

Wildland Weeds

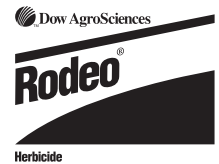
SUMMER/FALL 2011



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SUMMER/FALL 2011, VOLUME 14, NUMBER 3-4

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

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

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

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On the Cover:

Japanese chaff flower (*Achyranthes japonica*) has great potential to become a serious problem along the entire Mississippi basin. See article on page 4.

Photo by Christopher Evans.

Editor's note: The cover photograph for the last issue of *Wildland Weeds* (Vol. 14, Issue 1-2) was taken by Nancy J. Loewenstein.



The compact flower clusters and opposite leaves are characteristics to focus on when identifying this species.

NEW INVADER PROFILE:

Japanese Chaff Flower – *Achyranthes japonica*

By Christopher Evans and David D. Taylor, Photos by the authors

Sometimes a weed comes along that puts real fear in the souls of land managers. The Gulf Coastal Plain is the battleground for a number of these; species such as cogongrass, bush killer, giant salvinia, and the Old World climbing ferns. Managers to the north keep a wary eye to the south, hoping these weeds do not move northward.

Now we have a problem plant moving from north to south. Be on the lookout for Japanese chaff flower, *Achyranthes japonica* (Miq.) Nakai, in your neighborhood. It can invade a wide variety of habitats and can be easily introduced unintentionally by hikers, campers, and others.

Japanese chaff flower is a native of eastern and southeastern Asia. It is one of two species in the genus *Achyranthes* found in the United States (the other is *A. aspera*, an exotic species found in upland environments of the Southeast coastal plain). Japanese chaff flower was first discovered in North America 30 years ago this summer on the banks of Tug Fork of the Big Sandy River, Martin County, Kentucky (near West Virginia). It was collected in Pike County, Kentucky, and in Mingo County, West Virginia, the following year. This species likely arrived along the Tug Fork via railroad traffic and spread quickly throughout the region by floodwaters, animal movement, and humans. The finding, reported in a short article several years later (Medley et al. 1985), was largely forgotten. The authors noted:

“This species will probably be found eventually in all Kentucky and West Virginia counties bordering Tug Fork and the lower Big Sandy River; it may ultimately be found along the banks of the Ohio River downstream from the mouth of the Big Sandy.”

Unfortunately such predictions are often ignored and the pest of concern (plant, animal, or disease), is left to spread over a much larger area. By the early 1990s, chaff flower was dominant along large stretches of the Tug Fork River and was no longer confined to frequently flooded forested environments. Plants were invading edge environments, roadside ditches, logging roads, and even cracks in sidewalks (personal observations by the authors). Chaff flower quickly spread throughout the lower Ohio River Valley (likely through flood events), and other regions of the southeast United States (likely through human-aided dispersal).

Pat Haragan, then at the University of Louisville, brought an odd plant to a Kentucky Native Plant Society meeting around 1995-1996, concerned that large colonies were found along the Ohio River in Louisville. Botanists identified it as Japanese chaff flower. The plant had moved about 350 river miles in 15 years or less. Unfortunately, it was still viewed as something of a curiosity, but with the understanding that it was probably a bad actor.

By 2008, chaff flower had made it into Illinois with an initial discovery at the Chestnut Hills State Nature Preserve by retired Department of Natural Resources (DNR) botanist, John Schwegman. In 2010, a survey by the River to River Cooperative Weed Management Area (CWMA) and Illinois DNR found chaff flower present in every county adjacent to the Ohio River in Illinois and common in floodplain forests alongside the river, often occurring in large stands. Surveys conducted in the fall of 2011 confirmed that chaff flower has crossed the Mississippi River and is now found in southern Missouri.

An aggressive educational campaign was launched to learn more about this plant. Species alerts, literature reviews,

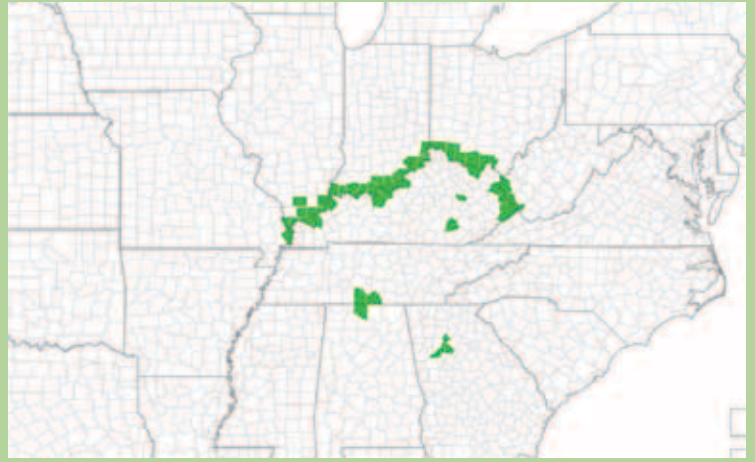
presentations, and emails were used to ascertain additional locations of this species. Currently chaff flower has been reported in 48 counties in 9 states, mainly concentrated along the Big Sandy and Ohio Rivers. In all likelihood, this is a gross underestimate of the actual distribution of chaff flower in the United States. Until recently, no species alerts, descriptions, or profiles were widely available, so few people know about this plant or how to identify it.

In the fall of 2010, William Overbeck, a student at Eastern Kentucky University in Richmond, discovered a population of chaff flower in the Daniel Boone National Forest (DBNF) along the Red River. This observation was reported in EDDMapS and was noted by the authors. Had it been a herbarium record (important in its own right) without wider notice, it could have gone unnoticed by land managers for months or years. Actions to reduce the plant's impact have been taken at the site, although work is still ongoing.

This plant has great potential to become a serious problem along the entire Mississippi basin, at least from central

Missouri and Illinois south. Given that it is spread by water, animals (including birds and people) and probably in soil, this year's floods may have carried seed from existing populations along the Ohio River and tributaries to flooded land along the Mississippi. Existing populations in Kentucky, West Virginia and Ohio, as well as Indiana and Illinois would provide seed for such an invasion. We encourage land managers, extension agents, citizen scientists and others to watch for this species, report it in EDDMaps if found, and eradicate it.

The unusual deflexed fruit with paired spiny bracts make identification easy.



Known distribution of Japanese chaff flower. Map courtesy of www.eddmaps.org

Already, outliers occur in Tennessee and Alabama along the Tennessee River system.

Japanese chaff flower is easy to identify. First impressions are that it is an opposite-leaved pigweed. As with pigweed, the stem at the ground is red, even in seedlings. It is a perennial herbaceous plant that does not appear to be rhizomatous. Young plants are single stemmed, but older plants seem to have multiple stems arising from the same root crown. Plants can be up to 2 meters tall (particularly in sunny areas). The leaves are opposite, simple, and entire along the margins. Venation of the leaves is somewhat arcuate, reminiscent of the venation on dogwood leaves. Stems are thin and somewhat wiry (especially late in the season). The entire plant is slightly pubescent. The flowers occur on erect spikes at the end of the stems and upper branches. Flowers are small, lack petals, and occur in a tight cluster at the end of the spike. The flowers diverge at nearly a right angle from the spike, giving the flowers a bottle-brush look. As the fruit is formed, the spikes elongate greatly and the fruits lie flat against the spike, giving the plant a look similar to the native lopseed (*Phryma leptostachya*). The fruits are slender and dry, with a single hard seed. Each fruit has a pair of stiff bracts that aid the fruit in attaching to clothes or fur. Many plants observed in the field appeared never to have flowered; all of these were smaller than plants that had flowered. This suggests it may take one or two years to reach flowering size from seed.

Chaff flower starts growing in late spring and peaks in mid-summer. Flowering begins in late summer. Flowers continue to develop into early fall, even after the spike elongates and the first flowers start maturing into seed. As the plants senesce in the fall, the leaves wilt away, and the remaining stems and fruits turn orange-brown. The dead thatch remains erect even into winter, making this plant easily recognizable almost any time of year. Heavy floods or snow can cause the thatch to break apart or lie down flat. The bracts on the seeds allow them to easily cling to clothing, shoes, hair, or animal fur any time from early fall to late





[from top] Chaff flower can form dense infestations in bottomlands, ditches, riparian areas, and other habitats; Seed-bearing plants can be covered in silt from flooding, resulting in clusters of seedlings around the buried plant; Chaff flower seed can easily attach to clothing or animal fur; New shoots emerging from root crown. Older plants often exhibit multiple shoots.

winter. Wool and loose-weave or knit fabrics collect the most seed. Tight-weave poly/cotton blends were relatively resistant to the bracts.

Many stems are broken by flooding. Seed-bearing stems buried in silt can result in dense patches of seedlings. Several plants showed evidence that late fall/early winter burial by silt allows a portion of the previous year's stem to survive winter. Several plants with silt deposition had new growth originating from the previous year's stem, 2-3 cm above the crown. Plants without silt deposition originated new growth at the crown.

Chaff flower is usually found in areas with partial shade and moist soil, making it an ideal floodplain weed. It will also grow in drier areas in sun, and in densely-shaded areas. Dense infestations have been found in bottomland forests, on riverbanks, at the edges of fields and in ditches and swales. Because it forms dense populations and grows tall, chaff flower competes with other floodplain species and likely shades many out. Deer seem to prefer these thick stands for browsing. During the Illinois surveys along the Ohio River in 2010, almost every stand showed significant deer browse and insect feeding. The plant resprouts and produces seed even after being browsed.

Fruits counted from plants in the DBNF suggest a large plant can produce more than 1,000 seeds. Preliminary research from Gibson and Shupert, Southern Illinois University (pers. comm. to C. Evans), from an infestation at Cypress Creek National Wildlife Refuge, indicates that infestations can reach densities over 70 plants per square meter (very dense considering each plant can be very wide with many stems and side branches) with an abundance of seedlings below. They also found incredibly high seed production potential (over 16,000 seeds per square meter). Nearly 100% of seeds were viable and almost 65% germinated in initial tests. We do not yet know the longevity of seeds or how flooding or winter affect viability and germination, but are investigating these aspects.

If you find chaff flower, do not let it go to seed while devising your plan of attack. As always, eradication while a population is small is the best tactic. Since this is a new species actively expanding its range, spread prevention and Early Detection/Rapid Response are the best management strategies. Thoroughly cleaning clothing, boots, and pet fur after hiking in infested areas is vital to preventing spread. Monitoring programs should focus on trails, campgrounds, and riverine and stream systems as these are the most likely places for introductions.

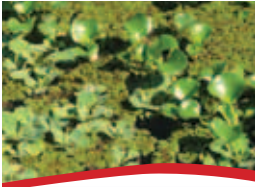
Little is known about effective control efforts. Because of the well-developed root system, digging or pulling large stands is not feasible, though it works for seedlings or small populations. Seedlings were somewhat difficult to pull, but could generally be removed with the entire root. Adult plants cannot be pulled, even from moist, sandy silt loam and must be dug out. Initial treatments of triclopyr at 2% solution appear to be effective. Preliminary trials are underway to test several different herbicides and rates.

Accurate distribution information is crucial for monitoring. If you find Japanese chaff flower, report the location in EDDMapS, alert other land managers and interested persons in your area, and help eradicate the population. Hopefully this species will not become established further south, but be prepared should it appear on your horizon.

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If You Cut It, Will They Come?

Plant and Animal Community Response to Chinese Privet Removal

By James L. Hanula, Scott Horn, Michael D. Ulyshen, Steven B. Castleberry, Michael S. Murphy, and John W. Taylor

You can spray the foliage, use basal bark sprays, mulch it, cut it with a chainsaw or machete, pull it, and even graze it with goats and sheep. Some methods may work better than others but they all have the same goal: getting rid of Chinese privet (*Ligustrum sinense*). However, once all that is done, what do you end up with? Everyone agrees that a privet-choked forest is not a pleasant place, but what does the forest look like if privet is removed? That's the question we have been trying to answer over the last few years.



Fig. 1 – Privet was eliminated from 5-acre plots by hand-felling with saws (above) and machetes or by mulching with a Gyrotrac mulching machine (bottom). Residue was left where it fell.

To find out, we tested two methods of removing privet in the fall of 2005. In one, we felled privet with saws and machetes and then immediately treated stumps with a herbicide (triclopyr). In the other, we mulched the privet in place with a Gyrotrac™ mulching machine. The stump treatment was not very practical in mulched areas mainly because of the way the Gyrotrac shredded or buried the stumps. Both worked well for removing the privet

shrub layer but neither prevented smaller seedlings and stump sprouts the following year. In fact, there was as much privet in the low-growing herbaceous plant layer of the treatment plots as in the control plots the summer following treatment.

Because privet was still abundant a year after removing the shrub layer, we followed up with 2% glyphosate using backpack mistblowers and sprayers to treat all the remaining low-growing privet in the herbaceous layer during winter when other plants were dormant (Harrington and Miller 2005). This was done on eight 5-acre plots (1 mulched and 1 felled per location) at four

different locations near Athens, Georgia. Some, like the State Botanical Garden and the Sandy Creek Nature Center properties, are in areas that receive a lot of visitors so they can be used for educational as well as research purposes. Others are more remote.

Immediately after the initial treatment, we measured the amount of privet biomass on the felling plots in 25 1-m² subsamples per plot. Plots had an estimated 44,627.2 kg of privet/ha (19.9 tons/acre) (oven dry wt.; SE=5989.1 kg/ha) which contained 0.61% (SE=0.075%) nitrogen or 272.2 kg of N/ha (242.8 lb/acre). The treatments put a lot of plant material on the ground which had the potential to release substantial amounts of nitrogen over time.

We then investigated how privet removal affected plant and animal communities, particularly their recovery compared to forests with no history of privet invasion. We had an untreated control plot at each location and we picked three areas of bottomland hardwood forest on the Oconee National Forest. These areas had never been invaded by privet and represented a desired future condition or recovery goal. These were not pristine, old-growth forests but they were useful as a reference condition.

What Did We Achieve? Plants

Our first goal was to eliminate privet and by 2007 we nearly achieved it. Both treatments resulted in less than 1% privet cover in the herb layer and none in the shrub layer of the forests; the results were dramatic. Bottomland hardwood forests are some of the prettiest places in the South when they aren't choked by privet and, after eliminating privet, desired plants returned (Fig. 2). Two years after

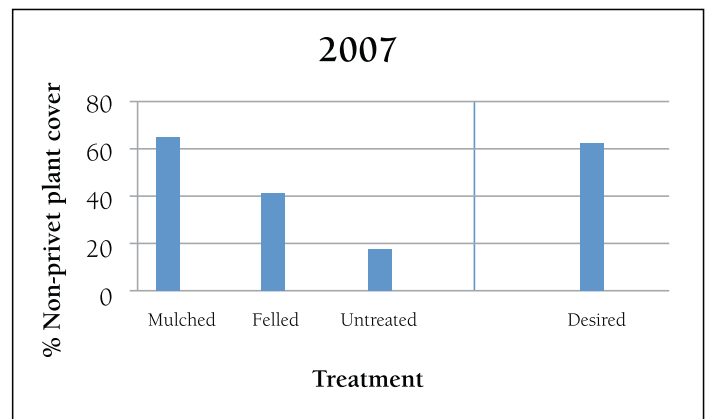


Fig. 3 – Percent of plot surface area covered by non-privet herbaceous plants two years after privet was eliminated by either felling or mulching. Desired plots were in forests never invaded by privet.

treatment, both mulching and privet felling resulted in higher non-privet herbaceous plant cover (Fig 3).

Mulched plots had the highest cover, probably due to greater soil disturbance caused by the mulching machine. Felling privet also resulted in much more non-privet plant cover. Mulched plots had similar plant cover to the desired future forests. Plant communities on the newly-cleared plots looked nothing like the desired



Fig. 2 – A control plot (left) with privet intact and a mulched plot (right) with a much more diverse and abundant herbaceous plant layer two years after privet removal.

forests. As might be expected, disturbing the forest by removing privet invited a lot of the early-colonizing plant species common to disturbed habitats (e.g., American burnweed and pokeweed). But other plants associated with healthy riparian forests (e.g., switchcane) are also showing up and even a rare plant has made an appearance (see page 15). Bottom line where plants are concerned: if you remove privet, other plants will come—not always what you want (e.g., Japanese stiltgrass), and sometimes beyond expectations (e.g., yellow fumewort), but all are better than privet.

Pollinators

Plants need pollinators and pollinators need plants, but when most people think of pollinators, they think of honeybees or maybe bumblebees. However, most forest pollinators are rarely noticed solitary bees. Because pollinators are so important to forests, we wanted to know how different methods of removing privet affected them. To measure pollinator abundance and diversity on the plots, we placed yellow and blue Solo® bowls (pan traps) filled with soapy water to attract and catch bees and butterflies.

As surprised as we were about the plant community response to eliminating privet, we were more surprised by the pollinator response. After two years, there were 4 to 5 times more bee species in privet-free areas. An average of nearly 40-50 species were captured on removal plots in 2007 compared to 10 on control plots. Removal of privet also resulted in a lot more bees. An average of over 650 bees were collected from mulched plots and 380 on felled plots. Control plots had an average of 33 bees per plot. Three times as many butterfly species were caught on mulched plots and nearly 7 times as many individuals. Clearly, bees and butterflies appreciated the resulting forest condition.

Beetles

Most people appreciate butterflies more than beetles but beetles play important roles in forests. We trapped beetles flying through the forest at ground level (0.5 m), at 5m (about the top of the privet canopy) and at 15 m. Beetle diversity was much higher in privet-removal plots at ground level than in the untreated control plots. Traps just above the privet canopy (5 m) caught similar numbers of

species regardless of the treatment or lack of treatment below and the same was true in the tree canopy (15 m). The only beetle caught in higher numbers in traps 5 m above the ground was an exotic, the Asian ambrosia beetle, *Xylosandrus crassiusculus*, which was much more abundant above the untreated control plots.

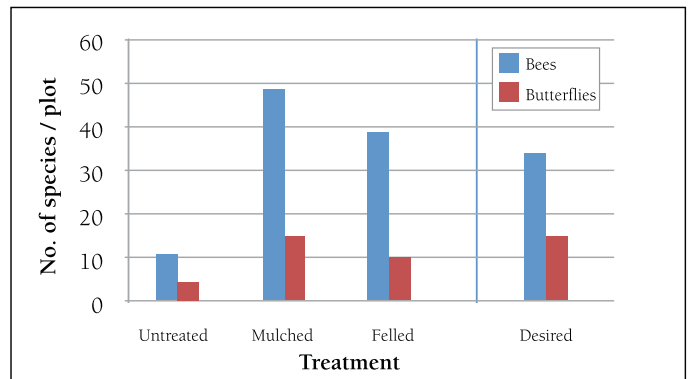


Fig. 4 – Average number of bee and butterfly species captured on forest plots which were either left untreated or had privet eliminated by mulching or hand-felling. Mulching privet resulted in the highest numbers of bee and butterfly species but felling also increased species richness of both groups over the untreated, privet-infested forest.

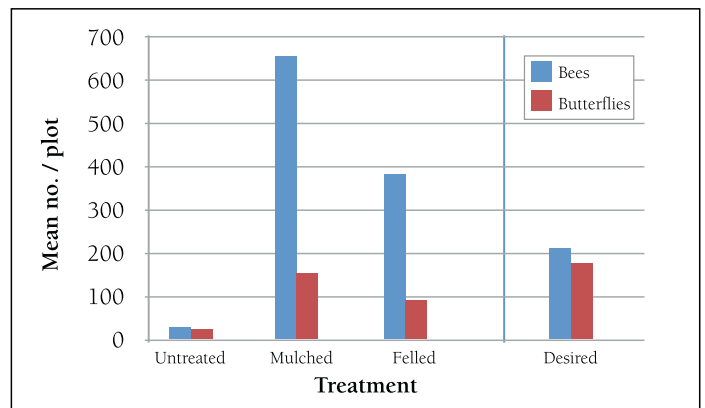


Fig. 5 – Average number of bees and butterflies (individuals) captured on forest plots that were either left untreated or had privet eliminated by mulching or hand-felling.



White-footed mouse (*Peromyscus leucopus*)

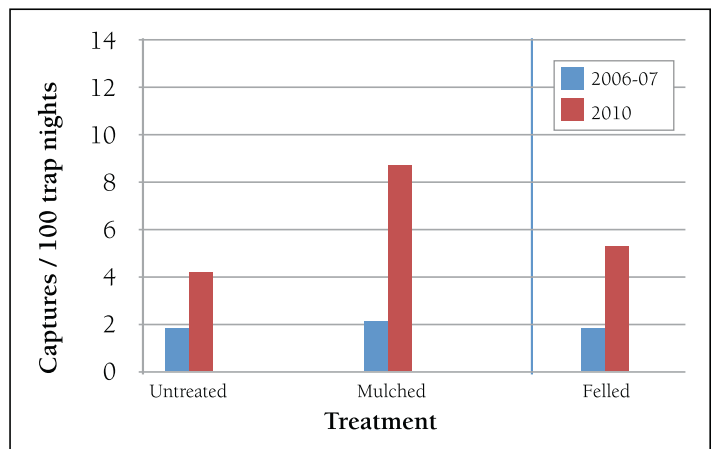


Fig. 5 – Average number of small mammals captured on forest plots that were either left untreated or had privet eliminated by mulching or hand-felling. Trapping was conducted four times each year in 2006 and 2007, and in the summer and fall in 2010.

Small Mammals

Rats and mice often go unnoticed in forests but several native species of small mammals play valuable roles in natural habitats. Small mammals are important in dispersing seeds of some plants and they serve as prey for a number of snakes, birds, and larger mammals. We live-trapped small mammals using aluminum box traps four times per year in 2006 and 2007, and trapped again in the summer and fall of 2010. Over the course of the study we captured 181 individuals that included 3 species of mice, 2 species of rats, and 1 species of shrew. Most of the small mammals captured were white-footed mice (*Peromyscus leucopus*).

During the first two years after the study was initiated, we found little difference among the treatments. However, in 2010 after the treatments had been in place for four years, we not only captured more small mammals, we also observed a noticeable trend of more small mammals in the felled treatment than in the untreated and mulched plots. Because small mammals are commonly associated with downed woody debris, it was not surprising that our capture rates were higher in the felled treatment. However, it was interesting that the increase in small mammal abundance did not occur until after the treatments had been in place for over 3 years. Although small mammals are usually not abundant in floodplain forests such as the ones in this study, felling the privet and leaving the stems seemed to result in the best habitat for small mammals.

continued on pg. 15

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Florida Exotic Pest Plant Council's 2011 List of Invasive Plant Species

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

- ▶ the adverse effects exotic pest plants have on Florida's biodiversity and native plant communities,
- ▶ the habitat losses in natural areas from exotic pest plant infestations,
- ▶ the impacts on endangered species via habitat loss and alteration,
- ▶ the need for pest-plant management,
- ▶ the socio-economic impacts of these plants (e.g., increased wildfires or flooding in certain areas),
- ▶ changes in the severity of different pest plant infestations over time,
- ▶ providing information to help managers set priorities for research and control programs.

CATEGORY I

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

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

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

FLEPPC List Definitions:

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

Native – a species whose natural range includes Florida.

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

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

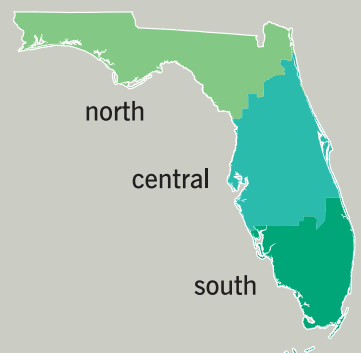
Abbreviations:

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

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

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

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



Changes to the 2011 List:

New Listings to Category I:

Deparia petersenii

(Japanese false spleenwort)
Documented in numerous near exotic-free ravines in the central panhandle, it is displacing native flora and likely insect populations because it forms extremely dense colonies. Documented in seven Florida counties.

Lumnitzera racemosa

(black mangrove)
This Asian mangrove has spread abundantly following plantings at Fairchild Tropical Botanical Garden in Miami-Dade County between 1966 and 1971. The species subsequently spread into mangrove forests at Fairchild and the adjacent Matheson Hammock Park, infesting 19 acres with stem densities exceeding that of native mangrove species. Looks very similar to the protected native white mangrove (*Laguncularia racemosa*).

Phymatosorus scolopendria

(serpent fern, wart fern)
This fern, native to tropical Asia, Africa, and Polynesia, has been documented naturalizing in three south Florida counties. It is invading rockland hammocks and forested wetlands where it displaces native understory species including endangered ferns.

New Listings to Category II:

Ardisia japonica (Japanese ardisia)

Ardisia japonica is a plant species from Japan. Thirteen populations have been located in San Felasco Hammock in Alachua County, two more at the Loblolly Nature Center in Gainesville, and another one containing 3,000 to 4,000 plants in Florida Caverns State Park in the Florida panhandle. All of the infestations are in undisturbed mature upland hardwood forest with healthy, diverse ground cover that is displaced as it spreads by underground rhizomes. Fruits collected from these populations produced viable seedlings.

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

CATEGORY II

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

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

²Many names are applied to this species in Florida because of a complicated taxonomic and nomenclatural history. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana*, *R. tweediana*, *R. caerulea*, and *R. simplex*.

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

Bruguiera gymnorhiza

(large-leaved mangrove)

This mangrove from the Old World tropics is established at the Kampong, a botanical garden in Miami-Dade County where it was planted in 1940. The leaves and propagules of this species bear a strong resemblance to the native red mangrove (*Rhizophora mangle*). In a 2008 survey it was found naturalized in mangrove forest on the property, where 86 individuals were observed and recruitment rates were higher than for native species. There is a strong chance that it will disperse to other nearby mangrove forests.

Cocos nucifera (coconut palm)

Coconut palm, ubiquitous along Florida's coastlines, is thought to be native to the Malay Peninsula or the South Pacific. This species has been found invading beach dune and coastal grassland communities in extreme south Florida and the Florida Keys. Plants form thick clusters and shed leaves that form dense layers on the ground, displacing native species. Impacted species include the federally threatened Garber's spurge (*Chamaesyce garberi*) in the Cape Sable area of Everglades National Park and nickerbean (*Caesalpinia bonduc*), the host plant for the endangered Miami Blue butterfly at Bahia Honda State Park.

Mikania micrantha

(mile-a-minute vine)

This vine of the American tropics is listed on the Federal Noxious Weed List because of invasiveness in other tropical regions. *M. micrantha* was first observed in Florida in 2008 in Miami-Dade County. It has since been observed at over two dozen sites throughout the Redland area of Miami-Dade County. It is primarily associated with agricultural sites, particularly container nurseries and tree farms, but has been found within the interiors of two rockland hammock fragments. It is a threat to other natural areas in Miami-Dade County, and poses a very high risk of dispersing to other counties.

Syzygium jambos

(Malabar plum, rose apple)

This species was downgraded from the Category II list in 2009 because of a lack of data in EDDMapS, herbaria, and observations of committee members. However, data compiled by FNAI shows 62 records in 9 counties in mesic and wet flatwoods, basin and floodplain wetlands. It has been reinstated as a Category II.

Category Changes

Jasminum sambac and *Solanum jamaicense* removed from Category II based on lack of data in natural areas. *Urena lobata* moved from Category II to Category I.

Use of the FLEPPC List

The FLEPPC List of Invasive Plant Species is not a regulatory list. Only those plants listed as Federal Noxious Weeds, Florida Noxious Weeds or in local ordinances are regulated by law. FLEPPC encourages use of the Invasive Species List for prioritizing and implementing management efforts in natural areas, for educating lay audiences about environmental issues, and for supporting voluntary invasive plant removal programs. For more information on using the FLEPPC List of Invasive Plant Species, see *Wildland Weeds* Summer 2002 issue (Vol. 5, No. 3), pp. 16-17, or <http://www.fleppc.org/list/list.htm>

NOTE: Not all exotic plants brought into Florida become pest plants in natural areas. The FLEPPC List of Invasive Plant Species represents only about 11% of more than 1,400 exotic species that have been introduced into Florida and have subsequently established outside of cultivation. Most escaped exotics usually present only minor problems in highly disturbed areas (such as roadsides). And there are other exotics cultivated in Florida that are “well-behaved” — that is, they don’t escape cultivation at all.



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Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Solanum torvum</i>	susumber, turkey berry	II	N, U	N, C, S
<i>Sphagneticola trilobata</i> (= <i>Wedelia trilobata</i>)	wedelia	II		N, C, S
<i>Stachytarpheta cayennensis</i> (= <i>S. urticifolia</i>)	nettle-leaf porterweed	II		S
<i>Syagrus romanzoffiana</i> (= <i>Arecastrum romanzoffianum</i>)	queen palm	II		C, S
<i>Syzygium jambos</i>	Malabar plum, rose-apple	II		N, C, S
<i>Talipariti tiliaceum</i> (= <i>Hibiscus tiliaceus</i>)	mahoe, sea hibiscus	II		C, S
<i>Terminalia catappa</i>	tropical-almond	II		C, S
<i>Terminalia muelleri</i>	Australian-almond	II		C, S
<i>Tradescantia spathacea</i> (= <i>Rhoeo spathacea</i> , <i>Rhoeo discolor</i>)	oyster plant	II		S
<i>Tribulus cistoides</i>	puncture vine, burr-nut	II		N, C, S
<i>Vitex trifolia</i>	simple-leaf chaste tree	II		C, S
<i>Washingtonia robusta</i>	Washington fan palm	II		C, S
<i>Wedelia</i> (see <i>Sphagneticola</i> above)				
<i>Wisteria sinensis</i>	Chinese wisteria	II		N, C
<i>Xanthosoma sagittifolium</i>	malanga, elephant ear	II		N, C, S

Citation example:

FLEPPC. 2011. List of Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: <http://www.fleppc.org/list/11list.htm> or *Wildland Weeds* Vol. 14(3-4):11-14. Summer/Fall 2011.

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FLEPPC Database – The Florida Exotic Pest Plant Database contains over 211,000 sight records of infestations of FLEPPC Category I and Category II species in Florida public lands and waters. 143 species are recorded. Nearly all of the records are from local, state, and federal parks and preserves; a few records document infestations in regularly disturbed public lands such as highways or utility rights-of-way. Natural area managers and other veteran observers of Florida’s natural landscapes submit these records, with many supported further by voucher specimens housed in local or regional herbaria for future reference and verification. New and updated observations can be submitted online at www.eddmaps.org/florida/. This database, along with other plant data resources such as the University of South Florida Atlas of Florida Vascular Plants at www.plantatlas.usf.edu, the Florida Natural Areas Inventory database at www.fnai.org, and The Institute for Regional Conservation Floristic Inventory of South Florida database at www.regionalconservation.org, provides important basic supporting information for the FLEPPC List of Invasive Plant Species.

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

Success?

The plots are no longer choked with privet but are they the desired future condition? The answer is mixed. The plant community on the plots is far from the desired forest condition. Two years after eliminating privet, there were three very distinct plant communities. The control plots are still dominated by privet and have low overall plant diversity. Removal plots are similar to each other, have much greater non-privet plant cover, and are more diverse. However, despite having similar levels of plant cover and species richness, they still have little similarity to the desired future forest. On the other hand, the bee community has responded much more quickly. After two years, the bee communities on desired and removal forests were almost the same. Butterflies have not responded so quickly, probably due to their more specific habitat needs. Bees are mostly generalists that use a wide variety of flowers for pollen and nectar. In contrast, butterfly larvae often have a relatively narrow range of host-plants, so butterfly communities on desired plots are still dissimilar to those on removal plots, but not nearly as much as the control plots. Neither treatment reduced small mammal abundance and small mammal populations increased on the felling treatment.

Butterflies, bees, mice and plants are important but so are humans. From the human perspective, privet removal has been a great success. On numerous tours through the plots we haven't met anyone who doesn't think privet-free forests are a vast improvement over privet-dominated forests. Just the fact that people can walk through the forests demonstrates success. However, some visitors that frequent the more remote plots are less desirable; feral hogs appear to approve of privet removal as well. It is not clear whether they root more in removal plots or if damage is just more apparent there, but we hope to find out.

Where to now?

It has been 6 years since the initial privet removal so it is time to remeasure the plots to see how the plant and animal communities are progressing. One thing we are keenly interested in is how long we can wait to retreat the privet that is reinvading the plots. We don't want the plots to revert to privet thickets again, but at present the privet is small (>50 cm) and widely scattered. We will also explore whether the overstory trees responded to removal with increased growth. Bird response to privet removal is another area to study. Anecdotal reports from birders suggest that privet removal has benefited birds, as well.

Beyond that, should we undertake active restoration? So far, the two methods of removing privet have resulted in very similar forests, as far as plants, bees, butterflies and beetles are concerned. If that trend is still true after the 6-year evaluation, then it would make sense to select one of the treatment plots at each location and initiate a more active restoration program. Whatever we decide, results thus far are clear: removing privet is good for the forest and has resulted in some unexpected and, for the most part, very welcome changes.



An Unexpected Outcome

A rare plant called yellow fumewort, *Corydalis flavula*, was discovered on plots where the invasive shrub, Chinese privet, was removed. It was discovered by Hugh and Carol Nourse, and confirmed by University of Georgia botanist Linda Chafin, at the State Botanical Garden of Georgia in a plot where a Gyrotrac mulching machine and a subsequent herbicide application were used to clear privet 5 years ago. Yellow fumewort is only known to occur in four other counties in Georgia. None are close to Clarke County where the new patch is located. Yellow fumewort is a small annual in the same family as bleeding heart. Individual plants are only 10-30 cm tall but they cover an area 10 by 30 meters. This is an exciting find that emphasizes the benefits of removing Chinese privet from riparian forests.

Further Reading

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CHAPTER UPDATES

NC-EPPC Update



The North Carolina EPPC Board has lots of exciting projects in the works. To improve communication among board members, a website was created by board member Maggie Porell that functions as a work space. Using the site the board is able to track action items, approve meeting minutes and collaborate on projects. For more information you can visit the site <https://sites.google.com/site/nceppc/> or contact Maggie Porell at mporell@tnc.org.

The NC-EPPC board is also working on a new website for public outreach. It will be linked through the SE-EPPC site, but will give our board the ability to update the site independently. A few features of the new site will include registration and payment for the annual meeting, a blog and link to the NC-EPPC Facebook page, resources and links, and a guide to invasives by geographic area.

The NC-EPPC annual meeting date has been moved from November to February 23-24, 2012 due to a scheduling conflict with the Southern Appalachian Man and the Biosphere (SAMAB) meeting, but will still take place in Asheville. The new date will give NC-EPPC the opportunity to engage more members in the area and will have the added advantage of being shortly before the 2nd annual North Carolina Invasive Plants Awareness Week, giving us the opportunity to get our members involved.

The NC Forest Service is hosting six free one-day workshops across the state for private landowners, focusing on the threat non-native invasive plants pose to their property and how agencies like Cooperative Extension and the Forest Service can advise landowners on these issues. Registrants were asked to list their three worst invasive plants, and the materials are geared toward addressing these species, as well as many others. The first two workshops were well-attended, with more than 150 participants at each.

NC-EPPC is co-sponsoring these sessions and publicizing our work with EDRR. NC-EPPC President Rick Iverson and board member Margaret Fields have given presentations on the topic. During the hands-on segment, we demonstrate how to use EDDMaps and answer participants' questions. The EDRR fact-sheets are posted on the NC-EPPC website so attendees can follow up later on their own. At the end of the day, participants receive a copy of both "Invasive Plants in Southern Forests" and "A Management Guide for Invasive Plants in Southern Forests," resources everyone should have!

Workshops continue around the state through May, 2012. Sign up at www.ncsu-feop.org/NNI/reg-form.html or from the NC-EPPC website at www.se-eppc.org/northcarolina/

Maggie Porell, Vice-President, mporell@tnc.org

FLEPPC, FISP & CISMAs



The Florida Exotic Pest Plant Council (FLEPPC) (<http://www.fleppc.org/>) has been around over 20 years and is focused on providing management information for invasive plants that threaten Florida's natural areas. FLEPPC provides this exchange of scientific and best management information in many ways, including our annual symposium, the FLEPPC website and list-serve, Wildland Weeds magazine and more. It is a great organization with a long tenure in Florida.

CISMAs (Cooperative Invasive Species Management Areas) are locally led partnerships focusing on invasive species management issues in specific areas of Florida (www.Florida-Invasives.org). To date, there are 18 CISMAs in Florida that fall under another statewide group, the Florida Invasive Species Partnership (FISP). FISP exists primarily to foster the development of CISMAs and to bridge efforts between different types of landowners (private, public conservation, right-of-way, etc). FISP/CISMAs also include all taxa of invasives species: plants, animals, pest/pathogens.

As a statewide organization, FLEPPC serves a large constituency, including FISP and CISMA participants. The FLEPPC listserv (<http://www.fleppc.org/listserver.htm>) is a great resource for any land manager. By sending an email with a question/comment/discussion to the list, you are reaching hundreds of natural area land managers, scientists, and extension agents throughout Florida with years and years (and years...) of experience to help you find your answer. This is the list-serve for the discussion of exotic pest plants in Florida including: impacts, biology, and management.

The CISMA list-serve has predominantly been used to announce monthly CISMA calls and to disseminate and discuss information that would assist CISMAs in their partnerships including grant information, private land incentive programs, updates on other CISMAs, FISP activities, and more. The CISMA list-serve is a valuable resource to learn more about locally led invasive species partnerships and activities (<http://www.floridainvasives.org/cismas.html>).

If in doubt about which list-serves to join, sign up for both! Many of us are involved in FLEPPC, FISP and our local CISMAs and welcome the exchange of ideas.

Join and stay active in FLEPPC (<http://www.fleppc.org/member.htm>) and get involved in your local CISMA (<http://www.floridainvasives.org/cismas.html>).

SAVE THE DATE! FLEPPC's 27th Annual Conference will be co-hosted with the Florida Wildlife Society on April 16-20 at the Ocala Hilton. Hope to see you there!

Kristina Serbesoff-King, The Nature Conservancy, Florida Invasive Species Partnership (FISP) Co-chair, Long time Florida Exotic Pest Plant Council (FLEPPC) supporter and member, Kserbesoff-king@TNC.org

SC-EPPC Invasive Plant Pest Species List 2011



The Invasive Plant Pest Species of South Carolina list was revised this year for the third time since 2004 when it was initiated by Dr. Larry Nelson of Clemson University and developed by the List Committee of the South Carolina Exotic Pest Plant Council. The title has been changed to the SC-EPPC Terrestrial Exotic Invasive Plant Species List to be consistent with the mission of SC-EPPC. The list has always included terrestrial species found in natural habitats but many of the listed plants are found in wetlands and standing water. Aquatic nuisance species (free-floating and submersed species) are not included because the Aquatic Invasive Species Taskforce, supported by the SC Department of Natural Resources (<http://www.dnr.sc.gov/invasiveweeds/ais.htm>), addresses aquatic invasive pest plants.

The review process for the 2011 list revision was similar to 2004 and 2008 with the additional step of using standardized ranking criteria. Development included reviews by professional and amateur botanists, ecologists, and resource managers. All comments were considered and a consensus approach was used. The SC-EPPC List Committee distributed the proposed list to 38 professional and amateur botanists, ecologists, biologists, agronomists, invasive species specialists, foresters, resource managers, horticulturalists, and vegetation managers representing the three major eco-regions of South Carolina (Mountains, Piedmont, and Coastal Plain) and asked them to recommend additions, deletions or changes to current species ranking. The committee compiled comments from the reviewers and established initial ranks for each species. Ranking criteria was adopted and developed using criteria from Tennessee (also used in other states including Massachusetts, California, Connecticut, and Virginia, as well as NatureServe.org) and each plant was evaluated and ranked. Criteria are objective, based on the invasive plants' effect on South Carolina's native plant communities, and on their distribution as documented in the Early Detection and Distribution Mapping System (EDDMapS) at www.eddmaps.org and in the S.C. Plant Atlas (<http://cricket.biol.sc.edu/acmoore/scplantatlas.html>) maintained by the University of South Carolina's A.C. Moore Herbarium and SC Department of Natural Resources' Heritage Trust Program. Professionals in adjacent states were consulted for species lacking information within South Carolina.

A new "Alert" category was added which replaces the former "Watch A" and "Watch B" categories. These are species for which more information is needed to determine their invasiveness in the state. Some may not yet occur in South Carolina but are found in nearby states. They have invasive characteristics such as rapid growth and high fruit/seed production and are known to be invasive in similar habitats to those found in South Carolina or are listed as a severe threat in adjacent states or pose substantial management difficulties where they occur. This category was added to help prevent new invasive plant introductions and to

assist in early detection and rapid response efforts. An "Emerging Threat" category was added to classify species established in South Carolina and known to be infesting natural areas, but for which management information is lacking; or for widespread species that may be managed without great difficulties. For consistency, nomenclature was taken from the Integrated Taxonomic Information System (ITIS) (<http://www.itis.gov/>) which is also used by Southeast EPPC and EDDMapS. For several recently changed scientific names, older names were retained in parentheses for ease of recognition.

The updated draft list was re-distributed to the same 38 reviewers for additional comments. The 2011 list was finalized in June 2011. For more information on the plant list and its development, visit the SC-EPPC home page at www.se-eppc.org/southcarolina/ and click on Invasive Plants. A PDF file of the brochure is available and printed copies will be available soon.

The SC-EPPC List Committee included Sudie Daves Thomas, Wildlife Biologist, Natural Resources Conservation Service; Lisa Lord, Land Stewardship Specialist, The Nature Conservancy; Bert Pittman, Botanist, SC Department of Natural Resources Heritage Trust Program; Allan Bridgman, Natural Resource Technician, SC Department of Natural Resources; and Kari Whitley, Scout Horticulture Consulting.



**Help protect *your* natural areas
from exotic pest plants – join
an Exotic Pest Plant Council in
your state!**

www.se-eppc.org



Since 2001, FLEPPC's Kathy Craddock Burks Education and Outreach Grant program has provided funding to organizations or individuals wishing to educate Floridians about non-native invasive plants and their impacts on Florida's native plant communities. A decade of operation has provided start-up money for more than 60 different projects, from the panhandle to the Keys. Every year, the education grant committee carefully considers all applications, looking for projects that creatively engage the public. In this issue of *Wildland Weeds*, we feature reports from four recent projects. Each is a unique program, but all share a common result: Florida residents—especially kids—began to notice the invasive plants in their surroundings. We hope they inspire you!

P.S. This November, watch the list-serve and website for the 2012 request for proposals!

—Jennifer Possley, Committee Chair

City of Sanibel Air Potato Exchange Day

By Holly Downing

Since the early 1980s, the City of Sanibel has been waging war against invasive exotic plants that threaten Sanibel's natural areas. In 1996, the City enacted legislation regulating eight invasive exotic plant species that were determined to be the "worst of the worst" invaders on Sanibel. Many of the names may be familiar to south Floridians—Melaleuca, Brazilian pepper, air potato, earleaf acacia, exotic inkberry, java plum, lead tree, and Mother-in-law's tongue. The city does not allow planting, transplanting or introduction of these eight species on Sanibel and developers are required to permanently remove them as a condition of all city development permits.

Although the war is far from over, the City and its conservation partners, the Sanibel-Captiva Conservation Foundation (SCCF) and the U. S. Fish and Wildlife Service (USFWS) at the J.N. "Ding" Darling National Wildlife Refuge, have won several battles. The last known melaleuca tree on Sanibel was cut down in September 1989. Brazilian pepper has been removed from all of Sanibel's conservation areas (nearly 70% of the island) and from most of the island's residential and commercial properties.

Building on the success and community support of these efforts, the City asked residents and visitors to join forces in a new fight against the FLEPPC Category I invasive exotic vine, air potato (*Dioscorea bulbifera*). The commercial and residential areas in the heart of the island are currently experiencing the worst infestations.

Thanks to a 2010 Kathy Craddock Burks Education and Outreach Grant from the Florida Exotic Pest Plant Council (FLEPPC), the City held its first annual "Air Potato Exchange Day" on Sunday, January

16, 2011. To spread the word about this new opportunity, the City established an information booth at the popular Sanibel Farmer's Market. The booth, staffed by members of the City's volunteer Vegetation Committee, included a 3-panel display, a variety of handouts (including the FLEPPC 2009 List of Invasive Plant Species), and live specimens of air potato vine and bulbils. A "Guess How Many Air Potatoes" contest was a great way to entice passers-by to check out the display and learn from the volunteers about air potato and other invasive exotic plants. Over the course of eight weeks, more than 140 people submitted their best guess with hopes of winning a 3-gallon native plant.

The City also advertised Air Potato Exchange Day through several articles in local newspapers, press releases posted on the City's website and sent to more than 7,000 email subscribers, and a "Wanted" poster displayed at more than 15 locations across the island. A YouTube video (<http://www.youtube.com/watch?v=EJwYjNQKoZY>) was posted to the City's website and Facebook page.

Air Potato Exchange Day was a thrilling success when more than 30 Sanibel residents brought in nearly 500 pounds of air potato bulbils. Participants bringing in at least 25 air potatoes were rewarded with a native plant of their choice. FLEPPC grant funds were used to purchase 3-gallon plants from the SCCF Native Plant Nursery. There were more than 10 native species to choose from, including wild coffee, elderberry, sweet acacia, and Everglades paurotis palm. Nursery manager Jenny Evans helped participants select the right plant for their landscape. A "grand prize"



15-gallon dahoon holly tree was awarded to the person bringing in the most (by weight) air potatoes. Additional prizes, courtesy of SCCF and the "Ding" Darling Wildlife Society, were awarded to several residents for noteworthy air potato specimens including the biggest, smallest, and most unusual air potatoes.

Following Air Potato Exchange Day, a final press release encouraged residents to help protect Sanibel's natural areas by removing air potato and other invasive exotic plants year-round and reminded folks to dispose of these invasive plants with their household trash (which goes to the county incinerator), not with their normal yard waste (which is recycled or sent to the landfill). View more information about air potato at <http://www.mysanibel.com/Departments/Natural-Resources/Vegetation-Information/Exotic-Vegetation/Air-Potato>.

Holly Downing, City of Sanibel Environmental Specialist, holly.downing@mysanibel.com, (239) 472-3700

Students Tackle Invasive Plants with Help of FLEPPC Grant by Jean Annucci

Invasive exotic plants are a growing dilemma for environmental managers throughout the United States. Here in Florida's warm, plant-friendly tropical climate, the challenge of controlling invasive plants can be overwhelming, with some invasive plants seeming to grow almost before your eyes. As part of their long-term strategy, stewardship managers at the Guana Tolomato Matanzas National Estuarine Research Reserve (GTM NERR) in St. Johns County are involving the next generation of environmentalists in a program designed to quash the spread of nuisance plants.

In 2010, the non-profit group "Friends of GTM Reserve" received a Kathy Craddock Burks Education Grant from the Florida Exotic Pest Plant Council (FLEPPC). The award enabled GTM NERR to bring students from the Jacksonville branch of the Student Conservation Association (SCA) to St. Johns County in order to eradicate invasive plants common to northeast Florida. GTM NERR's Stewardship Coordinator Forrest Penny says, "The FLEPPC grant to our Friends organization was invaluable this summer. With many organizations strapped for funds, the Friends used grant funds to help SCA transport their student crew to St. Johns County to give us a boost with our eradication program." He added that the grant also paid for the loppers that SCA members used in the field, as well as gloves and other important safety gear. The tools and supplies will be reused by GTM NERR volunteers throughout the year in other eradication projects.

Laboring for hours in the sun in a dense thicket of plants, fighting an onslaught of insects and occasional encounters with snakes is not the summer pastime a typical teenager would choose. SCA participants, however, were willing to volunteer for the job. Before beginning their campaign against invasive plants, the Jacksonville Community Crew of students took a short "101" course on natural Florida habitats, and learned how invasive plants can crowd out native plants upon which local wildlife depend for food and refuge. They learned how to identify plants that are a problem locally, the techniques used to eradicate specific plant species, and safety precautions to follow



SCA crew members use loppers and safety gear purchased with funds from a Florida Exotic Pest Plant Council grant.

while in the field. Then came days of hard work at several coastal locations where invasive plants were overtaking the natural environment. The result of their 2010 field work was six acres of coastal and estuarine habitat cleared of Brazilian pepper (*Schinus terebinthifolius*), Chinese tallow (*Sapium sebiferum*), air potato (*Dioscorea bulbifera*), asparagus "fern" (*Asparagus aethiopicus*), tuberous sword fern (*Nephrolepis cordifolia*), and arrowhead vine (*Syngonium podophyllum*).

The SCA project fit perfectly into the workplan of GTM NERR's Invasive Plant Eradication Task Force, coordinated by Park Specialist Gary Swenk. The task force targets invasive species found on public and private properties. Under Swenk's direction, the "Pepper Busters," as the volunteer-driven teams have become known, devote two days per week during the cooler months to cutting, treating, and disposing of invasive plants threatening to destroy fragile Florida coastal habitat. Of the SCA Community Crew of 12 students, Swenk says, "These kids were working in miserable summer weather. It was hot with no breeze, but the kids kept a good attitude and worked steadily. I would definitely work with an SCA crew again." The students' time in St. Johns County was not all work, however. Their project ended with a beach party near the GTM NERR Marine-land research station and a barbecue at the reserve's Environmental Education Center. At the barbecue, each student gave an oral presentation on what they learned through their GTM NERR training and eradication experience.

To learn about the work of the GTM NERR Invasive Plant Eradication Task Force or how to become involved as a "Pepper Buster," contact Gary Swenk or Emily Montgomery at 904-823-4500.

More about the Student Conservation Association

Putting students to work as park volunteers was an idea envisioned by Elizabeth Cushman in 1955 when she was a senior at Vassar College. She founded the SCA and initiated the first two student-run conservation projects in 1957. Today the non-profit program operates in 16 major cities nationwide. Program partners include the National Park Service, The Nature Conservancy, Audubon Society, U.S. Fish and Wildlife Service, and many other state and national conservation-oriented organizations.

Students from communities with an SCA program volunteer to become members of an SCA Community Crew. In some areas, SCA offers a Conservation Leadership Corps program that involves students working on weekends during the school year. In the program, teens learn about the local environment and complete site restoration and trail maintenance projects in area national, regional, and state parks. Students earn a small stipend for their efforts, though the value of their work goes far beyond the small amount they receive.

Most SCA crew members become life-long conservationists, with 70 percent of SCA alumni remaining active as adults in jobs or volunteer activities related to the environment. SCA reports that 12 percent of current National Park Service employees were once enrolled in their program. In the 50-plus years of SCA's existence, more than 50,000 members have provided service valued at over a half-billion dollars. SCA enrollees provide more than two million hours of service annually to natural and cultural sites throughout all 50 states. For more information about the Student Conservation Association, explore their website at www.thesca.org, or contact the Florida program at 904-354-7799.

“Do Florida a Favor – Trash the Air potato!”

By Marybeth Soderstrom, Teen Program Coordinator, Camp Fire USA

During the summer of 2010, a dedicated cadre of almost 100 teen volunteers engaged in service-learning projects throughout Florida as part of Camp Fire USA's Youth Volunteer Corps (YVC). The program was funded by a Kathy Craddock Burks education grant from the Florida Exotic Pest Plant Council, with additional support from the United Way of Central Florida. The teens completed a total of 2,226 community service-learning hours; approximately 75% of that time was spent removing FLEPPC Category I invasive exotic plants like air potato and Brazilian pepper. After completing so much time in the field, the teens shared their knowledge with children at the Charlotte Harbor Nature Festival through a craft and games.

One of the YVC's continued objectives is to bring a strong environmental education and conservation stewardship component to service-learning. YVC is committed to getting 6th–12th graders outdoors to enhance their appreciation for the environment while learning how to protect natural Florida. Through their time spent in the field working with invasive plants, the teens gained a deeper understanding of environmental issues. Even on non-service based outings, it was common to hear “I see air potato!” from the back of the van as we passed it on the roadside. There was a sense of pride that they knew about “real” Florida and the dangers of invasive plants.

The Youth Volunteer Corps is a place for teens to learn about themselves and their community. While it is sometimes challenging for them to think beyond their social life, continued exposure

to the outdoors empowers them to gain a true understanding of the impact that they and others have played in the environment, be it negative or positive. YVC teens become better stewards of the environment and learn to see how their day-to-day choices can affect the environment in a substantial way.

Jamie, 16, writes about the summer of 2010:

This summer I learned about exotic plants and how to remove them. Our quote this year was “2,010 in 2010.” That meant that the teens in Camp Fire were going to spend 2,010 service hours removing as many invasive exotic plants as they could during the summer of 2010. I believe I removed about six or seven different kinds. The most popular one was air potato. It is harmful to the plants because it suffocates them and kills the plants native to Florida. Camp Fire USA has a fun, educational atmosphere and I enjoy volunteering with them.

Caleb, 15, writes:

I went to Charlotte Harbor Nature Festival with Camp Fire USA to inform the community about air potato, an invasive exotic plant. It surprised me when so many visitors at said “That’s what’s growing in my back yard!” We played Hot Potato with air potatoes so the kids could learn what they looked like. I had a lot of fun playing with them and making a craft with the kids that said, “Do Florida a favor and trash the air potato.” I found the whole event very educational and incurable fun.

To learn more about Camp Fire USA or the Youth Volunteer Corps, please visit www.campfireusa-sunshine.org.

INVADERS! Traveling Trunks By Melissa Cain Nell, Manatee County Natural Resources Department

For an increasing number of schools, field trips to local parks and preserves are difficult to fund and schedule. Yet teachers still recognize the importance of teaching students about Florida's environment and are always looking for ways to incorporate this material into their curriculum. So how can teachers bring nature into the classroom? Manatee County's Natural Resources Department has developed a “traveling trunk” program in order to give teachers and students an opportunity to experience nature within the classroom using an interdisciplinary, hands-on approach. The idea behind the traveling trunk is to create a “nature in a box” experience, where students will be exposed to a diverse array of activities

and materials that follow and support a central theme. Teachers and other educators can check out the trunks for free from the Natural Resources Department and keep them for up to three weeks for use in the classroom.

FLEPPC's Kathy Craddock Burks Education Grant kindly funded two brand new traveling trunks packed with materials about Florida's non-native invasive species. The trunks, titled “INVADERS!,” were designed to help students better understand Florida's invasive species and the negative effects they have on our state's native creatures and habitats. Each trunk, one for K-5 and one for 6-12, also includes a detailed teacher's guide filled with lesson plans which utilize the trunks'



materials. The lesson plans and listing of trunk contents are available online at the FLEPPC website. The Natural Resources Department would like to thank FLEPPC for the grant award which has provided a new and unique way to educate others about Florida's invasive species problems.

Manatee County's “INVADERS!” traveling trunks include lesson plans (all online at www.fleppc.org/publications.htm), posters, DVDs, board games, mounted species specimens, plant guides, plant presses, brochures, identification flash cards, and other items designed to aid in learning about invasive species. Photo by Melissa Cain Nell, Manatee County Natural Resources Department, melissa.nell@mymanatee.org



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Participating organizations:

The Aquatic Nuisance Species Task Force
The Association of Fish and Wildlife Agencies
The Federal Interagency Committee for the Management of Noxious and Exotic Weeds
The Great Lakes Commission
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SE-EPPC Update SE-EPPC Hires Invasive Species Specialist

An Invasive Species Specialist has been hired by SE-EPPC after funding was granted by the USDA, Forest Service. Mr. Kevin Willis began working in June on a project to coordinate regional efforts to list species, publicize weed alerts, and contribute to the Early Detection and Distribution Mapping System (EDDMapS). The project will also examine the potential for Cooperative Invasive Species Management Areas across the region.

Kevin reports: The initial period has consisted primarily of orientation and networking—establishing contacts and becoming more familiar with the Council's chapters and people. Preliminary work involved organizing a timeline for milestones and project deliverables, and reviewing species lists and protocols. Communications from CISMAs—experiences and recommendations—were also a focal point. Visits to members in several states, and various phone and email conversations, helped refine project objectives and generate ideas. The ready cooperation that has been offered underscores the value of SE-EPPC's extensive scope.

Going forward, the general review of listing criteria, regulations, and opportunities—both technical and programmatic—will continue through February 2012. I will be contacting members and stakeholders with increasing frequency through the coming

fall and winter. Draft reports will follow in March and April, 2012. The final reports, scheduled for September 30, 2012, will incorporate the draft responses and comments offered in the intervening weeks. The final deliverables will present a detailed comparison of species and listing methodologies across chapters and public agencies in the southeast, and include documented protocols for: 1) expanding EDDMapS usage, and 2) publicizing weed alerts and lists. The report will also address regional CISMA activity and potential.

The extent and quality of SE-EPPC's resources are the biggest parts of our success. We are all, of course, busy with our respective projects and areas. The focus of the Specialist is to provide a level of coordination that can help harness those far-flung energies for the concerted good of southeastern invasive species management. Special thanks are due to the many people who have already been helpful and generous with their time in support of this effort. Many more people will be needed in the near future so—Thank you, in advance, to all of you!

Any questions or comments can be directed to: Kevin Willis, Plant Ecologist—Arnold Air Force Base, TN, Invasive Species Specialist—SE-EPPC, kwillis_mte@yahoo.com

SE-EPPC Award Winners – 2011

Dr. John W. Taylor was presented with an “Award of Excellence” at the 2011 SE-EPPC Conference in Lexington, Kentucky. The award was given in recognition of his long-time efforts and support of invasive species control programs across the South.

The award was presented by his friend and colleague, Dave Moorhead, Ph.D., Professor of Silviculture & Co-Director of the Center for Invasive Species & Ecosystem Health at the Warnell School of Forestry & Natural Resources, University of Georgia.

Dr. Taylor is an entomologist and Integrated Pest Management Specialist with the USDA Forest Service, Southern Region, State & Private Forestry, Forest Health Protection, in Atlanta, Georgia, a position he has held for 35 years. Prior to that, he was an active duty military entomologist in the US Army. He retired from the US Army Reserve in 1996 with the rank of Colonel after more than 30 years of military service.

Dr. Taylor has worked primarily evaluating promising strategies for providing more effective management of insects, diseases, and non-native plants that impact the forest resources of the South. Today his primary focus is the coordination of the non-native plant management programs for the 13 states in the USDA-FS Southern Region. John is the author of more than 40 publications related to the environmental fate of pesticides, invasive plant control, and pesticide safety. He has given more than 100 presentations related to the same topics.

John earned a BS in forest management (1966), a M.S. (1968) and Ph.D. (1971) in Forest Entomology at the University of Georgia.

Mr. William N. Kline was presented with an “Award of Excellence” at the 2011 SE-EPPC Conference in Lexington, Kentucky. Bill was instrumental in getting the Florida Exotic Pest Plant Council started in the mid-1980s. He has contributed ever since



in key positions involving education, training, and developing tools for invasive weed control. Bill was one of the inventors of the low-volume herbicide basal treatments used on so many key species in Florida and other areas of the country. In recent years he has been the FLEPPC and SE-EPPC Industry Liaison.

Bill worked as a field scientist for Dow AgroSciences for 30 years. He contributed to the development of new products for the Integrated Vegetation Management (IVM) and Range and Pasture markets, and refined herbicide application methods and species control methods. Prior to his work at Dow, Bill was a Forest Nursery manager for Champion International. He earned a B.S. and a M.S. in forestry from the University of Georgia.

Bill's award was presented by Jimmie Cobb, AL-IPC President, and Forestry & IVM Sales Specialist, Dow AgroSciences. Bill is an avid ham radio operator and his most emphatic request every year is that annual EPPC meetings not be scheduled during his annual ham radio club gathering. We do our best to accommodate Bill—he's a good friend and colleague.

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