Wildland Weeds

WINTER 2003

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Renovate was designed to be effective on both **submersed** and **floating emergent** plants—a feature that allows Renovate to restore wetlands, marshes and shorelines as well as lakes, ponds and canals. With its highly effective systemic mode of action, Renovate provides selective control to help restore aquatic habitats knotted with nuisance and exotic plants including Eurasian Watermilfoil, Purple Loosestrife, Water Hyacinth, and Alligator Weed among others.

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Renovate was developed for aquatic use to control both submersed and floating emergent plants such as:

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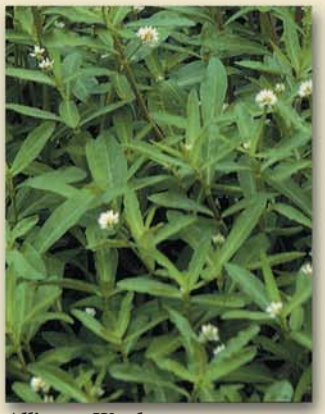

Alligator Weed

Purple Loosestrife

Water Hyacinth

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Wildland Weeds

WINTER 2003, VOLUME 7, NUMBER 1

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Visit these websites:
Florida EPPC: www.fleppc.org
Southeast EPPC: www.se-eppc.org

Wildland Weeds (ISSN 1524-9786) is a quarterly publication of the Florida Exotic Pest Plant Council (FLEPPC) and the Southeast Exotic Pest Plant Council (SE-EPPC).

Wildland Weeds is published to provide a focus for the issues and concerns regarding exotic pest plant biology, distribution and control. To become a member of FLEPPC or SE-EPPC and receive the Council newsletter and *Wildland Weeds* magazine, contact the respective Treasurer.

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On the Cover:

Native *Agave missionum* (Agavaceae) in bloom in Virgin Islands National Park (St. John) with the British Virgin Island of Tortola in the background. Beautiful - but there are still weeds in paradise! See article on pg. 16. *Photo by Dan Clark.*

FLEPPC EDUCATION AND OUTREACH SMALL GRANTS

Request for Proposals - FY 2003/2004 • Proposal Due Date: March 15, 2004

PROGRAM DESCRIPTION AND ELIGIBILITY

The Florida Exotic Pest Plant Council is soliciting grant proposals for non-native invasive plant education and outreach projects in the State of Florida. The intent of is to provide funding to organizations or individuals who wish to educate the public about non-native invasive plants and their impacts. Proposals will be accepted from individuals, public or private nonprofit organizations, and academic institutions.

Award preference will be given to proposals that meet the following criteria:

- Involve a plant or plants listed on FLEPPC's 2003 List of Invasive Species (found on www.fleppc.org).
- Educational message will reach a large segment of the community.
- Includes partnerships (please specify type and degree of involvement for partner entities).
- Demonstrate matching funds or in-kind contributions.
- Increase local community awareness of non-native plants through local charettes, volunteer events, web site development, and distribution of educational materials.
- Assist local communities in developing area specific non-native plant control ordinances and programs.
- Heighten community awareness about non-native invasive plant identification, control and prevention.
- First time applicants and new projects, but repeat applicants will still be considered.

GENERAL INFORMATION/SELECTION PROCEDURES

- Proposal should be limited to 4 pages (10 point font minimum) not including maps or other graphic attachments.
- Grants may not be used to fund capital expense items (sprayers, chain saws, machinery, herbicide) or to fund control or large-scale herbicide application activities.
- The FLEPPC Education Committee will review all grants and award letters will be sent via electronic mail by May 1, 2004. If full funding is not available, partial funding may be awarded.
- Proposal submission deadline is March 15, 2004.

APPLICATION INSTRUCTIONS

Proposals must include the following:

- Title
- Short Project Summary (< 100 words)
- Project Description
  - Location - include name of county, city, a local map or area description (section, township, range), and letter of support from landowner.
  - Target plant(s)
  - Target audience
  - Method of implementation
  - Timeline for completion
  - Summary of expected results
  - An evaluation component that demonstrates success at reaching target audience
- Collaborative organizations and descriptions of their contributions (please include contact information for all partner organizations)
- Description of prior activities that may help applicant accomplish the project
- Total project costs, detailed budget that itemizes EPPC requested funds and matching funds, and budget narrative.
- Contact information, name of principal investigator and brief summary of qualifications.

- Requests for funding should not exceed $1000.00 and all funds awarded are to be used within 1 year of receipt.
- A final report that includes copies of any educational materials created through the project should be submitted to the FLEPPC Education Committee within 90 days of project completion.
- Applicant/organization must present a summary of results at the FLEPPC Annual meeting (poster or presentation) or provide a summary article for Wildland Weeds, the FLEPPC quarterly magazine.
- Preferred method of proposal submission is via electronic mail. Send proposals via email, fax, or mail to:

Leesa Souto, Manager of Educational Programs
Email: lsouto@mriresearch.org

Midwest Research Institute - Florida Division
1470 Treeland Boulevard, S.E. • Palm Bay, FL 32909-2211
(321) 723-4547 Ext. 200 • Fax: (321) 722-2514

RFP also online at www.fleppc.org

Invasive Plants of Eastern United States: Identification and Control (CD-ROM)

USDA Forest Service, Forest Health Technology Enterprise Team

Drawing on recent publications by the USDA Forest Service, National Park Service, U.S. Fish and Wildlife Service, USDA APHIS PPQ and the Southeast Exotic Pest Plant Council, a new CD-ROM has been compiled that covers the identification characteristics, distribution, and control options for 97 invasive tree, shrub, vine, grass, fern, forb, and aquatic plant species of concern in the eastern United States. For each species, a menu of control options is presented, including mechanical treatments, specific herbicide prescriptions, and, for selected species, recent advances in biological control. While not an official list of "invasive" plants throughout the eastern United States, the CD includes Federal Noxious Weeds and those listed by State regulatory agencies, pest plant councils and other organizations. This publication will aid landowners, foresters, resource managers, and the general public in becoming familiar with invasive plants in their area.

The CD features the complete text and images from the following publications:

- **Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control.** James H. Miller. 2003. USDA Forest Service, Southern Research Station.
- **Biological Control of Invasive Plants in the Eastern United States.** Roy Van Driesche, Suzanne Lyon, Bernd Blossey, Mark Hoddle and Richard Reardon. 2003. USDA Forest Service, Forest Health Technology Enterprise Team.
- **Plant Invaders of Mid-Atlantic Natural Areas.** Jil Swearingen, Kathryn Reshetiloff, Britt Slattery and Susan M. Zwicker. 2002. National Park Service and U.S. Fish and Wildlife Service.
- **Southeast Exotic Pest Plant Council Invasive Plant Manual.** Southeast Exotic Pest Plant Council. 2003.

Request free copies of this CD-ROM from Richard Reardon, FHTET, USDA Forest Service, Morgantown, West Virginia, (304) 285-1566, rreardon@fs.fed.us or from www.invasive.org

Full contents of the CD also will be available at the Invasive and Exotic Species of North America web site: www.invasive.org

For more information, contact Chuck Bargeron at cbargero@uga.edu, Webmaster, The Bugwood Network, www.bugwood.org and ForestryImages.org, www.forestryimages.org 229-386-3298

The project was funded by the USDA Forest Service, Forest Health Technology Enterprise Team in Morgantown, WV. Publication No. FHTET-2003-08

Air Potato Eradication Project:

A Teaching Model for the Management of Exotic Species

by Joshua Platt

Introduction

Today's high school students are tomorrow's voters, policy makers, environmental caretakers and concerned citizens. Faced with this certainty, it is of the utmost importance to instill in these individuals a sense of environmental stewardship and an awareness of current environmental issues. An educated society is perhaps the most important ally for our environment in the future. As exotic introductions are one of the most serious threats to our environment and to our native flora and fauna, it is imperative that students fully understand this issue. Traditional teaching methods, even with the addition of technology and other current techniques, still fall short of providing students with insight into the actual impact of these species. The **Air Potato Eradication Project** was designed to take students a step further and immerse them in a simulation of actual environmental management of an exotic invader. Students became the environmental managers as they learned about the problem of exotic species and accepted responsibility for the removal of species from an area of degraded cypress dome on campus.

Our study site was located at New Dimensions High School in Kissimmee, FL, across the street from a large Nature Conservancy preserve and adjacent to a large tract of unspoiled habitat. The cypress dome was in very poor condition, but it had value both as a wetland and as a buffer zone to the larger land area. As an edge habitat, it was vulnerable to exotic pest plant invaders and was accessible to students. The proximity to the school, the condition of the area and its potential value all contributed to making the site an excellent choice for our removal and restoration project.

The dominant invader in the area was air potato (*Dioscorea bulbifera*), which blanketed the understory and covered the trunk of 80% of the trees. This fast-growing and highly fecund vine had literally taken over the area, reducing the diversity of species and adversely affecting the condition of the other species present. Because of its ability to spread rapidly, this concentration of *D. bulbifera* in close proximity to the Nature Conservancy land presented a potentially important problem for them. The goal of the project was to remove this threat and restore the cypress dome to a more pristine state.

Project overview

From the Fall of 2002 through the Spring of 2003, 125 students in Environmental Science and Biology classes at New Dimensions High School participated in the **Air Potato Eradication Project**. The project consisted of three phases designed to expose students to all aspects of the exotic species management process. Students would follow the progression of tasks from identification and targeting of species, to land surveys, to design and implementation of a management plan and, finally, restoration of an area with native vegetation. Students began to learn about the problem of exotic species with introductory readings, activities, videos and a research project on exotic animal species. In the second phase, students were assigned an area within the study site, and were challenged to develop and implement a viable management plan for removing *D. bulbifera* that could be used on a broader scale in the future. In the final phase, students were given the opportunity to participate in planning restoration work and planting native species in previously overgrown areas. The culmination of the entire project was an Exotic Species Day at school where students gave presentations on the results of their research and their management efforts.

The management simulation

As with any real management situation, students had to deal with choice of techniques, working within a fixed budget and working with a fixed amount of time and labor available. In pairs, students were assigned 3 x 3 meter plots within the study area that they would restore. Students were able to choose from all of the techniques available to land managers, from herbicide application, to physical removal, to various combinations of the two and anything they could dream up from their studies of the literature. Every method and tool was given a fixed cost and labor value designed to simulate their true benefits as seen by an environmental manager. A successful plan not only would eliminate the *D. bulbifera*, but also would minimize both the amount of money spent and the effort required. Thus, students managed their plots under the same constraints that a land manager would, and their results could be applied on a larger scale.

Results

Results were quantified using two separate indices. First the project was measured for its success as an educational experience. Student attitudes, as judged by attendance for project work and surveys of opinions, indicated that it was a favorable experience and increased student interest in science. Standardized test results were used as well since approximately half of the

continued on page 6

Air Potato Eradication *continued*

school population participated in the project. Our school was in the top three in Osceola County for Science FCAT scores and our overall school grade increased from a D to a C, indicating academic gains from this and many other projects at the school.

Removal of *D. bulbifera* was a success, though the project must continue in upcoming years if the species is to be completely eradicated. Overall, 237 pounds of tubers were removed from the site, with a maximum of 78 pounds in two hours one day. In addition, vines were stripped from every tree and removed from 85% of the ground. All plots showed less than 10% regrowth after eight weeks.

Partnerships

The entire project was made possible by grants and support from various organizations. In its early stages the project was supported by a grant from the Bingham Environmental Education Foundation (BEEF) at The University of Florida. Further funding was received from the Osceola Foundation for Education Grants for Great Ideas Program. And finally, funding of the current and most successful phase of the project was provided by a Florida Exotic Pest Plant Council Education and Outreach Grant.

New Dimensions High School has now formed a mutually beneficial partnership with The Nature Conservancy, working at their preserve in Poinciana, FL. Our student volunteers assist in their constant fight against exotic species on the property, from removal of exotics, to seed collection from native species, and planting of native species. Over the course of 3 volunteer days last year, students contributed almost 400 volunteer hours. This partnership continues at the school, and has expanded into a second program promoting wetlands education and remediation.

Conclusions

This project was a tremendous success. By immersing students in the actual experience of managing an exotic invader, they learned first hand just how daunting a task it can be. This experience will leave a lasting memory of how devastating these species are to the environment. Perhaps most important, these individuals are now empowered by what they have accomplished to help the environment. They can see how a small contribution on their part can have a lasting effect on their world. In addition, many students who once lacked motivation in school now have found a renewed excitement for science.

For more information, contact Joshua Platt at jp_platt@hotmail.com

A Florida Exotic Pest Plant Council Education and Outreach Grant Project

Pest Plant Packets for Lake People

by Fritzi S. Olson

The problem of invasive exotic plants is recognized worldwide, and Florida seems to be especially impacted by their introduction. The shorelines of Lake Santa Fe, other dark water lakes, and the region's sandhill lakes are no exception, especially with the ever-intensifying development taking place around these popular water bodies. Education about these harmful invasive pest plants and the assistance of homeowners in stemming the tide of their spread is imperative if our native ecosystems are to stand a chance. The "Pest Plant Packets for Lake People" project is one small effort to help.

As part of an invasive plant survey and homeowner education project on Lake Santa Fe in Alachua County, Current Problems, Inc., a non-profit corporation in Gainesville, Florida, compiled a packet of information about invasive plants and good waterfront landscaping habits. Homeowners seemed very pleased to receive these packets, as most that we talked with were quite interested in the problem of invasive exotic plants.

After completing the survey and discovering additional plants, Current Problems decided to expand the packets to include the Lake Region of North Florida in general. An Education and Outreach grant from the Florida Exotic Pest Plant Council made this possible.

Wedelia

We targeted the "Four Corners" area of north-central Florida, which includes parts of Alachua, Bradford, Clay and Putnam counties. The region is full of both dark and clear water lakes. Some are surrounded by cypress swamp. Lake Santa Fe is a dark water lake bordered by swamps featuring dahoon holly, red maple, pond cypress and black gum, and mixed bays farther in, along with buttonbush and other shrubs in the understory. Dense maidencane with scattered clumps of rushes, lilies and other emergent species line the shore. Other lakes, such as Swan Lake, are the "sandhill" lakes, characterized by white sand bottoms, clear water, and much different vegetation close to the shorelines, such as turkey oaks, live oaks and pines. Sandhill lakes also tend to be more inhabited by humans, providing more disturbed sites than the swamp-bordered lakes in the area. Invasive plants can establish themselves anywhere it seems, but disturbed lands provide especially good opportunities. In addition, any of the lakes can have nuisance aquatic plants, especially hydrilla and water hyacinth.

Because the spread of invasive exotic species and landscaping habits may often be related, and because landscaping habits contribute to the health of a lake, Current Problems wanted to include information on good waterfront landscaping practices in addition to information about invasive plant species.

We consulted with the Florida Department of Environmental Protection – Bureau of Invasive Plant Management, the UF/IFAS Alachua County Extension Office, and the Alachua County Environmental Protection Department (ACEPD) to determine which plants to describe in the Pest Plant Packet. Tim Harris of ACEPD was especially helpful, as he had previously worked for the Bureau of Invasive Plant Management and had visited many of the lakes in our target area.

The waterfront landscaping information included advice about what to plant in which zone along one's shoreline, good landscaping management practices, and the value of healthy shorelines.

To develop the packet, Current Problems gathered together an assortment of materials already available, rather than producing new ones. We found excellent materials to include from the Florida DEP-Bureau of Invasive Plant Management, UF/IFAS Center for Aquatic and Invasive Plants, Southwest Florida and St. Johns River Water Management Districts, and the Alachua County Extension Office Florida Yards & Neighborhoods Program (FYN).

Wendy Wilber of the Florida Yards & Neighborhoods Program customized IFAS materials for our project and worked with us in adapting the IFAS Fact Sheet 44B, "Selected Invasive Exotic Plants in the North Central Florida Lake Region" to present the plants chosen for the packet. (Fact Sheet 44B can be requested from the Alachua County Extension Office, 352-955-2402.)

continued on page 8

Sesbania

Wendy also helped us bring two workshops to the community about invasive, exotic plants. Claudia Larson, president of the Gainesville Native Plant Society, and Dan Rountree, president, and Fritzi Olson, executive director of Current Problems, assisted with presentations focusing on the issue of invasive plants, plants of concern in our area, methods of removal, alternative species, and good landscaping practices and principles. Plant specimens were on hand to facilitate identification among attendees. Many handouts, including the Pest Plant Packets, were available for participants to take home.

Pest Plant Packets also were distributed at the Bonnie Melrose Lakefest in March, the public libraries, the local post offices, and even a real estate office in Melrose to offer their customers. The Pest Plant Packets seemed to be well received by area residents.

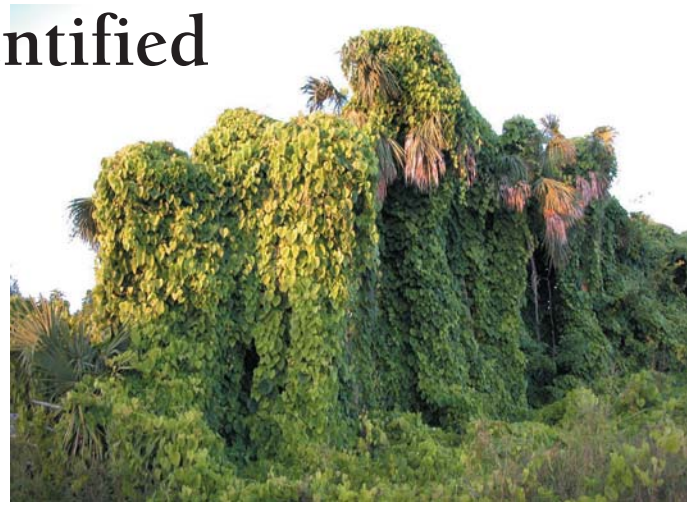
Current Problems hopes to assemble a similar packet about urban creeks in the Greater Gainesville area. These creeks are quickly being over-run by invasive exotic plants. We hope to garner citizen help to rein in this spread and restore the habitat along the city's creek beds.

To help address the basic problem of shoreline management practices among residents, businesses, agriculture operations, forestry interests, and even government lands, Current Problems is launching Restore A Shore. This new program seeks to educate and increase awareness among North Florida's citizens about the importance of healthy shoreline ecosystems, whether they be lake or pond, river or creek, spring or sink, marsh or swamp, canal or drainage ditch. Invasive exotic plants, shoreline revegetation, native plants, good waterfront landscaping practices, wildlife needs, and thoughtful living habits will be emphasized. Healthy shoreline ecosystems contribute tremendously to both water quality and wildlife habitat, important to us all – whether we always realize it or not.

For more information, contact the author at 352-264-6827 or aar@currentproblems.org

Origin of Air Potato Identified

Bill Overholt[1], Colin Hughes[2], Caronia Wallace[2] and Eric Morgan[1]
[1/] Indian River Research and Education Center, University of Florida;
[2/] Department of Biology, University of Miami



Air potato engulfing cabbage palm in Glades County

If you are reading this magazine, you're probably all too familiar with the devastation caused to Florida's natural areas by alien invasive plants. One of the most destructive is air potato, ***Dioscorea bulbifera***, a vining member of the yam family that rapidly climbs into tree canopies and smothers native vegetation. Air potato invades a variety of natural habitats, including hammocks and pinelands, and its presence is now felt in at least 23 Florida counties, extending from the panhandle to the southern peninsula (Langeland and Craddock Burks 1998).

One promising strategy for combating invasive plants is classical biological control - the introduction into Florida of insect herbivores that feed on air potato in its native home range. A major advantage of classical biological control is its sustainability. Once an effective agent is established, it provides permanent control, often without any further inputs. However, classical biological control is a long-term endeavor, and must be undertaken with great care; it often takes several years to identify and introduce safe and effective natural enemies. One reason that the process is so lengthy is the requirement for host specificity. It must be demonstrated that candidate biological control agents feed only on the target plant, and thus, pose little threat to native or economically important plants. For air potato, this is a particularly important issue because there are two native yams in Florida: ***Dioscorea villosa*** and ***D. floridana***. The screening for non-target effects is done under highly secure quarantine conditions, and demand for these types of facilities in Florida has surpassed space availability. Fortunately, the University of Florida Institute for Food and Agricultural Sciences (UF/IFAS) and United States Department of Agriculture's Agricultural Research Service (USDA/ARS) both recognized the need for additional quarantine space several years ago, and are in the process of constructing new facilities in Fort Pierce and Fort Lauderdale. This will greatly expand opportunities for conducting research on classical biological control of both invasive plants and exotic insect pests.

The best biological control agents of air potato, those most suited to eating this weed and least likely to feed on the native species, are likely to be found on plants that are genetically similar to those found in Florida. Air potato is not known to reproduce sexually in Florida, and thus has probably undergone little genetic change since arriving in the state. This means that it is still genetically similar to the original source in its native range, and probably still vulnerable to biological control agents present in the source population. Unfortunately, we haven't known the source of Florida's air potato until very recently.

In 1905, the United States Department of Agriculture sent aerial bulbils of air potato to Henry Nehrling, a nurseryman based in Gotha, Orange County, Florida. The origin of the bulbils sent to Mr. Nehrling is unknown. There is speculation that ***D. bulbifera*** was introduced into the United States with slave ships coming from Africa in the 'early days of slavery' (Coursey, 1967). Yams store well, which made them ideal for long sea voyages.

Air potato is widely distributed in Asia and tropical Africa, where it occurs in wild populations and is a minor agricultural crop. The center of origin of the genus ***Dioscorea*** is thought to be Asia, although a secondary center of yam species diversity exists in West Africa. Centers of diversity of a genus (areas with lots of different species) are usually found where the genus evolved. The interesting thing about yams is that there are two centers of diversity - one in Asia and another in Africa. ***Dioscorea bulbifera*** is the only member of the genus that occurs in the wild in both Asia and Africa. Thus, determining the geographic source of Florida's air potato becomes problematic.

Recently, the University of Florida (UF) and the University of Miami (UM) joined forces to solve the mystery of the origin of Florida air potato. Previous work by Japanese scientists (Terauchi et al., 1991) showed that air potatoes from Asia and Africa are quite different at the molecular level, and could be readily distinguished by examining their chloroplast DNA. Using this technology, and with financial support from the Florida Exotic Pest Plant Council to Caronia Wallace, an undergraduate at the University of Miami, it has been determined that Florida air potato is most likely of African origin.

Now that we are fairly certain of the Florida air potato's origin, efforts are underway to explore for natural enemies. On a trip to Africa in June 2003, a collaboration was established with the Crops Research Institute in Ghana and Makerere University in Uganda. Florida's Department of Environmental Protection recently awarded a grant to UF/IFAS and UM to support the work in Ghana and Uganda, and to allow further genetic studies to narrow the search in Africa for genotypes similar to those found in Florida.

For more information about air potato biological control, please contact Bill Overholt at waoverholt@mail.ifas.ufl.edu.

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This research was supported by the Florida Agricultural Experiment Station and a grant from the Florida Exotic Pest Plant Council, and approved for publication as Journal Series No. T-00646.

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Ho! Ho! Ho!
Merry Christmas Senna[1]

by Ken Langeland
UF/IFAS Agronomy Department & Center for Aquatic and Invasive Plants
Cooperative Extension Service

Introduction

Christmas must be just around the corner because home landscapes are colored with the bright yellow flowers of Christmas senna (*Senna pendula* var. *glabrata*). Christmas senna is a long time favorite landscape plant, commonly cultivated as an ornamental in Florida at least since the 1940s (Bailey and Bailey 1947). Christmas senna is so named because it blooms during the Christmas season (Fall-Winter). It is popular, in part, because of its showy yellow flowers (Fig. 1). This is especially true in the northern part of the state, where it is one of the few landscape plants that bloom in late fall and early winter. It also is popular for butterfly gardens (Fig. 2). Christmas senna also is known as Christmas cassia, winter cassia, climbing cassia, cassia shrub, butterfly cassia, butterfly bush, or just plain cassia. The common name "cassia" is derived from the genus *Cassia*, to which the species historically belonged. "Climbing" describes the plant's clambering growth habit when support is available, while "shrub" refers to its growth habit in open ground. In the nursery trade it is known by the botanical name of *Cassia bicapsularis*.

Christmas senna can be seen blooming not only in landscapes, but also along roadsides, canal banks, hammocks, marshes, and even mangrove communities. It escaped from cultivation and has become a weed in natural areas and other sites in central and southern Florida (Fig. 3). Those traveling the state by car will especially notice the brilliant yellow flowers along commonly traveled roads such as Florida's turnpike south of Orlando, I-75 south of Sarasota, and SR 60 between Yeehaw Junction and Vero Beach.

The virtues of Christmas senna as an ornamental landscape plant have been well described (e.g. Dirr 2002; Gilman and Black 1999; Bender and Felder 1993). Little, however, has been published concerning the escape of this plant into the wild. Because of the confusion in taxonomy, everyone may not realize that the plants for sale in the nursery trade are the same species as those escaped and growing in the wild. This article will provide information on the biology of Christmas senna outside of cultivation and clarify the taxonomy.

Distribution

Christmas senna is native to Brazil, Peru, Bolivia and south to Paraguay and Argentina. It is cultivated in warm regions of both hemispheres. In the US it occurs in Florida, Texas (common in southern Texas), California, Arizona, and probably in other Sunbelt states (Isely 1998). It is cultivated in all regions of Florida (Hunt 1977, Nelson 1996). Herbarium records document it as outside of cultivation from Hillsborough and Brevard Counties south to Dade and Collier Counties (Wunderlin et al. 2003). It is reported from scrub and forest natural areas in Palm Beach County and from the edge of Lake Okeechobee in Hendry County (EPPC 1996). In Collier County, it invades mangrove communities at the headwaters of the Baron River (personal observation by the author). It was reported as a weed of canal banks, roadsides, and fencerows in 1977 (Orsenigo 1977). It has been observed in the wild in south Florida since the early 1970s (D. F. Austin, Florida Atlantic University, 1995 personal communication). It is noted as naturalized in south Florida and becoming weedy in the Bahamas and disturbed areas in South America (Irwin and Barneby 1982). Isely (1990) described it as moderately established outside of cultivation in Florida.

Natural History

Christmas senna produces flowers from October through January. Large numbers of seeds are produced, which mature through the spring and summer. Seeds may be dispersed by *continued on page 12*


Fig. 1

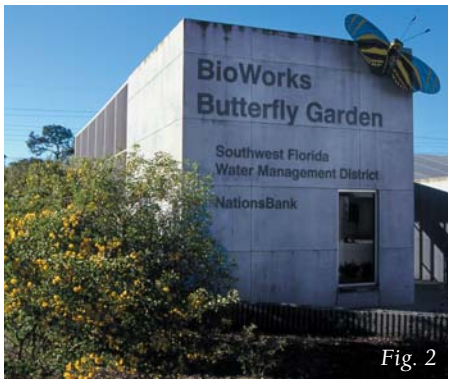

Fig. 2


Fig. 3


Fig. 4

1. The invasive characteristics of this plant have not been assessed using the IFAS Assessment of Non-Native Plants in Florida's Natural Areas.

birds, mammals, and/or human conveyance but specific dispersal agents have not been identified. Plants are hardy north of the frost line as they will regrow after tops are killed by freezing (Maxwell and Maxwell 1961). Specimens (reported as *C. bicapsularis*) over 3 m (10 ft) are common as far north as Charleston, South Carolina (Dirr 2002). The lack of herbarium records north of Hillsborough and Brevard Counties suggests that the plant has not escaped or effectively reproduced out of cultivation in colder climates of the state. Plants may not produce viable seed when they are frozen back in winter, which is a possible explanation. However, sexual reproduction has been observed as far north as Gainesville (David Hall, 2003 personal communication). Whether the species can become as abundant in the northern part of Florida remains for future determination.

Christmas senna often becomes established in sunny openings and then clambers over adjacent vegetation (Austin 1998). It displaces native plants in both disturbed and undisturbed areas of Florida's tropical hammocks, coastal strands, and canal banks (M. Renda, The Nature Conservancy, 1996 personal communication).

Taxonomy

The genus *Senna* (Family Fabaceae) is represented by ten species in Florida, four native and six introduced (Wunderlin 1998). The correct nomenclature for the Florida plants called by the common name Christmas senna is *Senna pendula* (Willd.) Irwin & Barn. var. *glabrata* (Vogel) Irwin & Barn. (synonym *Cassia colutoides*). This revised nomenclature is based on the separation by Irwin and Barnaby (1982) of the large genus *Cassia* into *Cassia*, *Senna*, and *Chamaecrista* based on male floral characteristics.

Christmas senna plants found in cultivation or established in Florida usually have been identified as *Cassia bicapsularis*, which they are not (Isely 1998). The species *Cassia bicapsularis,* now properly called *Senna bicapsularis* (L.) Roxburgh, has been only slightly introduced into the United States and is not known to have escaped in Florida (Isely 1990). *Senna bicapsularis* has leaflets in 3 pairs and flower stalks (pedicels) 3-5 mm (0.12-0.2 in) long, while the commonly escaped *Senna pendula* has leaflets in 4-7 pairs and flower stalks (pedicels) 2 cm (0.08 in) or more long (Isely 1998). The species name *pendula* describes the growth habit of the branches, which arch downward.

Botanical Description

Christmas senna is a sprawling evergreen shrub to 4 m (13 ft) tall (or wide), with somewhat zigzag, sparsely hairy stems. Leaves are alternate, stalked, even-pinnately compound, with 4 to 7 pairs of leaflets, the larger ones occurring at the leaf tip. The leaflets are up to 4 cm (1.6 in) long, oblong with rounded tips; leaf stalks (petioles) have a gland on the upper surface, between lowermost leaflets (and occasionally between others). The flowers are yellow or yellow-green, 3 to 4 cm (1.2 to 1.6 in) across, in 3- to 12-flowered racemes near the stem tips. Stamens in the flowers have prominent, curved filaments (Fig. 4). The fruit is a brown slender pod, cylindric, glabrous, 7 to 12 cm (3 to 5 in) long.

Control

Christmas senna can be controlled by foliar or basal bark herbicide application. The following foliar applications on a spray-to-wet basis have been found effective: 1.0% Roundup Pro, 0.5% Garlon 3A + 0.375% Induce, 0.50 oz/gal Escort + 0.375% Induce, 3.13% Brush-B-Gon. Basal bark application of 10% Garlon 4 in oil is used by the Southwest Florida Water Management District (Mack Sweat, 2003 personal communication).

For more information, contact Ken Langeland at kal@ifas.ufl.edu

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Evaluation of Foliar Applied Herbicides for Control of Christmas Senna[1]

Langeland, K. A., D. W. Clark, R. K. Stocker, and G. E. MacDonald; UF/IFAS Agronomy Department & Center for Aquatic and Invasive Plants

Introduction

Christmas senna (*Senna pendula* (Willd.) Irwin & Barn. var. *glabrata* (Vogel) Irwin & Barn.) has been commonly cultivated as an ornamental in Florida at least since the 1940s (Bailey and Bailey 1947). It escapes from cultivation in central and southern Florida and has become a weed in natural areas and other sites. It was reported as a weed of canal banks, roadsides, and fencerows in 1977 (Orsenigo 1977) and has been observed in the wild in south Florida since the early 1970s (D. F. Austin, Florida Atlantic University, 1995 personal communication). It is noted as naturalized in south Florida and becoming weedy in the Bahamas and disturbed areas in South America (Irwin and Barneby 1982). It often becomes established in sunny openings and then clambers over adjacent vegetation (Austin 1998). It displaces native plants in both disturbed and undisturbed areas of Florida's tropical hammocks, coastal strands, and canal banks (M. Renda, The Nature Conservancy, 1996 personal communication). The purpose of this study was to evaluate herbicides for control of Christmas senna.

Materials and Methods

PLANT CULTURE

Christmas senna seeds were collected in January 2000 from plants growing along a roadside in Lee County, FL. In May 2000, seeds were removed from the pods, scarified, and germinated in moist petri dishes. Upon reaching a height of 4.0 to 8.0 cm (1.6 to 3.2 in), seedlings were planted in one-gallon containers of commercial topsoil in a plastic house at the UF/IFAS Center for Aquatic and Invasive Plants in Gainesville, Florida. Seedlings were allowed to grow from June 2000 through April 2001, during which time they were transplanted to 2.5-gallon containers. The plants were removed from containers and planted on two-foot centers at the IFAS Agronomy farm (Green Acres) near Citra, Florida in April 2001. Plants were overhead irrigated every other day and weeds were controlled by tilling and spot spraying with a glyphosate containing herbicide. Plants grew vigorously and attained 1.5 to 3.0 meters in height.

HERBICIDE APPLICATION

Herbicides were applied November 9-10, 2001. Weather during and immediately after herbicide application was clear, calm, and 78 F. Herbicides were applied on a spray-to-wet basis, which resulted in application of approximately 0.75 l of spray solution per plant. Each herbicide treatment (Table 1) was applied to 10 randomly assigned replicate plants. Induce (Helena Chemical), a nonionic fatty acid based surfactant, was added to spray solutions of Transline, Garlon 3A, and Escort. Water, containing no herbicide or adjuvant, was applied to experimental checks.

EVALUATION

Final evaluation for herbicide efficacy was determined on July 10, 2002 (eight months post application) as percent of foliage that was defoliated or attached and completely necrotic. Foliage that contained any green tissue was not considered necrotic.

Results and Discussion

All rates of Transline (0.750% to 0.125%), Garlon 3A at 1.0% and 0.5, Escort at 0.02 and .01 oz per gallon, Roundup Pro at 2.0%, 1.5%, and 1.0%, and Brush-B-Gon at 3.13% gave complete control of Christmas senna (Table 1). Plants were completely defoliated, woody plant parts were desiccated and brittle, and plants showed no indication of regrowth. In contrast, untreated plants were defoliated 56% by cold damage but were vigorously regrowing at the evaluation time in July. Roundup Pro at 0.5% resulted in excellent control with nine of ten replicate plants being 100% defoliated. Lower rates of Garlon 3A (0.25% and 0.063%) and Escort (0.025 oz/gal and 0.012 oz/gal) resulted in good to fair control. Roundup Super Concentrate at 1.95% provided no control of Christmas senna.

Table 1. Control (%defoliation) of Christmas senna eight months after foliar herbicide applications (all additions of Induce, an adjuvant, at 0.375%).

Treatment	% Defoliation
0.750% Transline + Induce	100
0.500% Transline + Induce	100
0.250% Transline + Induce	100
0.125% Transline + Induce	100
1.000% Garlon 3A + Induce	100
0.500% Garlon 3A + Induce	100
0.250% Garlon 3A + Induce	95
0.063% Garlon 3A + Induce	82
0.020 oz Escort/gal + Induce	100
0.010 oz Escort/gal + Induce	100
0.025 oz Escort/gal + Induce	91
0.012 oz Escort/gal + Induce	77
2.0% Roundup Pro	100
1.5% Roundup Pro	100
1.0% Roundup Pro	100
0.5% Roundup Pro	98
3.13% Brush-B-Gon	100
1.95% Roundup Super Concentrate	59
Untreated check	56

Transline contains the active ingredient clopyralid, which is known to have excellent herbicidal activity on other leguminous weeds such as kudzu. It is not registered in Florida but is scheduled to be registered in counties of western Florida (Scott Ditmarsen, Dow AgroSciences, 2003 personal communication).

Brush-B-Gon, is a dilute product of triclopyr (0.75 lb a.e./gal), which is packaged for homeowner use and available in small containers in retail garden supply stores. The dilution used in this study is that recommended on the Brush-B-Gon label. The concentration of active ingredient in this Brush-B-Gon dilution is in between the 1.0% and 0.5% dilutions of Garlon 3A, which is a concentrated (3 lb a.e./gal), commercial product.

Roundup Super Concentrate is a glyphosate containing product that is packaged for homeowners and available in retail garden supply stores. It is more concentrat-

1. The invasive characteristics of this plant have not been assessed using the IFAS Assessment of Non-Native Plants in Florida's Natural Areas.

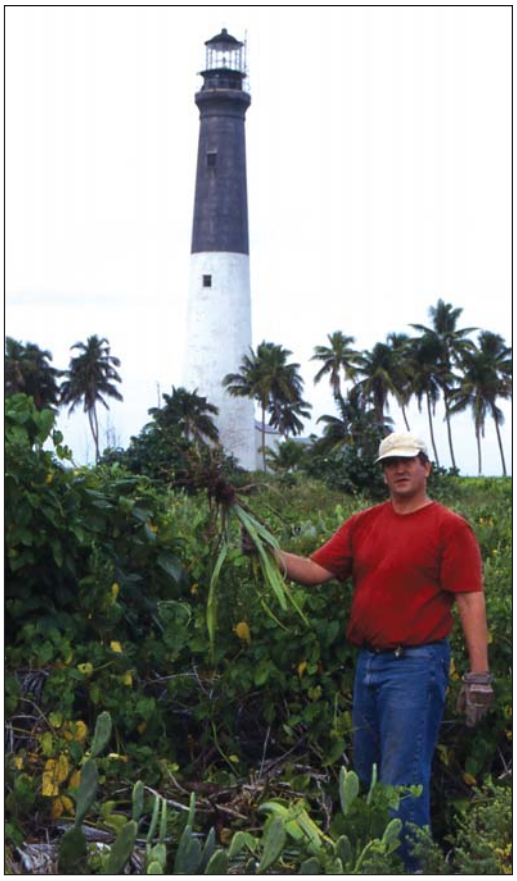
ed (3.7 lb a.e./gal) than Roundup Pro (3 lb a.e./gal), which is packaged for commercial applicators. The concentration of Roundup Super Concentrate used (1.95%) is between the two highest concentrations of Roundup Pro used and would be expected to perform as well based on herbicide rate. The lack of control observed with Roundup Super Concentrate compared to Roundup Pro may be related to adjuvants in the different formulations (proprietary information) but cannot be explained in this study.

Acknowledgements

Appreciation is expressed to Mike Ward, Elizabeth Jimenez and Hillary Cherry for technical assistance, and to Helena Chemical, DuPont Agricultural Products, Monsanto Company, and Dow AgroSciences for herbicides or adjuvants used in this study.

For more information, contact Ken Langeland at kal@ifas.ufl.edu

FLEPPC Board Gets Down and Dirty



The most recent quarterly meeting of the FLEPPC Board of Directors took place at Fort Jefferson National Monument in the Dry Tortugas National Park, 70 miles west of Key West, Florida. Following up on the 1995 exotic plant management plan that FLEPPC helped develop, board members spent several hours removing exotic *Agave* plants from Loggerhead Key. It was a prickly job and drew blood from several of us, but our time was well spent. During a sweep of the island, we pulled or treated *Agave* plants regrowing from an established population that was removed in the late 1990s along with Australian pines (*Casuarina equisetifolia*) (see article by Tony Pernas, et al, *Wildland Weeds*, Winter 2001). *– Ed.*

The tenacious Jonathan Taylor of the National Park Service organized the FLEPPC board member agave pull.

Q&A with Great Results

Question:

I review landscape plans for new construction on Florida's Turnpike system. A lot of plans are calling for *Washingtonia robusta* in groupings for accent trees.

I usually argue that it's preferable to use native species and recommend booted sabals in lieu of washies. Knowing that Dade County has put some restrictions on the use of washingtonias, is there a stronger argument that this tree may soon be on the [FLEPPC] List of Invasive Species, or is this just a concern in extreme southern Florida?

Bruce Mantell, ASLA, Florida's Turnpike Enterprise

Answer:

The FLEPPC list committee has kept Washingtonia palms (Fan Palm) on its unpublished "To Be Watched (TBW)" list for the present. This is because, despite numerous reports of "escapes" and establishment from many regions of the state (Pinellas, Okeechobee, Brevard, MiamiDade Counties, for instance) few vouchered specimens and no reports of large, dense invasions have been made. Richard Wunderlin's "Guide to the Vascular Plants of Florida (1998)" reports the Fan Palm as "Escaped from cultivation," strongly confirming the need for concern regarding Fan Palm populations already found in Florida's natural areas.

"Escaped" Washingtonia robusta found on the rim of Lake Okeechobee. (A. Ferriter)

As I'm sure you're aware, many invaders exhibit low-level invasions, often for decades, before some factors or threshholds are met allowing wider incursions. It is often a nonnative plant's continued use and persistent intentional plantings that enable such threshholds to be overcome and widespread invasion to proceed.

Several strategies aiming to predict plants' invasion potentials have found palms, as a family, to have relatively low invasive characteristics. This includes the IFAS nonnative plant assessment strategy (http://edis.ifas.ufl.edu/pdffiles/AG/AG10000.pdf, http://agronomy.ifas.ufl.edu/IFASassessmt.pdf) However, *Washingtonia robusta*, in the considered opinions of numerous field biologists and the published record of Florida flora, already exhibits the ability to establish widely throughout many regions of Florida, and I must argue that it is wiser to err on the side of caution than to encourage the continued use of this plant in horticultural plantings.

The Florida Exotic Pest Plant Council strongly recommends that the Florida Turnpike Enterprise not use fan palm in its plantings and would strongly support the adoption of an all native planting palette.

Best wishes,

Mike Bodle, Chair, Florida Exotic Pest Plant Council

Results:

Thanks for the information. This was forwarded to the Turnpike's Landscape Architect in the Planning Office. He passed the information to all Turnpike landscape design consultants. They have been advised to drop *Washingtonia robusta* from the plant list for all upcoming Turnpike landscaping projects that aren't already under contract.

As a point of information, FDOT District 6 (Dade & Monroe Counties) also discourages new plantings of WR's on state roads within their jurisdiction.

Bruce Mantell, ASLA, Florida's Turnpike Enterprise

P.S. We have an upcoming District Landscape Managers meeting in November. I'll be more than happy to bring up the subject with my northern counterparts.

Weeds are Still "Weeds" in Paradise

by "Weedman" Dan Clark
National Park Service Supervisory Exotic Plant Specialist, Florida/Caribbean Exotic Plant Management Team

While working on wildland weeds for the Florida Department of Environmental Protection and the City of Sanibel, I often thought that the plants we learned to despise (usually accompanied by a great deal of respect) were from enticing, tropical, far-away places. When you scan the origins of the plants targeted for management and control in Florida found in Ken Langeland and Kathy Burks' book, ***Identification & Biology of Non-Native Plants in Florida's Natural Areas*** (Langeland and Burks, 1998), visions of places like Africa, Southeast Asia, Australia, Madagascar, and Tropical America are conjured in the imagination. I can't count the number of times I thought to myself, "It sure would be cool to be someone like Dan Thayer (South Florida Water Management District), Dr. Jim Cuda (University of Florida) or Greg Jubinsky (Florida Department of Environmental Protection) and go visit some of those places and see our invasive exotic plants in their native range behaving appropriately. It'd also be pretty cool to work with people of other countries to exchange information on plants we're concerned about and see what plants they're combating."

For me, wildland weed work and graduate school years passed and a wise friend of mine, Dr. Randall Stocker of the University of Florida's IFAS Center for Aquatic and Invasive Plants, told me that if I was interested in weeds and tropical places, we needed to write a grant to get there and take a look. Now on the surface, writing a grant to a federal agency that includes extended periods of time conducting weed research in a tropical paradise seems a bit "over the top," but upon reevaluating and removing a request for a 45' sailboat, our grant proposal had the gist of your typical North Georgia kudzu research proposal except we'd substitute Carnival for winter. After grant approval and the big move, I quickly found that when you move from the Southeast United States to a small Caribbean Island that is a world-class vacation destination, your personal and professional friends become even closer, especially around the time Santa comes to Spring Break. Since I'd like to think that I choose friends of a high caliber, I don't fault a single one.

Maho Bay, Virgin Islands National Park (St. John)

On a slightly serious note, Caribbean weed research, management and control are not all rum drinking on a hammock gently swinging in the trade winds. Some of it is, but mostly it entails the tried and true methods of getting out in the woods with armloads of field and scientific apparatuses and contraptions, sweltering in the heat, and being cut, scratched, poisoned and bit by sundry flora and fauna. The lure of the tropics is strong when you visit on a cruise ship, however interns that have worked here find themselves longing for the cool autumn days in Tennessee when they don't have to cut and drag tree limbs in the Anacardiaceae family through a cactus/thorn scrub.

Seemingly a boondoggle by my inner circle, the research project and National Park Service partnerships have been met with approval from the U.S. Department of Agriculture, the National Park Service, and surrounding Caribbean nations. Like many areas in the United States, invasive exotic plants in the Caribbean are not well understood. There is little scientific literature discussing the effects of these plants on native ecosystems, how to manage and control them, and what really belongs (is native) versus what we, the "experts" (who are often introduced, invasive, exotic species ourselves) profess to be non-native. These are the age-old battles you're already familiar with. Reviewing the ***Flora of St. John*** (Acevido-Rodriguez, 1996), I found that of the approximately 750 plant species described on the island, about 18 percent are non-native. The ratio is similar but slightly lower than that of Florida. The lower ratio is probably due to the fact that over 60 percent of the island is preserved as the Virgin Islands National Park. More important than the percent of non-native flora is the coverage of that flora.

A cursory examination of the distribution and abundance of invasive exotic plants in the U.S. Virgin Island natural areas is a part of the work underway. Another facet of the work involves applied research in the Virgin Islands National Park to look at the effects of several invasive exotic plants on the native flora. After introduction to the islands, species such as ***Triphasia trifolia*** (Rutaceae) and ***Melicoccus bijugatus*** (Sapindaceae) have become naturalized and have drastically expanded their range over several hundred years. Stem counts for ***T. trifolia*** have exceeded 38,000 per hectare and questions regarding the effects of these plants hopefully will be answered soon. Restoration using native plants after removal of invasive exotics also is being examined.

As important as it is to ask and answer questions about invasive exotic plants, it is

equally important to formulate a management plan and strategy to control these plants in natural areas. The National Park Service has recognized this fact and formed Exotic Plant Management Teams (EPMT) around the United States and in Hawaii to combat the exotic plants infesting nearly 2.6 million acres of NPS land. The teams are designed after the strategic coordinated response efforts used in wildland fire fighting. This year, the NPS expanded the Florida Partnership EPMT to include the Caribbean and it is now called the Florida/Caribbean EPMT. The same partnership (Florida DEP and NPS) that has been so effective in managing and controlling invasive exotic plants in Florida since 1999 is working similarly in the Caribbean.

Working with Tony Pernas, NPS Exotic Plant Management Specialist and Florida/ Caribbean EPMT Liaison, the first weed management project of it's kind known in the Caribbean has been funded and is scheduled to commence this winter on Buck Island just north of the U.S. Virgin Island of St. Croix. This 174-acre island is the terrestrial portion of the Buck Island Reef National Monument and eight invasive exotic plant species are targeted for initial treatment over a six-week period. Although the project may seem small in relative size to many in the United States, the topography and logistics make it difficult. However, positive results are expected. Several plant and animal species listed as federally threatened or endangered, and territorially protected, should benefit from the removal of nearly all invasive exotic plant species on the island.

While working in close proximity to so many different nations that have similar flora and issues of plant invasion and importation, I've been communicating with representatives of some of them to begin to form Caribbean Basin partnerships on behalf of the U.S. National Park Service. To date, the Director of the National Regional Parks of Martinique, the Minister of Agriculture and the Environment of the Dominican Republic and staff of several other Caribbean nations are beginning to discuss the management and control of invasive exotic plants in natural areas of their countries. Collaborations are blossoming between the U.S. National Park Service and other Caribbean nations for the exchange of technical expertise and other information related to management and control of invasive exotic plants in Caribbean natural areas.

A final thought surrounds a main concern of local citizens of the U.S. Virgin Islands with regards to managing invasive exotic plants with a long history in the Caribbean. Many species and individual plants have significant historical value and definitive knowledge of their exact origin is sometimes sketchy. Trees still exist that provided shade for slaves working on sugar cane plantations in the 17th century, many species were brought by Europeans during the discovery and colonization of the islands in the early 16th century, and some species are thought to have been brought here from Tropical South America by the aboriginal Taino Indians thousands of years ago. It could be overwhelming to consider the many issues surrounding culturally and historically significant exotic plants in an area where many people truly care about and connect with them at a deep level. I had never considered the issue at the magnitude it is here where one can readily see trade routes from Venezuela being developed a couple of thousand years ago with nominal vessels like sailing canoes. In the area of the Virgin Islands alone, one can look out from a tall mountain (1500') and see 50-60 different islands easily reached in one day by paddling. After pondering the dilemma, I saw a need to shed some of my "purist" attitude and concede that there are some exotic plant individuals in the Virgin Islands and in the National Park (and some whose species demonstrate truly invasive potential that has already been realized) that need to be protected for these values in spite of their current biological drawbacks. I have begun to prompt park managers to examine ecosystems under their stewardship and manage species for the purpose stated in the park's mission: "To conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." That stewardship can include preserving specific individuals while controlling many of the same species within the park. The public and park staffs have been receptive to this notion so far.

The invasive plant work in the Caribbean is fulfilling and there is much to do. Life here is fraught with challenges but the rewards are equally splendid. After being a member of the U.S. Coast Guard for 21 years, I never thought some people would know me only as "The Weedmon," and not by my name. Oh well, as long as they know which weeds I work with. I wonder what Thayer, Cuda, and Jubinsky did today? Oh well, back to the hammock, rum needs some ice!

Triphasia trifolia

For more information, contact Dan Clark at Daniel_Clark@nps.gov

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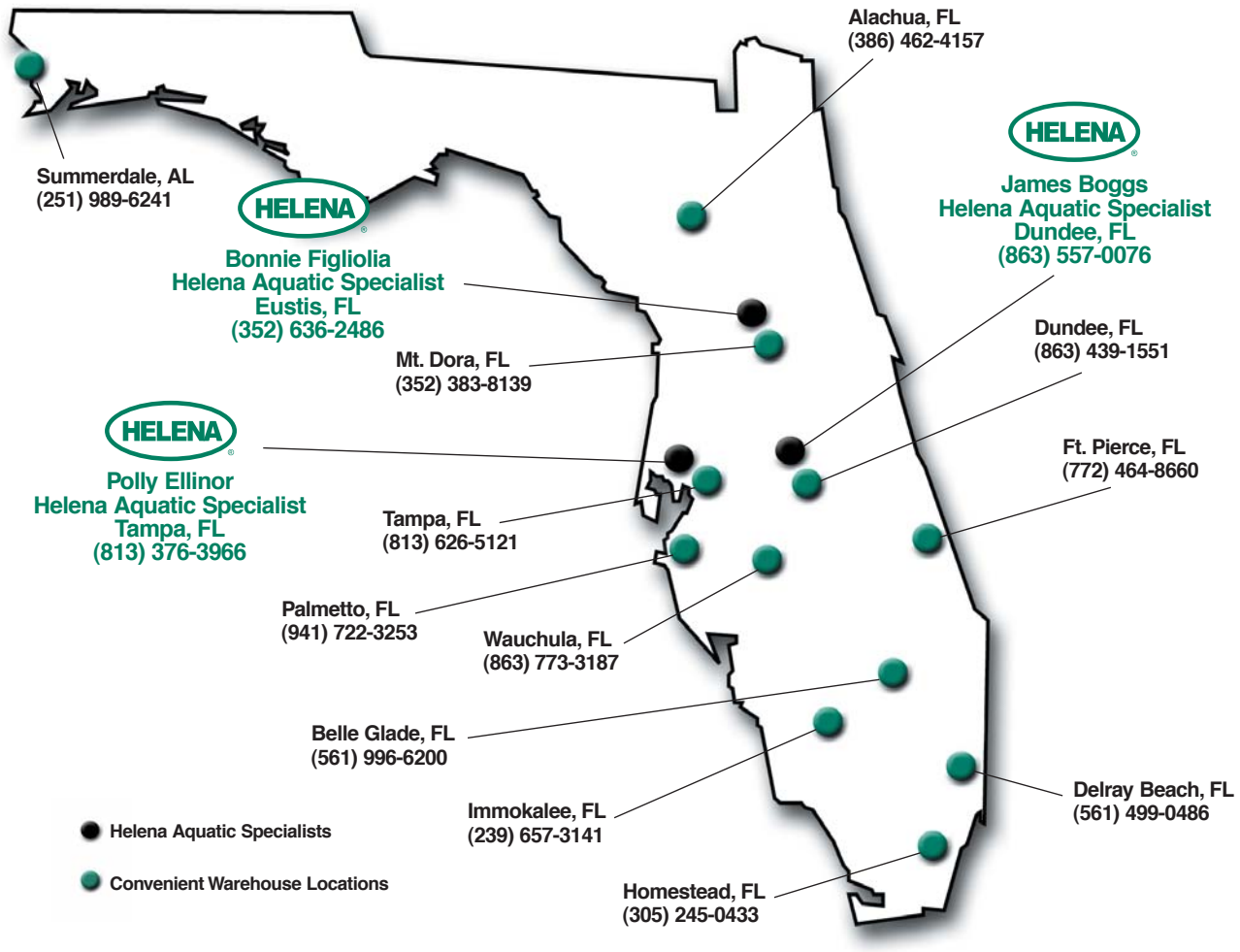

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One man's weed…

"The U.S., jolted into action by the mushrooming magnitude of invasive plants and the damage they have wrought – and continue to cause – has launched a new, internet-based effort to choke off domestic retail sales of banned plants as one phase of a strategy to limit further introduction and spread of invasive plant species."

Scientists at the Center for Integrated Pest Management (CIPM) at North Carolina State University, together with the U.S. Department of Agriculture Animal and Plant Health Inspection Service (USDA/APHIS), have developed a "web crawler" that searches the internet for web sites selling plants officially defined as noxious weeds or invasive species*. The system, Agricultural Internet Monitoring System (AIMS), will be used primarily to locate, then notify, offending vendors, according to R.E. Stinner, lead researcher on the AIMS program.

Vendors identified by AIMS as offering banned species online will be notified and directed to stop selling the plants. AIMS will then keep track of retailers who continue to sell illegal plants; refusal to comply with notification can lead to prosecution and the possibility of substantial fines.

Depending on performance and results from the AIMS program, federal officials will consider developing a cooperative effort with equivalent organizations in other countries. Authorities in Australia, New Zealand, and South Africa have expressed an interest in some form of joint effort.

•For more information, contact R.E. Stinner, CIPM, North Carolina State University, 919-515-1648, Ron_Stinner@ncsu.edu

•To report internet sites offering prohibited plants for sale, contact Sherrena.A.Harrison@aphis.usda.gov

**For a copy of the Regulated Pest List in PDF format, go to: http://www.invasivespecies.org/RegulatedPestList.pdf or go to the USDA/APHIS web site at: http://www.aphis.usda.gov/ppq/regpestlist/ Pests other than weeds are listed (viruses, insects, bacteria, etc.)*

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AIR POTATO - *Dioscorea bulbifera* - We are offering small tubers of the Air potato. A mature plant is quite a sight. It grows vigorously producing upright vines that are often supported with some type of trellis. The dark green leaves are heart shaped and attractive - but its the aerial potatoes that steal the show as they begin to develop at various intervals on the vines. Although they are thought of as a novelty, they actually are edible. Not to be confused with another variety which is rather bitter. They are very easy to grow. Provide warmth and bright light. Now available. No shipping to Florida or Texas.

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Editor's Note: *Dioscorea bulbifera* currently is not on the Federal Noxious Weed List. There is work to be done!

REQUEST FOR PROPOSALS FOR INVASIVE PLANT RESEARCH

Deadline: February 27, 2004

The Florida Exotic Pest Plant Council (FLEPPC) has available funding for a small number of research grants/scholarships for students conducting studies related to invasive exotic plant management in Florida.

The deadline for proposal submission is February 27, 2004. Written proposals should be no more than three pages in length and should request funding for no more than $2,500. The proposal should include a summary of the research project and its relationship with Florida exotic plant management problems. Particular plant species involved in the study should be one or more of the Category I or Category II exotic pest plant species listed by FLEPPC (see web site: www.fleppc.org). In addition, the applicant should provide complete contact information and a detailed budget, with an explanation of how the funding will be used. Examples include (but are not limited to) travel funds for field work, funds for research equipment or supplies (or temporary use of specialized equipment), stipend for applicant's project work time not otherwise supported, travel funds for presentation of the research, etc. In developing the budget, funds requested are to be used for the direct costs of conducting research on the proposed project and are not to be used for indirect costs incurred by the student's university.

Proposals will be evaluated and ranked on the critical management need for scientific results in the area of study and on the clarity of the submitted request.

Basic eligibility requirements:
To be eligible for funding, applicants must be an undergraduate or graduate student enrolled at an accredited institution of higher learning anywhere within the United States. However, the research must be on a listed Florida invasive plant (http://www.fleppc.org/Plant_list/list.htm). An accompanying letter of recommendation from a faculty advisor is strongly encouraged.

Send proposals by e-mail, fax, or mail to:
John C. Volin, Chair
Research Committee, FLEPPC
Florida Atlantic University
2912 College Ave.
Davie, FL 33314
jvolin@fau.edu
FAX - (954) 236-1099
office - (954) 236-1115

Proposals are due by 5:00 p.m. February 27, 2004.

Internodes

Mark Your Calendar

- Weed Science 2004 – Weed Science Society of America (WSSA) Annual Meeting, **February 9-12, 2004**, Westin Crown Center, Kansas City, MO. www.wssa.net Invasive Plant Species Workshop, **February 12-13, 2004**.
- 65th Annual Meeting of the Association of Southeastern Biologists (ASB), **April 14-17**, Memphis, TN. www.asb.appstate.edu/
- 19th Annual FLEPPC and 6th Annual SE-EPPC Joint Symposium, **April 28-30, 2004**, Clarion Conference Center, Pensacola Beach, FL. www.fleppc.org or www.se-eppc.org
- 2004 Aquatic Weed Short Course, **May 4-7, 2004**, UF/IFAS Fort Lauderdale Research and Education Center. Fort Lauderdale Marriott North. http://conference.ifas.ufl.edu/aw/
- Second Latin-American Short Course on Biological Control of Weeds, **June 7-10, 2004**, Barcelo Hotel, Montelimar, Nicaragua. Organized by the University of Florida in cooperation with the Universidad Nacional Agraria of Nicaragua. Conference will be in Spanish. Dr. Julio Medal, Course Coordinator, biocontrol.ifas.ufl.edu/materials/nicaragua.htm or medal@ifas.ufl.edu
- Aquatic Plant Management Society 44th Annual Conference, **July 11-14, 2004**, Tampa Hyatt Regency, Tampa, FL. www.apms.org

Publications

- **Florida's Best Native Landscape Plants, 200 Readily Available Species for Homeowners and Professionals by Gil Nelson, 2003.** "Every one of its 448 pages has something to teach - botanical name, pronunciation, family, size, landscape use, form, native range, characteristics, culture, best features and companion plants, as well as other information." 710 color photos and 180 detailed watercolors. University Press of Florida, (800) 226-3822, **www.upf.com**
- **Guide to the Vascular Plants of Florida, 2nd edition** by **Richard P. Wunderlin and Bruce Hansen, 2003.** "In this second edition of the only comprehensive identification manual and definitive guide to the highly diverse flora of Florida, over 100 additional species have been added, nomenclature updated, and families arranged alphabetically for easier reference." A series of taxonomic keys to family, genus, and species that also gives many common names, the general habitat preference, and, for plants not native to Florida, the place of origin. University Press of Florida, (800) 226-3822, **www.upf.com**
- **Invasive Plants of Eastern United States: Identification and Control** (CD-ROM) – USDA Forest Service, Forest Health Technology Enterprise Team. Covers the identification characteristics, distribution, and control options for 97 invasive tree, shrub, vine, grass, fern, forb, and aquatic plant species of concern in the eastern United States. Request free copies from Richard Reardon, FHTET, USDA Forest Service, (304) 285-1566, rreardon@fs.fed.us or from www.invasive.org
- **1,000 Weeds of North America: An Identification Guide** – An interactive weed ID program on CD that contains color photos of each weed; common and scientific names, with synonyms; an illustrated glossary; and searchable distribution data. Covers 860 broadleaf weeds and 140 grass-like weeds. Weed Science Society of America (WSSA), 1-800-627-0629 Ext. 297 or www.wssa.net/
- **Integrated Pest Management: Current and Future Strategies** – Council for Agricultural Science and Technology (CAST) Task Force Report No. 140. www.cast-science.org
- **Tropical Flowering Plants – A Guide to Identification and Cultivation**, by Kirsten Albrecht Llamas. "Incorporating the latest advances in plant taxonomy from the definitive text of Dr. Walter Judd, the book is a rare work of scrupulous research – and magnificent photography – that will be as useful to the gardener as it is to the botanist." More than 1,500 color photographs by the author. Timber Press, 1-800-327-5680, www.timberpress.com/whitecap
- **WATERWISE – South Florida Landscapes - Landscaping to Promote Water Conservation Using the Principles of Xeriscape**. Explains the principles of Xeriscape and contains a comprehensive plant list for choosing plants suitable for your landscape. Color photos of many species. Includes the FLEPPC Category I list for plants *not* recommended for landscaping. Free from the South Florida Water Management District, 1-800-432-2045, www.sfwmd.gov
- **Native Trees, Shrubs, and Vines: A Guide to Using, Growing, and Propagating North American Woody Plants** by William Cullina (2002). A comprehensive reference to almost 1,000 native woody plants. Available from booksellers.

Web Sites

- For a list of approximately 1,100 *Alien Plant Invaders of Natural Areas* compiled from plants lists of the National Park Service and other federal, state and local natural resource agencies, Exotic Pest Plant Councils, The Nature Conservancy, and universities, go to: www.nps.gov/plants/alien/list/all.htm From the Plant Conservation Alliance's Alien Plant Working Group ***Weeds Gone Wild*** project.
- The **USDA PLANTS Database** now contains almost 16,000 photos and drawings of plants. The PLANTS Database provides standardized information about the vascular plants, mosses, liverworts, hornworts, and lichens of the U.S. and its territories. It includes names, plant symbols, checklists, distributional data, species abstracts, characteristics, images, plant links, references, crop information, and automated tools. Go to: http://plants.usda.gov

continued on page 22

- **Plant Management in Florida Waters**, a web site for the interested public, is now available at plants.ifas.ufl.edu/guide/ The site covers invasive plants and related issues for lakes, rivers, springs, marshes, swamps and canals, and is the product of a collaboration between the University of Florida, IFAS, Center for Aquatic and Invasive Plants and the Florida Department of Environmental Protection, Bureau of Invasive Plant Management.
- For an update on exotic pest/invasive plant councils throughout the U.S., go to http://www.ma-eppc.org/ and click on **2003 Update on Partner Organizations**. Organization summaries were presented at the National Exotic Pest Plant Council (NA-EPPC) meeting in September. Included are summaries for California, Florida, Kentucky, Michigan, Mid-Atlantic, Mississippi, New England, New York, North Carolina, Pacific Northwest, Southeast, Tennessee, and Wisconsin.

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NOTE: Residents of other states can visit the SE-EPPC website for the nearest state chapter: www.se-eppc.org

notes from the disturbed edge - chapter 10

She had been sitting at the table next to the men's room door for what seemed like forever, holding her now-empty Styrofoam coffee cup and wondering what on earth could be going on in there. They were on one of those blessed-coolness-of-air-conditioning lunch breaks, on a sweltering summer day. Despite the heat outside she was in her standard get-up of long pants, boots, and long sleeve shirt, and already two women had given her that look she'd seen before, not knowing whether to drop a coin in her cup or just look away. Grimy field clothes always made a girl feel like a woman – a woman who had slept in the bushes. It would be a while before either of them saw a commode again, but what was going on in there?

She heard the door creak and turned her head just in time to see his face emerge with a weird look. "Psssst. Get in here. You gotta see this to believe it," he hissed, gesturing her inside. She didn't have to utter a word – her eyes said it all – *no way, absolutely not*. He knew how to read that look. "No," he continued, but then interrupted himself, "– man, you really do think I'm twisted, don't you?" She silently replied with a strong affirmative glance. "You really do have to come see this, it's…art, (*her expression shifted from disgust to puzzlement*) inspiration, literature!" He held up a roll of toilet paper with writing all over it. OK, so now she was interested. "It's…Poetry!" He held up the wad of toilet paper like Moses on the mountaintop. She was hooked.

Warily, but with increasing curiosity, she rose from her seat and sidled over to the door. "What the heck is going on?" He started rambling: "It's the ultimate bathroom graffiti – an Ode, a message from one our own kind, but it's long. If I could just drag a photocopy machine in here and hold it up against the wall I would, but I don't even have any real paper – go get a field book! Go! Go!" he urged her, as he ducked back into the bathroom to continue his insane work. Shaking her head, not believing she was doing this, she complied and returned, knocking tentatively at the door. The door opened abruptly and he scanned the perimeter. "Come on in," he indicated with a jerk of his neck. "We both have to scribble this down before it's erased forever by some overzealous cleanup crew." He was like a man possessed. "I can't go in there – it's the MEN's room," she protested. "What if someone sees me?" He rolled his eyes and then let them take a walk from her combat boots up to her summer-swelter hairdo tucked into her baseball cap, then looked her straight in the eye. "Come on in, Fred." She followed him.

Later that night, long after they'd emerged from the men's room and finished their day's work, they sat at his computer under the glow of a single bare light bulb and transcribed from their scraps of paper, vowing to spread this Desiderata of the exotic invasion by word of wall wherever they would wander.

– J.A.

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

Where the Backyards Meet the Backwoods

Where the white lines of the highway
fade to twin tracks in the grass
there's an ecotone where the weeds have grown
as the semis fly on past

There's a well-worn assumption
that it's somebody else's turf
but the fact remains that it's our domain
And we gotta work together
if we wanna save the earth

Among the lush greenery
of our suburban sprawl
there's an alien invasion waiting to happen
just beyond the garden wall

There's a common misconception
that all that's green is good
But the fact is there're probably out of place plants
growing in your neighborhood

Where the backyards and the backwoods meet
at this week's outer edge
there's an infestation taking place
on the other side of the hedge

Introduction through horticulture
has proved a foreign flora source
and the way we're headed now
ain't a sustainable course

We're putting a crimp in diversity
by putting aesthetics first
and our garden's seeds just make more weeds
so it just keeps getting worse

We've brought them here from around the world
Australia to Japan
But they've escaped from our cultivation
and foiled Mother Nature's plan

Imported from the forests
of another hemisphere
without the pests that keep them in check
they're out of control over here

We've spent so much of the people's cash
to buy the lands that remain
But there's a heck of a lot to be lost
after so much has been gained

There are problems on plenty of fronts
and money is never the least
because it takes substantial funding
to do battle with this beast

We've got to manage the lands we acquire
to keep the invaders at bay
and each time we plant another one
it's just more that we'll have to pay

It's hard to convince anyone
that we're not doing what we should
but the fact remains we've got problems spreading
from our back yards to our backwoods

Without regulation or education
we've planted anything we care
and now the fruits of our ignorance
are germinating everywhere

They're pushing out the natives
growing where they oughta be
And as a crow flies, he's an effective vector
if you nurture the wrong tree

Once they get established
it's hard to beat them back
So plant the plants and weed the weeds
resist the alien attack

This is a genuine problem
that only a few folks recognize
So we gotta spread the word, if we wanna make it heard
Gotta open up their eyes

There's a well-worn assumption
that it's somebody else's turf
but the fact remains that it's our domain
And we gotta work together
if we wanna save the earth.

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