **converting** exotic grass infestations to native warm season grasses;
  - **controlling** mile-a-minute weed, Japanese knotweed, and other problem species.
- Learn how the St. Louis Declaration is being implemented and received.
- See the US Forest Service's new guidebook on exotics.
- Hear great bluegrass/folk music and bid on silent auction items at the social on the evening of May 15th.
- Attend a workshop for private landowners on controlling exotic plants on the morning of May 17th.

Contact:

Augusta Mazyck for registration information at kmazyck@tnc.org or phone (859) 259-9655 ext. 52

Registration Cost:

$85 (includes reception on May 15 [cash bar] and lunch on May 16)

For room reservations at the Campbell House Inn ($79 double):

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Reservations: (800) 432-9254 (KY); (800) 354-9235 (Outside KY)

Email: staying@campbellhouseinn.com Web: http://www.campbellhouseinn.com/

FIELD TRIPS highlighting the diversity of Kentucky's Inner Bluegrass Region are planned for May 17th. Learn more about the efforts of land managers to control the spread of invasive exotics at two local sites: McConnell Springs in Lexington and Floracliff State Nature Preserve in Fayette County. For a longer trip, view the ancient Kentucky River Palisades at Tom Dorman State Nature Preserve in Garrard County or visit Harrison County at a newly acquired bluegrass savanna woodland, a globally imperiled natural community that will require a tremendous amount of invasive species management.

A Special Recognition

Tyler Alley Sykes
1971 – 2002

To honor the memory of Ms. Tyler Sykes, the first trail scheduled for completion in Spring 2003 at the Couchville Cedar Glade State Natural Area (Tennessee) will be dedicated in her name. Tyler Alley Sykes was a young, energetic conservation biologist committed to rare plant protection in Tennessee and Kentucky. She contributed significantly to the protection of Tennessee coneflower in Middle Tennessee, and was instrumental in securing grant funds to expand Couchville in 2002. She began her short professional career working as an ecologist for the Division of Natural Heritage and then worked for the Cookeville Field Office of the US Fish and Wildlife Service before unexpectedly succumbing to an illness. She is greatly missed by friends and colleagues. She was a member of the Board of Directors of the Tennessee Exotic Pest Plant Council.

Organizational Summary of the Southeast Exotic Pest Plant Council (SE-EPPC)

Organization: Southeast Exotic Pest Plant Council (SE-EPPC)

Type: Regional with state chapters: 1) Florida 2) Tennessee 3) North Carolina 4) Georgia 5) Kentucky 6) Mississippi. Alabama (forming), South Carolina (affiliate: represented by the South Carolina Native Plant Society)

501C3 non-profit: Group exemption status enables SE-EPPC to add or remove state chapters annually by letter to the IRS. New state chapters are given provisional status for 1 year and must submit bylaws for approval by the SE-EPPC Board.

Incorporated in Tennessee.

Governing authority: Bylaws that provide governing authority to the Board of Directors. The Board of Directors meets quarterly with one representative from each state chapter, four officers, past president, and liaisons to federal agencies. State chapters are required to have a Board of Directors that meets regularly. Minutes of SE-EPPC board meetings and state chapters are posted on the SE-EPPC web site.

Established: 1999 – Oak Ridge, Tennessee at 1st annual symposium.

Membership: 580 members through state chapters, 47 members at large (not represented by state chapters).

Activities: Annual symposium; SE-EPPC News (in transition from hardcopy newsletter to electronic web base news updates); Wildland Weeds (quarterly magazine published by Florida EPPC contains SE-EPPC news); Web site: www.se-eppc.org; Web list serve; Electronic SE-EPPC Vegetation Management Manual (under construction).

Committees: Executive Committee (officers), Membership Committee, and Budget Committee

Mission: To raise public awareness about the spread of exotic plants into the Southeast's natural areas.
To provide a focus for issues and concerns regarding exotic pest plants in native plant communities of the Southeast.
To facilitate communication and the exchange of information with all interested parties regarding any and all aspects of exotic pest plant management and control.
To provide a forum for all interested parties to participate in meetings, workshops, and an annual symposium, and to share the benefits from the information provided by SE-EPPC.
To serve as an educational, advisory, and technical support council on all aspects of exotic pest plants.
To initiate action campaigns to prevent future introductions of exotic pest plants.
To facilitate action campaigns to monitor and control exotic pest plants that impact native plant communities in the Southeast.

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US Forest Service
presently vacant

Internodes

Mark Your Calendar

- The 64th Annual Meeting of the *Association of Southeastern Biologists (ASB)*, **April 9-12, 2003,** Washington, DC. **Contact:** www.biology.howard.edu/ASB/ASBstart_here.html
- The Florida Native Plant Society, 23rd Annual State Conference, *Symbiosis: The Power of Partnerships,* **May 8-11, 2003,** Fort Myers, FL. **Contact:** http://www.fnps.org/
- The *Southeast Exotic Pest Plant Council 5th Annual Symposium*, **May 15-17, 2003,** Lexington, KY. **Contact:** Augusta Mazyck, kmazyck@tnc.org 859-259-9655 ext. 52
- The *Florida Exotic Pest Plant Council 18th Annual Symposium,* **June 5-6, 2003,** St. Petersburg, FL. **Contact:** www.fleppc.org
- The UF/IFAS *Aquatic Weed Control Short Course,* **May 19-22, 2003,** Fort Lauderdale, FL. Aquatic weed control; upland and invasive weed control. Will include a training session on the new Natural Areas Weed Management Pesticide Applicator Category. **Contact:** http://conference.ifas.ufl.edu/aw/index.html
- The 30th Natural Areas Conference, *Defining a Natural Areas Land Ethic*, **September 24-27, 2003,** Madison, WI. Co-hosted by the Natural Areas Association and the Wisconsin Department of Natural Resources' Endangered Resources Program. **Contact:** www.naturalarea.org The last day of the conference, September 27th, will feature a one-day symposium on *Invasive Plants in the Upper Midwest* (see next listing).
- The *2003 Symposium on Invasive Plants in the Upper Midwest*, part of the 30th Natural Areas Conference (see above listing), **September 27, 2003,** Madison, WI. Participants may register for the entire Natural Areas Conference, or just the one-day symposium sponsored by the Invasive Plants Association of Wisconsin. **Contact:** Kelly.Kearns@dnr.state.wi.us -or- www.ipaw.org
- *Invasive Plants in Natural and Managed Systems: Linking Science and Management,* **November 3-7, 2003,** Fort Lauderdale, FL. A joint conference and workshop, co-hosted by the Ecological Society of America and the Weed Science Society of America in conjunction with the 7th International Conference on Ecology and Management of Alien Plant Invasions. **Contact:** http://www.esa.org/ipinams-emapi7/

Publications:

- **WEEDS WON'T WAIT!** The Strategic Plan for Managing Florida's Invasive Exotic Plants, by R.F. Doren. Four parts: I. An Assessment, 271 pp.; II. The Strategy, 90 pp.; III. Assessment Executive Summary, 16 pp.; IV. Strategic Plan Executive Summary, 17 pp. Published by the South Florida Ecosystem Restoration Task Force, Florida International University. ISBN 0-9718804-0-9. Available as a CD or PDF. **Contact:** http://www.sfrestore.org
- **Plant Invaders of Mid-Atlantic Natural Areas**, by J. Swearingen, K. Reshetiloff, B. Slattery and S. Zwicker, 2002. National Park Service and U.S. Fish & Wildlife Service, 82 pp. **Contact:** USFWS 410/573-4500; NPS 202/342-1443 Ext. 218 (Jil Swearingen); E-mail: Mary_Cordovilla@fws.gov
- **Turning the Tide: The Eradication of Invasive Species,** edited by Dick Veitch and Mick Clout, contains 52 papers from conference presentations and abstracts for a further 21 presentations from the Proceedings of the International Conference on Eradication of Island Invasives held at the University of Auckland in February 2001. 424 pp. All abstracts, as written prior to the conference, can be seen at www.issg.org **Contact:** Dick Veitch in New Zealand at dveitch@kiwilink.co.nz

Web Sites:

- The **Mid-Atlantic EPPC** has a new web page at: http://www.ma-eppc.org/
- The Plant Conservation Alliance's Alien Plant Working Group presents **Weeds Gone Wild – Alien Plant Invaders of Natural Areas** at: http://www.nps.gov/plants/alien/
- Vermont Department Of Agriculture Creates Noxious Plants Rule To Combat Invasive Plant Problem - http://www.state.vt.us/agric/invasive.htm
- **Alien Plants Ecology in Spain**, the site of the "Spanish Working Group on Urban and Alien Plants" at www.med-alienplants.org

notes from the disturbed edge - chapter 7

"...because this is serious business", he continued as if no time had elapsed since he'd uttered his last word. She certainly wasn't going to tell him that he'd been out cold for almost 30 minutes, twitching around as he lay on the soft grass in the shade, probably continuing the conversation in his head as he slept. She, too, was exhausted. It had been a long day and she was a human beanbag, but she had resisted the urge to get horizontal and had stayed awake, even after he'd drifted off in the middle of explaining why their work was important, and why the rest of the world should understand.

She'd found it difficult to believe in her cosmic significance during the past eight hours spent crawling around in a thicket, primarily focused on keeping both eyeballs in her skull and non-perforated. This was a nasty place for now, but it would look better after the chainsaw crews worked their way through and cut away all the trees that were NOT labeled "NO CUT" in big black letters on day-glow pink plastic flagging tape. This was one of those sites where the most difficult initial decision had been whether to mark the exotic vegetation to be removed, or the native trees to be left untouched, knowing that either choice would involve considerable effort. She'd thought she had begun hallucinating in a haze of permanent felt marker fumes when she'd bumped into a seemingly brand new refrigerator in the middle of the thickest growth, but putting her fingers in the bullet holes that pierced the shiny white metal had told her she was really there, and gave her an idea of how quickly the invaders had become established.

Even now, when they were done marking trees, they still had a haul ahead of them. She'd drive the truck around on the road, and he'd drive the ATV cross-country, out to the storefront where they'd left the trailer. At least that was her plan at this point. He'd been asleep, but she'd been pretty busy.

"Yeah, folks have got to eventually realize that it is serious business to continue to mess with Mother Earth. Too many people still view nature as something that happens in parks and on other continents. Not enough people today realize that we are part of nature, and the places we live - our habitats - are IN nature, part of the big picture..." He was definitely awake now, on a roll, but suddenly she was getting drowsy - she'd heard this one before and he was, of course, preaching to the choir. It was a good speech, the first time, but she didn't need to hear it again.

She abruptly stood up and informed him "Time to roll. I'm taking the truck. You can bounce your butt back to the store on that beast of a machine." She pulled a crumpled dollar bill from her pocket. "Hey, would you get me the coldest soda they have if you beat me there?" She headed for the truck and then stopped, patting her pockets. "Can I use your compass?" He handed it over, wondering why she'd need a compass to navigate back on the road she'd driven in on, and was amused to see that she instead used it only for it's mirror - daubing dirt off her face and then slinging him a sideward smile as she climbed up into the truck and was gone. He creaked to his feet, climbed onto the ATV and began motoring through the woods. It kind of annoyed him that she'd cut him off mid-monologue. Maybe he would find a way to ease into the "we are in nature" spiel with the locals at the store before she arrived.

Meanwhile, just around the bend, she sat in the idling truck, trying to picture just how seriously he'd be received while sporting a brand new Zorro moustache and matching sideburns in shiny black permanent felt marker. She hoped he wouldn't be too mad. They had to work together again tomorrow and this was, after all, serious business.

- J.A.

An excerpt from "The Adventures of Hack Garlon and his buxom sidekick Squirt."

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