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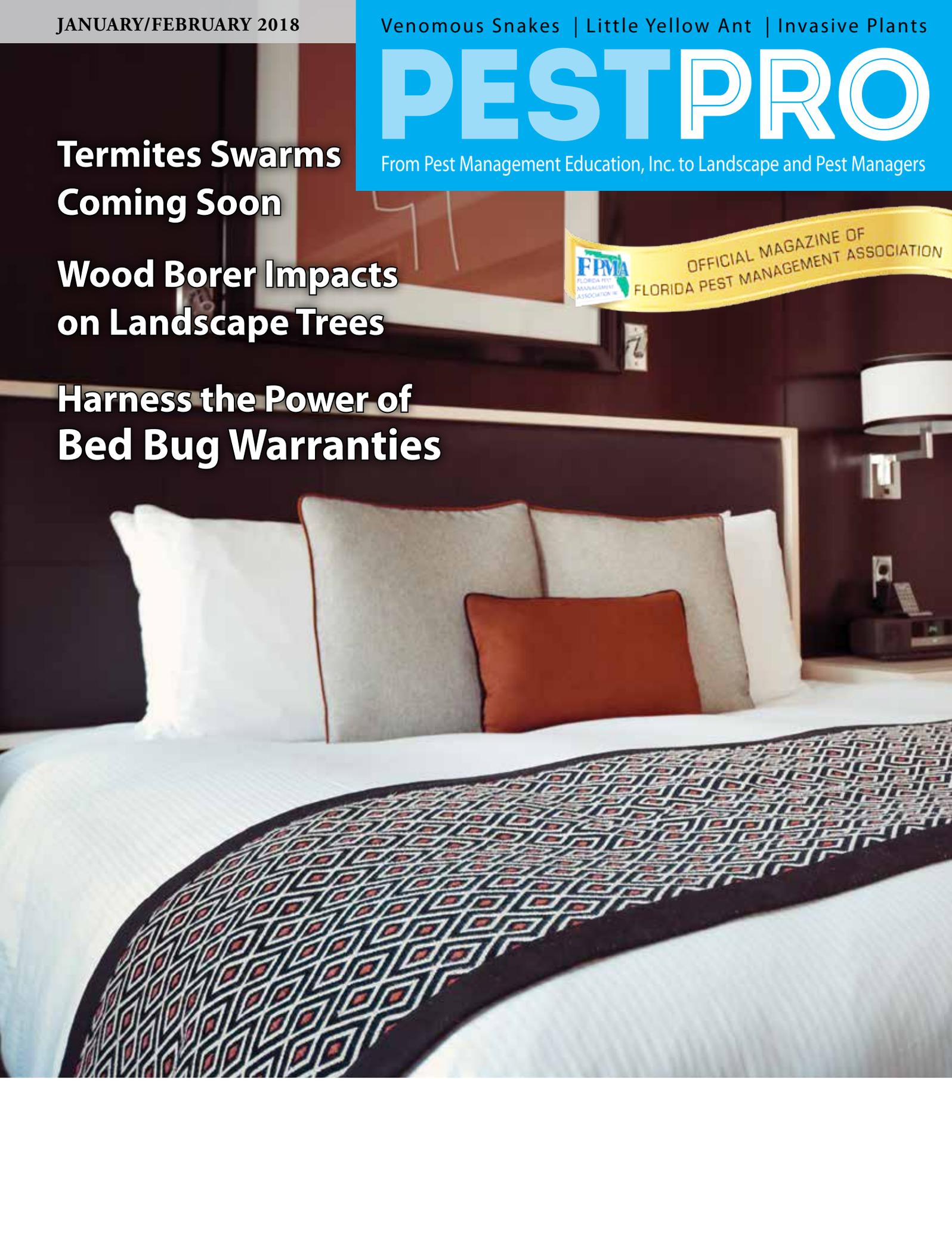
**Termites Swarms
Coming Soon**

**Wood Borer Impacts
on Landscape Trees**

**Harness the Power of
Bed Bug Warranties**



OFFICIAL MAGAZINE OF
FLORIDA PEST MANAGEMENT ASSOCIATION



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Managing Director

Philip Koehler (352) 392-2484
pgk@ufl.edu

Managing Editor

Roberto Pereira (352) 392-2485
rpereira@ufl.edu

Production Editor

Jane Medley (352) 871-1809
medleyuf@gmail.com

Advertising Manager

Sandra Krempasky (904) 679-5615
ads@pestpromagazine.com

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FOR ADVERTISING information contact our
advertising manager, Sandra Krempasky, at (904) 679-
5615, or by email at ads@pestpromagazine.com.

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CONTACT SANDRA FOR 2018 MEDIA KIT
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ON THE COVER

Did you know that two busy bedbugs in a
hotel can become 17,000 after 10 weeks?
Double that for a busy pair in a home.
PestPro experts present an innovative plan to
keep the bed bugs from biting, on page 8.

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A Fond Farewell

Message from the President of FPMA

Anne-Marie Tulp

AS MY YEAR as the 70th president (and third female!) of the Florida Pest Management Association comes to a close, I look back with gratitude and appreciation for the opportunity to serve. I am proud of the many hardworking volunteers of this association who I can now fondly say are my friends. I have asked a lot of many of you, and when some of my ideas seemed like nothing more than a pipe dream you helped me make it come to life.

But it is not just the volunteers who make this association strong. Leslie Herren is the glue that holds it all together. She came on staff a short 18 months ago and during that time turned a homeless, short staffed, chaotic operation into a well run machine. Her tireless dedication, take-the-bull-by-the-horns energy, and ability to see the big picture has made FPMA a force to be reckoned with today. She has been my left hand — yes, I am a south paw — every day.

We have gone toe-to-toe when we disagreed and laughed harder than I can tell you on some of our weekly Skype calls when things were hitting the fan. Leslie helped me pull off the *PestPro* magazine partnership, all of our 2017 events, member-only educational webinars, and the introduction of the very first UF Field Day and Behind the Scenes Tour. She and I endured losing two-thirds of our staff in

2017, the excitement of hiring Leslie's newest assistant, Melissa Tyler, this fall, and bringing Stacey Miller on as our event planner for Expo 2018. Although I will remain on the Executive Committee for one additional year as immediate past president, I will so miss my weekly interactions with Leslie. It was because of her that I was able to accomplish my goals.

When planning the 2018 Expo, my vision was to make it a "wow." I wanted to be sure that attendees were getting new sessions, new speakers, new everything. What I got were friends in the industry from all over the United States who, when asked if they would attend and speak at one of the business sessions, never hesitated and quickly said "yes."

And so I must personally thank: Joe Kucik, Brad Leahy, Dan Gordon, Cleveland Dixon, and Dr. Austin Frishman for making the time to come share their wisdom with us. I have personally learned so much from them over the years, and I know that by attending their sessions you have as well. A big thank you also goes out to Dr. Phil Koehler, Dr. Roberto Pereira, and the UF students who never disappoint in their refreshing, interactive and entertaining CEU sessions.

As many of you may have heard, and as my last hurrah, our team is working diligently to provide FPMA members, both PMPs and allied, with the ability to offer affordable health insurance to their employees. We recently sent out a survey to all members to get a feel for their interest. In addition, we had a presence in both the exhibit hall and at the annual business meeting at Expo, answering questions and explaining the benefits program.

The survey results showed us that the majority of respondents were very interested in exploring this member-only benefit. Therefore, as I have done with pretty much everything in the past year, I have put this project on a fast track, with the intent to go live by this summer. Your input as members was essential in making this decision to move forward.

And so, this is it. I thank you all again for your support, dedication, and mostly for your friendship. I am confident that I am leaving you in good hands with Steve Lum as our new FPMA president as well as the entire board and executive committee. And of course, Leslie. **PP**

— Anne-Marie Tulp,
President, FPMA

BUSINESS AND OPERATIONS

EXPO

FLORIDA PEST MANAGEMENT ASSOCIATION

JANUARY 11-13, 2018

Hilton Orlando Lake Buena Vista
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A New Year for the Pest Management Industry

THE NEW YEAR looks bright for the pest management industry. Businesses are booming as more and more potential customers find that they do not have the knowledge or products for pest control. Many people start out thinking that pest control is a do-it-yourself job. It is not. People are finding it is scary to do pest control on their own and are reaching out to professionals to solve their pest problems for them. Let's take a look at some of the situations that can occur for a do-it-yourself pest controller.

THOSE WILY PESTS OFTEN DEFY DO-IT-YOURSELF ATTEMPTS

Almost every homeowner in the South has fire ants. The owner goes to a home improvement store and is told by a competent salesperson that fire ant bait is the way to get rid of them. The homeowner purchases a pound bag of fire ant bait. He/she applies a tablespoon or so on about five fire ant mounds. Now the homeowner has a problem. The leftover bait in the pound bag (almost all the amount purchased) is placed in the garage. The bag is probably not closed and is open for Carolina wrens to eat, or for cats to spill on the floor. Even if the bag is sealed, the bait inside has a lot of soybean oil on the granules. The oil goes rancid in a short time, even if the bait is placed in a freezer. So the next time fire ant mounds appear in the yard, the bait does not work. Ants do not eat rancid bait. The other option is that the homeowner decides to throw away the leftover bait. That bait should not be put in the garbage for waste collection. Maybe they just pour the bait on the ground in a pile for wild animals or other people's pets to eat. What is the solution? Use a pest management professional for the job.

Another common situation is for peridomestic cockroach control. Again the homeowner goes to a home improvement store and buys 8 ounces of pyrethroid spray concentrate and a pressurized sprayer. The homeowner then mixes up



maybe 1 ounce of concentrate in a gallon of water. The spray is put on the soil and the exterior walls of the house. The homeowner does not know that the insecticide should not be applied to sides of and eaves of buildings above impervious surfaces, like patios, sidewalks and driveways. So when it rains, the application goes into the storm drains, causing death of aquatic organisms. The leftover spray solution is placed in the garage to be thrown away later. Most homeowner surveys have shown that much of the leftover spray solution and pesticide concentrate is poured in a sink or commode and flushed down the drain. What a great way to pollute our water resources. What is the solution? Use a pest management professional for the job.

Most homeowners are scared of termites damaging their house. Only about 50 percent of homeowners have a termite contract with a pest management professional. The rest think it is a do-it-yourself job or figure termites will stay away from their house. The do-it-yourselfer goes to the home improvement store and can't find anything that says termite control. So they buy 8 ounces of cockroach spray and a compressed air sprayer. They go around the house with their sprayer and spray the soil surface with the spray. Later, termites get into the house and they pay for a big loss. What is the solution? Use a pest management professional for the job. Homeowners don't have the equipment or experience to do termite control on their own.

Another scary pest is the bed bug. Nobody wants bed bugs in their bed. So the homeowner goes to a department store and

buys a mattress encasement. The mattress encasement does not kill bed bugs. It just makes it easier to see bed bugs. So the unsuspecting homeowner now sees how many bed bugs are actually running around their bedroom. So the situation worsens, like one homeowner's DIY solution in North Carolina. The homeowner went to a home improvement store and bought lawn and garden spray. He then sprayed down the mattress with the lawn and garden product. At the same time he set off foggers in the bedroom. The wife was

still being bitten by bed bugs, so he did the applications again. Next, the wife spread insecticide on her skin and dipped her hair in insecticide, covering her hair with a shower cap before going to bed. Several days later she died as a result of bed bugs and inappropriate treatments by the homeowner. What is the solution? Use a pest management professional to do the job.

2018: A NEW YEAR DAWNS

These are just some of the reasons the pest management business will boom in the coming year. People need your experience and expertise to control all sorts of pests around their homes, condos and apartments. Never underestimate the importance of this industry in protecting people and their environment from both the pests and pesticides used to control pests.

This is our third anniversary of *PestPro* magazine. We started publishing it to provide needed education for the pest management industry. We send the magazine to all pest management professionals in Florida and some in other states and countries. We are proud of our accomplishments.

This is also our first anniversary of publishing *PestPro* is the official magazine of the Florida Pest Management Association. FPMA has made major contributions to ensure the success of the magazine, and we are proud of working together with them to help educate all pest managers in Florida. **PP**

— Dr. Philip Koehler,
Managing Director, *PestPro*



Ready to take your bed bug service to the next level? Use the latest research-based tools and techniques, provide a warranty, and give your customers a good night's sleep.

Bed Bug Prevention Contracts *and* Warranties

Philip Koehler and Roberto Pereira

PEST MANAGEMENT professionals provide bed bug service in many ways. The usual service is designed to control an established infestation, and that service is often provided with almost no guarantee to the customer.

The reluctance to provide a written warranty is due to a simple fact: When bed bugs appear in the room or structure after treatment, we cannot know for sure whether that was due to a treatment failure or due to a new introduction of bed bugs from another location. Therefore, warranties are rarely provided for bed bug work.

Customers often prefer to use a company that not only controls bed bugs, but will guarantee that bed bugs cannot get established or reestablished as an active infestation. A model for a company would be to provide two different services: a bed bug *elimination* service with no warranty, and a bed bug *prevention* service with a warranty. Each service would utilize different methodologies and could be invoiced separately or together as a total package.



The idea is to have a system that prevents bed bug infestations from occurring. This type of service could be provided to people who don't have bed bugs and don't want to get bed bugs, or who have had a treatment and don't want to get them back again. So this service should have a reasonable expectation that it will prevent bed bugs from getting established in the structure.

No company can guarantee that bed bugs will not be introduced into a structure. It is impossible to prevent the movement of bed bugs from one place to another. However, it may be possible to prevent an introduction of bed bugs from becoming an infestation with thousands of bugs.

Termite Contracts Provide a Guide

Bed bug prevention and termite prevention are very similar in concept. Subterranean termite colonies are in the soil, and termiticides are used — usually around the perimeter of the building — to prevent their entry and damage to buildings. Bed bug harborages are around beds and other places where people sleep. Bed bug prevention tools intercept bed bugs as they move from harborages to people.

Bed bug prevention warranties could be structured similarly to termite contracts that warrant against termite damage to a structure for a period of time. For termites, a contract is usually issued for five years and stipulates that the contract be renewed annually, after inspection and other necessary actions. Bed bug contracts could be similarly structured to prevent bed bug infestation for two years following installation of prevention tools, and stipulate that the contract be renewed every three to six months, after inspection and other necessary actions.



Mattress encasement



Active mattress liner



Interceptor trap



Dust treatment

Bed Bug Prevention Tools and Tips

THE KEY to providing a prevention warranty is to implement research-based tools and techniques that are proven to prevent establishment or reestablishment of a bed bug infestation for a certain time. Staying on top of new techniques and tools is important for any pest management company.

A warranty could be offered to customers for a two-year period by using a combination of several tools including mattress encasements, active mattress liners, bed bug interceptor traps, application of dusts to bed bug harborages, and other insect control techniques and tools.

Some tools can only prevent infestations, but should not be considered the primary tools to eliminate an active infestation. Treatments to eliminate active bed bug infestations are a separate type of treatment and can be used/charged independently of the prevention contract.

The Main Tools for Bed Bug Prevention

Prevention should be implemented within a month of eliminating bed bugs, before, or after an introduction. Bed bug treatment failures are usually seen 8 to ten weeks after bed bug treatments.

The main prevention tools available currently are mattress encasements, mattress liners treated with permethrin, interceptor traps, dust treatments (with or without pesticide active ingredient), and some residual

pesticides. All prevention tools are helpful and can be used simultaneously and integrated into an effective prevention program. As new tools and methods are developed, pest management companies should incorporate them to improve their bed bug prevention system.

Mattress encasements do not kill bed bugs. They prevent bed bugs from using the mattress and box springs as a harborage. Mattress encasements allow an easier inspection for the presence of bed bugs and protect the bed from bed bug stains. They prevent bed bugs from accessing the interior of the box spring, a favored and hard-to-treat harborage for bed bugs. By the way, they also prevent mattresses from being stained by bodily fluids — a side benefit of using these products.

Active mattress liners are pretreated with permethrin or other insecticide and are designed to kill bed bugs when they move from areas where they are introduced into a structure to feed on a sleeping host. Bed bugs do not fly, so they have to crawl across surfaces. Bed bugs usually die within 60–90 minutes after contacting the insecticide-treated mesh. Pyrethroid-resistant bed bugs that contact the surface have been observed to be unable to feed, therefore, they cannot produce eggs.

Mattress liners are not used to control active infestations, and they come with a two-year longevity. So, similar to termite

service agreements, a bed bug prevention contract should be renewed every three to six months when inspections and other treatments are done, and the contract could be reissued at two years, when liners are replaced.

Interceptor traps capture crawling bed bugs. They are usually pitfall-type traps that surround the legs of a bed or furniture. As bed bugs are attracted to a sleeping host on the bed or furniture, they crawl up the sides of the trap and fall into it. The interior pitfall of the trap has slippery sides, so the bed bug cannot leave the trap and is captured.

These traps can also be placed around a room to capture bed bugs as they move from harborage to host and back. The pitfall area of interceptor traps needs to be maintained free of dust and debris. Therefore, traps need service, and that is another reason for periodic visits to the structures under warranty. The pest management company must certify that all preventive tools are in place and continue to be functional.

Dust treatments can eliminate harborages for bed bugs. Dusts should be applied with a high-quality duster like the Technicide Exacticide duster. Silica gel/diatomaceous earth can be used to dust common bed bug harborage areas. These dusts absorb/



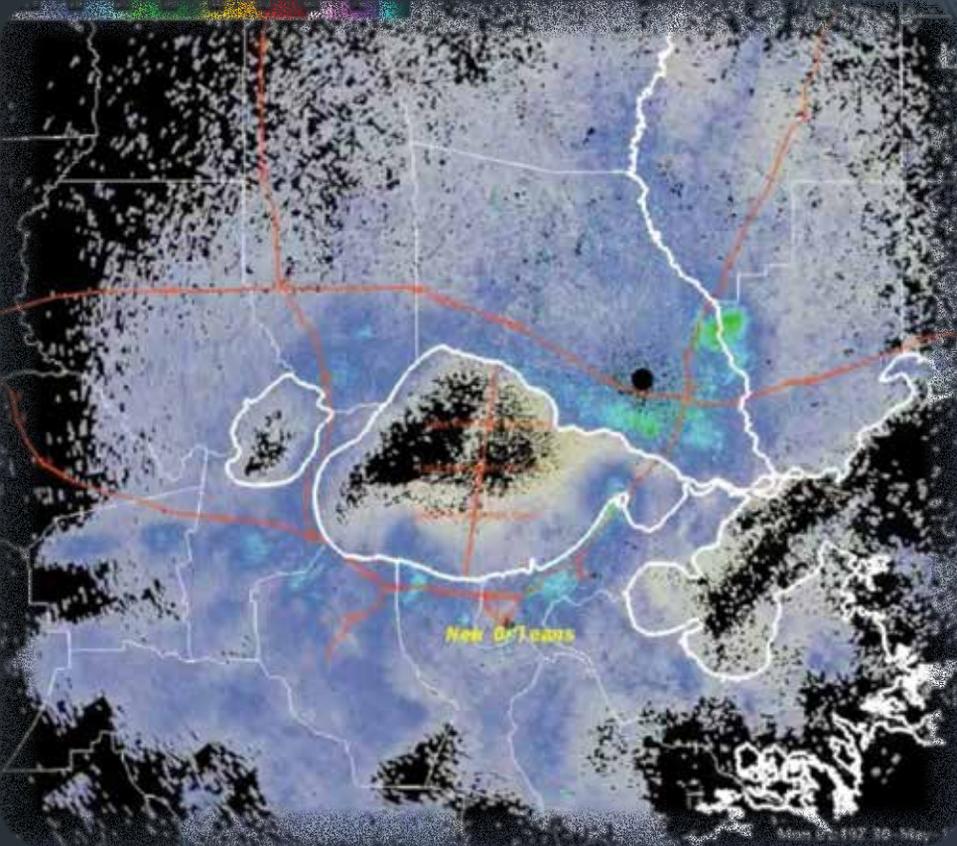
Bed Bug Biology

Bed bugs are nest parasites that hide/harbor near areas where people sleep. They leave those harborages to feed on sleeping hosts, then they return to the harborages to digest their blood meal.

When hungry, bed bugs return to the sleeping person to feed again. Bed bug prevention captures and/or kills bed bugs as they move from harborage to sleeping people and back.

Just one pair of bed bugs introduced into a room can become 35,000 within 10 weeks if not controlled. Daily feeding and long feeding times produce the highest populations. Weekly feeding and short feeding times limit population growth. Prevention of feeding eliminates bed bugs.





A huge cloud of termites was detected by National Weather Service Doppler radar over New Orleans on May 30, 2016.

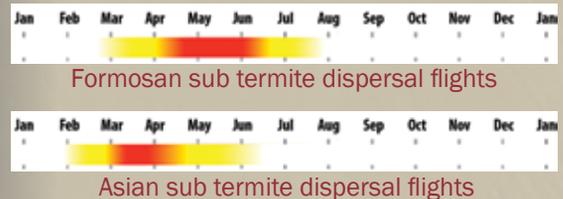
In 2017, hundreds of termite samples were provided by the public to the termite team at the Ft. Lauderdale Research and Education Center. These samples help the team understand these invasive pests. To provide termite samples, please visit <http://flrec.ifas.ufl.edu/termites-in-florida/>.

Swarming Season is Coming

For Formosan and Asian Sub Termites

Thomas Chouvenec

Termites are cryptic insects, and it can be difficult to detect a colony. The only time of year termites can be found easily is during the dispersal flight season's swarming events.



OVER the past few years, my colleagues and I at the UF/IFAS Ft. Lauderdale Research and Education Center took the time to carefully monitor dispersal flight events of two of the most damaging termite species in South Florida. The Formosan subterranean termite, *Coptotermes formosanus*, and the Asian subterranean termite, *Coptotermes gestroi*, are formidable foes and are increasingly problematic in our urban environment, destroying wood structures and damaging valuable trees.

Reading the Swarms

One of the main ways to detect the presence of termites in a neighborhood is by the swarms of alates, or winged termites, during

the termite reproductive season. Using cues from the environment, termite colonies can synchronize their swarms, resulting in massive events where it almost feels as if it is snowing termites. A major swarm in March 2015 in Ft. Lauderdale of the Asian subterranean termites was so big that it was estimated that almost 1 billion termites flew in a single night, and a gigantic termite cloud was detected by the local Doppler radar.

If a homeowner finds a few subterranean termite alates around his or her house, it does not necessarily mean that there is a termite infestation inside the structure but that mature colonies are nearby — within a block — and that the structure is therefore in an area at risk of infestation. However, if hundreds or thousands of alates swarm

inside the house, this means that there is a termite treatment job to do as soon as possible.

For homeowners, keeping an eye on swarming events in the neighborhood can be proactive, in order to prepare for a possibility of infestation. For the industry, being on the lookout during swarming season is a good clue to discover new areas where a subterranean termite species could be newly established and respond to the problem.

Termite Research Results

In our recent study, my colleagues and I were able to precisely detect the swarming events and the conditions promoting such flights by using termite traps over three full seasons.

Continued on Page 15

HOTEL BED BUG GUIDE

CHECK ALL FURNITURE

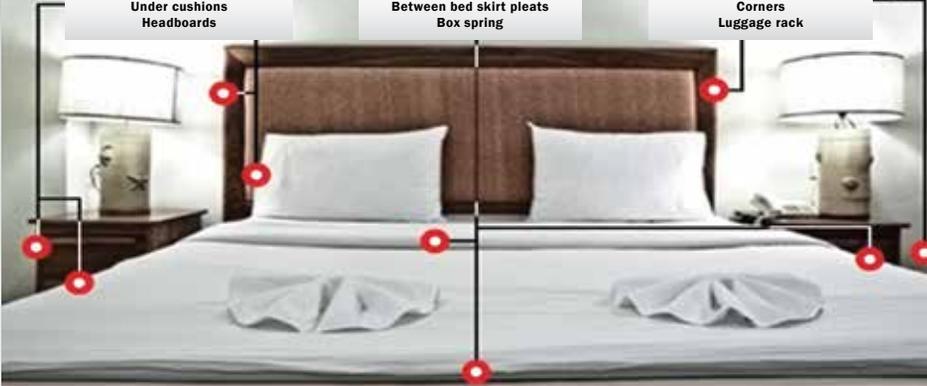
Dresser drawers
Beneath pillows
Under cushions
Headboards

INSPECT THE BED

Between mattress
Mattress cover
Between bed skirt pleats
Box spring

USING FLASHLIGHT, CHECK

Baseboards
Ceilings
Corners
Luggage rack



Bed Bug Warranties, continued from Page 10

3. At least two types of agreements are possible:
 - a. Retreatment-only service agreement/warranty covering only the room or structure where prevention tools were placed, and stating that the pest management company will retreat but not pay for any potential damage.
 - b. Retreatment and damage service agreement/warranty stating that the company will treat any bed bug infestation and pay for any new bed bug damage. Medical problems and costs should probably be excluded!
4. Some details on what is or is not covered, or considered bed bug damage may be necessary on these contracts, so consultations with lawyers is certainly important before such contracts are offered to consumers.

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Tips on Providing the Right Bed Bug Service/Warranty Agreement

Communicate, communicate, communicate. Sit down with your customer and explain the difference between treatments to eliminate an infestation and a bed bug prevention program. Write out all the items that might confuse the customer. Think of all the questions they will ask and make sure they understand: a) the treatment invoice for eliminating the infestation, and b) the contract/warranty for bed bug prevention. Go over exactly what the company is going to do and explain in detail the service agreement / warranty for the prevention program.

Have the customer show you where the problems are; explain the history of the infestation, and discuss the problems they have encountered. Hoarders may have an impossible situation for either bed bug elimination or prevention. Tell them how they can help keep bed bugs out of the home, and do not be afraid to walk away from problematic accounts!

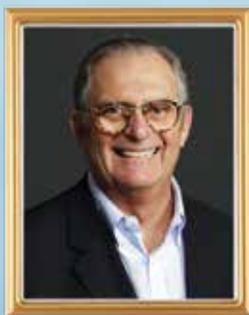
Get all the appropriate paperwork. A diagram, blueprint or building plans and description of the structure to be treated should include the following: the address or location of the structure, approximate measurements of the structure, areas of known bed bug activity, areas to be treated, and a label of any pesticide used.

Continued on Page 24

Name: Norman Goldenberg
Hometown: Bridgeport, Connecticut
Where you live now: Miami Beach
About your company: Namron Business Associates, Inc., is a consulting company I formed after retiring from Terminix International in 2013. (Not genius, but Namron is Norman spelled backward). Subsequent to selling my businesses in Miami and West Palm Beach in 1987 to Waste Management, they sold all of their acquired pest and lawn businesses to ServiceMaster, which owned Terminix. I helped Waste Management buy almost \$200 million dollars in pest and lawn businesses over a three-year period. I became senior vice president for both Terminix and TruGreen, and remained with them for 23 years.

First paying job, and what you learned from it: Delivered newspapers for *The Miami*

Daily News. It was an afternoon newspaper that I delivered after school. They had an early Sunday morning edition, too. Learned the responsibility for showing up on time daily and at 4 AM on Sundays to fold and deliver the newspapers. Then I was responsible for the collections for those papers.



NORMAN GOLDENBERG

First break in the pest business: I worked for Truly Nolen during summer and Christmas breaks in Miami while attending the University of Florida, where I majored in entomology. Subsequently I went to work for Orkin and worked all over the country. I was the youngest district manager at 27 and had the largest geographical area in the United States, living in Arizona. I covered seven western states and opened up two branches for Orkin in Salt Lake City and Denver. I acquired Lear Pest Control Co. in Miami Shores in 1974. Tom Lear, the owner, was a great guy and allowed me a very easy payment arrangement to buy that company on a long-term payout. I borrowed money for the down payment from everyone I knew, including family, friends and a very close fraternity brother. I grew the business quickly and paid everyone back with full plus interest within three years.

Best business book: *Who Moved My Cheese*. This book was written in 1998 and still holds true to today about dealing with change in life and work.

Best piece of business advice you received: Treat your employees right — with dignity, respect and loyalty — and they will treat your customers the same way.



What you would tell someone new to the pest business? We have a great industry that is somewhat recession-proof and that creates opportunities that are undreamed about. Take care of your employees and customers, learn every day about changes in technology and leadership, and respect what you do.

Where can we find you when you are not at the office? I have been traveling for the last four years quite extensively as a consultant to Terminix and others, but that will be ending soon. I love time with my grandkids — six of them — at their sports events, drama performances and anything else they do. My triplet grandsons are now 15 and are competitive swimmers who swim for a swim team and their high school team. My wife Diane and I travel all over two or three counties following all of them in whatever they do.

What is the most important trait you look for when hiring? I haven't hired anyone in many years. I have, however, interviewed prospective people for employment with Terminix as a third-party interviewer. Like everyone else I look for honesty, integrity and the other standard character traits in which we all believe. However, I seek to see the confidence level of the person I am interviewing in that he or she believes and has in themselves. **PP**

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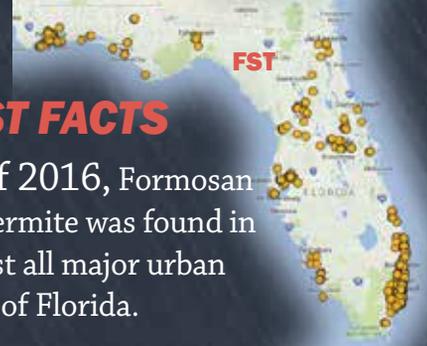
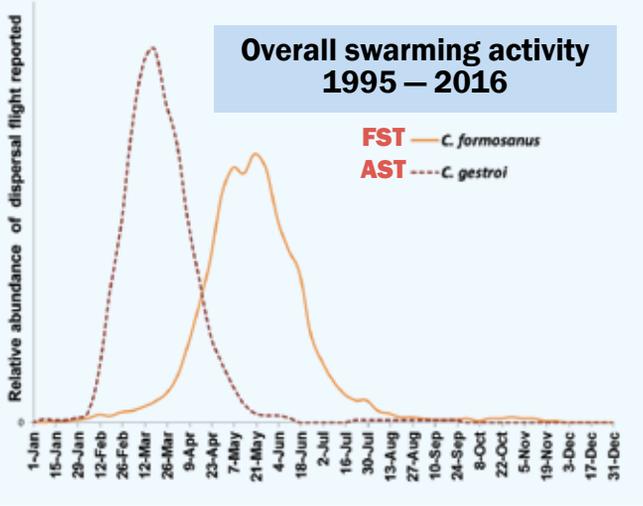
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Formosan sub termite
Coptotermes formosanus



Asian sub termite
Coptotermes gestroi



FAST FACTS

As of 2016, Formosan sub termite was found in almost all major urban areas of Florida.

FST may attack many species of living plants and noncellulose materials such as plaster, plastic, asphalt, and thin sheets of soft metal in search of food and moisture.

FST's highly publicized ability to penetrate solid concrete is a fallacy. However, these termites are persistent in finding small cracks in concrete, which they enlarge and use as foraging routes.

In 1996, Asian sub termite was collected for the first time in the continental United States from a storefront and a church in Miami.



In Florida, AST has been collected only from structures, ornamental trees near structures, and boats.

The same management strategies such as baits and soil treatments employed for FST should be considered for AST.

— Nan Yao Su et al.

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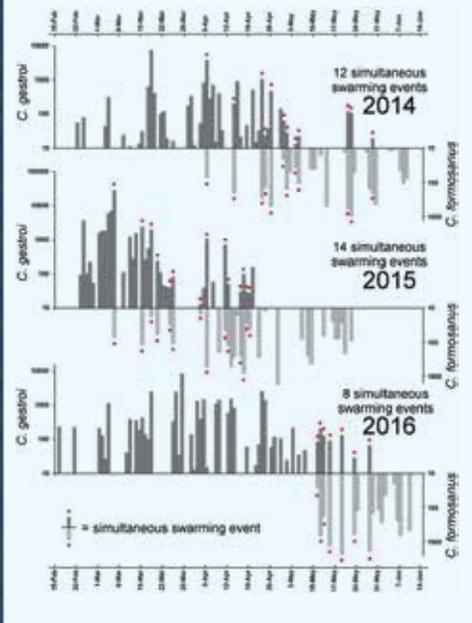
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Termite Swarms, continued from Page 11

As you can see on the figures, most of the swarms for the Asian subterranean termite occurred from early March to late April, while for the Formosan subterranean termite swarms occurred from mid-April to late May. However, there is a big variation in the swarming season each year, as it depends on how warm the winter was and how dry it was.

Finally, most major swarms occurred at the end of a warm day with little to no wind. In 2017, while temperatures were conducive for Asian subterranean termite swarms, windy conditions for a couple of weeks delayed some of the events to late March instead of mid-March. This makes predicting swarms very difficult, because many factors can be involved in the synchronous flights of many mature colonies.

One important observation from the study is that both species were able to fly at the same time during multiple times each year. This increases the risk for the two subterranean termite species to mate and produce hybrid colonies. While no hybrid colonies have been detected in the field yet, it may be just a matter of time before a sample is found and properly identified.

In 2017, hundreds of termite samples were provided by the public to the termite team at the FLREC for identification and mapping. These samples are extremely valuable to the termite team to help understand these invasive pests. The research from FLREC continues to help in the fight against Formosan and Asian subterranean termites. **PP**

Thomas Chouvenec is Assistant Professor in Entomology at the UF/IFAS Ft. Lauderdale Research and Education Center. His research focuses on invasive species of termites and ants in South Florida. Email tomchouvenec@ufl.edu.



Dienerella sp.

Photos by Lyle J. Buss except as noted. All photos highly magnified.



Eufallia seminiveus



Eufallia seminiveus



Eufallia seminiveus

Daniel D. Dye II

Plaster Beetles

Lyle J. Buss

I'D LOVE TO write about some huge, showy, colorful insects, but that's just not the type of bugs that are a problem in the pest control business. It's the tiny, drab bugs that you have to watch out for. And it's hard to imagine a bug being smaller than the ones I'm writing about today. Entomologists commonly call them "minute brown scavenger beetles." That's a mouthful, so I'm going to use one of their other common names, which is "plaster beetles."

Plaster beetles aren't common pests, but they occasionally show up in homes and commercial buildings. The first thing you notice about these beetles is that they really are minute. Most are about 1/16 inch long, so they are difficult to even recognize as beetles without a hand lens. Most are reddish brown to dark brown. A microscope is needed to see most other identifying characters, such as the rows of deep pits on the elytra (wing covers). However, one particular species, *Eufallia seminiveus*, is easily recognizable because it has two large white patches on its head and pronotum (the plate behind the head). These white patches are visible on dry specimens using a hand lens.

Plaster beetle adults and larvae feed on molds and other fungi. Molds grow in moist places, so the presence of plaster beetles in buildings usually indicates a moisture problem. They are sometimes associated with newly constructed homes, showing up in the first or second year. If wood gets wet during construction and then gets sealed into walls and other closed places before it dries, then this moisture can lead to mold growth. Other sources of moisture can be roof and plumbing leaks.

Control is best accomplished by finding and fixing the moisture problem. Once the damp material dries out, the mold will die and the beetles will soon disappear. The beetles don't cause any damage, but they can be a nuisance to homeowners, or a potential contaminant in commercial buildings.

If you find insects and you're not sure what they are, consider sending them to the Insect Identification Lab! Learn more at <http://edis.ifas.ufl.edu/sr010>. **PP**

Lyle J. Buss, Scientific Photographer, manages the Insect Identification Lab at the UF/IFAS Entomology and Nematology Department.

Florida's Venomous Snakes

Steve A. Johnson and Monica E. McGarrity

Of the approximately 20 species of venomous snakes found in the United States, only six are found in Florida, and only four are found in central and southern Florida. Florida's venomous snakes belong to two families—the Viperidae, or pit vipers, with five species, and the Elapidae, represented in Florida by the coral snake.

THE FOUR venomous species described here are the most commonly encountered venomous snakes in Florida. More information on identifying all six of Florida's venomous snake species can be found in *Recognizing Florida's Venomous Snakes*, an educational document available online through the University of Florida's Electronic Data Information Source (EDIS) at <http://edis.ifas.ufl.edu/UW229>.

Learning to identify Florida's most commonly encountered

venomous snakes is essential, not only for safety reasons but also to alleviate the fears that lead to needless persecution of snakes. As you learn more about snakes and begin to understand them, you will see that all snakes — even venomous species — are beneficial and play important roles in our environment. Negative encounters with venomous snakes are rare. Take precautions to help prevent such unwanted encounters in residential areas.



Harlequin Coral Snake

Micrurus fulvius

THE HARLEQUIN CORAL SNAKE is a small, slender, secretive snake of 1 – 2.5 feet in length that spends most of its life underground. This snake feeds on lizards and other snakes. Coral snakes occur in residential areas, where they may be encountered under brush piles, firewood, or other objects under which they hide. People may also encounter a coral snake while digging in the yard to plant shrubs or a garden. Coral snakes stay in hiding most of the time. If you see one in the open it will likely be moving rapidly across your lawn to a new hiding place.

Coral snakes have smooth, glossy scales and are brightly colored with red, yellow and black rings. Their snout is blunt and black followed by a band of yellow, and their body is marked with wide red and black rings separated by narrow yellow rings. The colored rings go all the way around the snake, and the tail is black and yellow.

Interestingly, all of the pit vipers give birth to live young, and the harlequin coral snake is the only venomous egg-laying species in Florida. Therefore, when snake eggs are encountered, they almost certainly belong to a nonvenomous species and can be left in place unharmed, without fear for your safety.

There are two nonvenomous coral snake look-alikes — scarlet king snake and scarlet snake — that can be confused with the coral snake at first glance. However, they can easily be identified as nonvenomous by the order of their colored bands: red touching black.

Remember the “stoplight phrase” — when you see a snake with bright red, yellow and black bands, remember “yellow, red, STOP!” In the venomous coral snake, the yellow and red bands touch. In the two nonvenomous species the black and red bands touch. These snakes also have red, rather than black, snouts.



Scarlet snake



Scarlet king snake

Coral snake lookalikes: nonvenomous



Eye stripe of diamondback



Eastern Diamondback Rattlesnake

Crotalus adamanteus

THE EASTERN DIAMONDBACK rattlesnake is North America's largest venomous snake, typically ranging in size from 3 – 6 feet, with a record length of 8 feet. It is found throughout the state of Florida. This snake can easily be identified by the large dark diamonds with beige borders, which are repeated down the back.

These snakes have large, blocky heads with a distinctive dark band from the eye to the corner of the jaw, rough-looking keeled scales, and may have large rattles at the tip of the tail that usually make a loud buzzing sound when the snake feels threatened. Juvenile eastern diamondback rattlesnakes are similar in appearance to adults, and can also be easily identified.

The eastern diamondback rattlesnake is rarely found in urban areas, preferring more natural scrub or wooded areas, where it preys on mice, rats, and rabbits. However, they occasionally wander onto golf courses and into suburban neighborhoods that are near pine forests. Eastern diamondback rattlesnakes have declined severely in numbers due to habitat loss, road mortality, and indiscriminate killing by people. The eastern diamondback rattlesnake should be respected and admired from a safe distance. It can strike up to two-thirds its body length and possesses the largest quantity of the most toxic venom, at least to mice, of any species in the United States. If you encounter this snake, leave it be — DO NOT attempt to approach, handle or kill it!

THE PIT VIPERS found in Florida all share certain characteristics that can help you learn to identify them. They all have bodies that are rather thick and heavy for their length, heat sensing pits on the side of the face, and vertical pupils. They usually have a dark stripe through the eye to the corner of the jaw, as do some nonvenomous water snakes.

Pit vipers also have rough-looking, keeled scales with longitudinal ridges, and wide, somewhat triangular heads with obvious thin necks. However, many nonvenomous species also have keeled scales and triangular heads, and should not be mistaken for venomous snakes. If you are not sure, be safe — give the snake its space!



Pygmy Rattlesnake

Sistrurus miliarius

THE PYGMY rattlesnake is the smallest venomous snake in Florida, averaging one foot in length, and feeds on frogs and mice. Found throughout the state, this is the most commonly encountered venomous snake in Florida and can be found in a variety of urban settings.

Although small, the pygmy rattlesnake has a stout body and blocky head. The body is gray with irregular dark blotches down the back and sides and a broken reddish-brown line down the center of the back between blotches. There is also a distinctive dark line through the eye to the corner of the jaw. Juveniles are similar in appearance, but the tip of the tail is a bright yellowish color.

Although pygmy rattlesnakes do have a rattle, but it is so small it is barely audible and makes an insectlike buzzing noise. These small rattlesnakes are quite defensive — if approached, they may hold their ground and strike at their perceived attacker. It is a good idea to wear leather gloves at all times while gardening, as these venomous snakes may be encountered in brush piles, flower beds, and gardens.



White mouth of cottonmouth



Cottonmouth

Agkistrodon piscivorus

THE COTTONMOUTH, also known as the water moccasin, is the most venomous aquatic snake in Florida. It is occasionally seen in urban areas throughout Florida near the edges of ditches, ponds, lakes, and wetlands, where it feeds on fishes, frogs, mice and rats.

These heavy-bodied snakes can grow to 6 feet in length and have rough-looking, keeled scales. Typical size ranges from 2 – 4 feet. Young cottonmouths resemble the closely related copperhead, and have bright reddish-brown, splotched crossbands, a dark stripe through the eye to the corner of the jaw, and a bright yellow-tipped tail. The crossbands darken with age, and older snakes may be nearly uniformly dark.

Several species of nonvenomous water snakes are often misidentified as cottonmouths. In order to avoid being bitten, it is best to never attempt to handle any aquatic snake. Cottonmouths do not have rattles but may vigorously shake their tail when threatened, like many nonvenomous snakes, making a rattling sound in dry leaves. As a defensive behavior, cottonmouths may coil their body and open their mouth widely, showing the namesake cotton-white interior. These behaviors are defensive rather than aggressive, and, despite their infamous reputation as being aggressive, cottonmouths generally flee from threat unless harrassed. **PP**

Steve A. Johnson is a tenured faculty member in the University of Florida Department of Wildlife Ecology and Conservation, and Monica E. McGarrity is Biological Scientist at UF Gulf Coast Research and Education Center.

Adapted from EDIS publication WEC220, Dealing with Snakes in Florida's Residential Areas—Identifying Commonly Encountered Snakes

Meet Omotola

—voracious reader,
adventure seeker,
wife and mother,
entomology major,
scientist soldier,
and good friend of
the Urban Lab.

BORN, raised and educated in Nigeria, young Omotola loved the outdoors but was restricted due to her parents' overprotectiveness. This led her to develop the habit of reading books such as the children's book series *Famous Five*, by Enid Blyton. She gradually moved on to read other books and collect some, like the Sidney Sheldon books, medical thrillers by Robin Cook, and detective series by James Patterson.

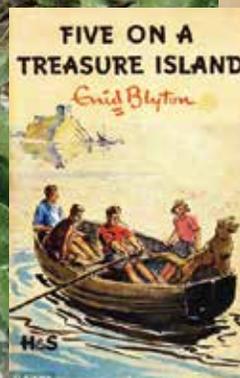
In 2008, Omotola received her bachelor's degree in the Department of Plant Science at Obafemi Awolowo University, Nigeria, graduating as a top student. In 2011 she moved to the United States to pursue her dream of higher education — and adventure.

She got her master's degree from Florida A&M University in 2013, again at the top of her class. For her master's research project, she worked on the acoustic detection of palmetto weevil at larval stages. This technology can be used to detect cryptic insects and prevent entry of such infested planting materials at the borders.

Now Omotola Dosunmu is working toward her PhD at the University of Florida under the supervision of Dr. Oscar Liburd. Her doctoral research project is on integrated strategies for managing twospotted spider mite on organic strawberry.



Twospotted spider mite



Q and A With Omatola

Have you always wanted to be an entomologist?

No. My first dream career was to be a ballerina — a short-lived dream, however. My curiosity led me to science, even though many people at that time believed I would make a great lawyer.

I stumbled upon entomology in my second year at Obafemi Awolow University while studying plant science. In my senior year, I made a special request to do my undergraduate project with an entomology professor, as many other students ran away from the idea. I embraced what others rejected and joked about being the “mother of bugs.” Many years down the line, I am still pursuing that dream.

In what capacity do you want to serve as an entomologist?

As a pest management expert. I come from a country where abundance of food is inadequate, food choices are limited, and many arthropod-borne diseases occur. Food and health are important factors in anyone’s life, and I would like to help in mitigating the effects of agricultural pests and arthropod vectors of medical importance.

It is my ultimate desire that no one would have to go hungry, especially in the developing countries.

You are not a student at the Urban Entomology lab. How did you meet Dr. Koehler?

I am one of Dr. Liburd’s students. I used to visit the urban lab when I formed a friendship with Tiny Willis, and then later with Heather Erskine. I visited the lab with my young son, and everyone, especially Brittany Campbell, loved him.

I met Dr. Koehler during the times that I made personal delivery of fresh strawberries to the entire lab, and we got

talking about my research. He welcomed me as part of the lab. He has been so supportive of my career and interested in my well-being since then. He is a great mentor to me.

You mentioned that you love adventure. Do you have anywhere in mind?

I would love to visit many places, including the moon, and maybe hang out with some friendly aliens if there are any. All depends on money and time.

Top on my list is to visit Paris — it has been my childhood dream to have my honeymoon there (I am yet to have my honeymoon). My dad used to say, “See Paris and die.”

I used to learn French when I was in Nigeria, and now when I meet foreigners, I ask them how to say some words in their language. This is to prepare me just in case I find myself in their country. I know some words in Chinese, Swahili, Spanish, Italian, Nepali, and Hindi, to mention a few.

Why and when did you join the US Army Reserve?

I got accepted into the US Army Reserve in 2016, but I was commissioned exactly a year after in February 2017.

I was in a military school for my middle and high school years. I loved the training and discipline that were an integral part of the schooling process. After I finished, I did not venture to go into the Nigerian Army because I was certain my parents would not agree and also because the Nigerian Army cannot be compared to the US Army, especially in terms of public health.

I joined the US Army Reserve for the main purpose of serving this country. I am an entomologist in the Preventive Medicine Unit, and I serve in the capacity of protecting the

Continued

Paris and a future in pest management await Omatola. In the meantime, her family and her PhD work help keep her down to earth.



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Omotola, continued

soldiers that protect us. This has offered me the opportunity of being able to identify and manage pests of medical importance, and not just agricultural pests that my PhD research focuses on.

In the near future, I hope to join a team of researchers in conducting research experiments of public health importance that would help to alleviate some of the problems and risks that we encounter with arthropod and

animal vectors of pathogens.

My husband is in full support of my decision to join the US Army Reserve.

What has been challenging since joining the US Army Reserve?

The only challenge is meeting the requirements of the Physical Fitness. We are required to pass three fitness exercises within a certain time limit. The two minute sit-ups have been my greatest challenge because of

my weak back. I am working on myself in that area so that I can pass my fitness tests.

Any plans after UF?

I plan to get a job, preferably as a postdoctoral associate for two years before some other job opportunities become available. My long-term career goal is to work as part of a research team for international organizations like FAO or WHO.

[Smiles] I deserve a vacation, seriously. PhD has been quite challenging, combining it with family. But, I would not have it the other way. My son has been a bright spot in my life and I am motivated more than ever to teach him values that would make him a good citizen (I cannot afford to fail as a mother). My husband has been supportive. We plan to have more kids in the nearest future.

How do you unwind?

I am hardly free, as I am a full-time mum immediately when I step out of the lab. When I can, I watch some of my favorite shows like *Wheel of Fortune*, *Jeopardy*, and *Forensic Files*. I love listening to music, walking, especially in natural areas, and spending time with family. I hope I can return to my hobbies of writing poems and drawing sometime soon.

What matters most to you?

God, family, and good health. Money is important too — lol.



Name one fun fact about you.

I love Mickey Mouse.

Do you have a motto that you live by?

I have several, but the overarching one that molds my thinking, daily activities, relationships, and character is "Live well and help others." I do not want to be remembered for my title or achievements, but I want my name to be remembered as one that made a positive impact on the lives she encountered. **PP**

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Live oak trees at Oak Alley Plantation, Louisiana

Impacts of Wood Borers On Landscape Trees

David Holmes

THERE IS an old adage in real estate lore that trees add value to property. It is a statement that is often true, provided trees are of the right variety and in good health.

Oak trees in particular are a prized commodity and add quaintness to tree-lined streets, bring cooling properties to residential landscapes, and provide cover for wildlife in pastures, parks and woodlots. But oak trees vary widely by species, and old age comes much earlier for some than others. Variety is an important consideration in selecting oaks for value and in avoiding the high costs associated with large-tree removal.

Consider the vast differences between water oak, *Quercus nigra*, which has a life expectancy of 30–50 years, laurel oak, *Quercus laurifolia*, a life expectancy of 50–70 years, and the southern live oak, *Quercus virginia*, which may live 150–200 years. To the novice, all are similar in appearance, but many home buyers have been dismayed to find the lot they purchased because of the magnificent trees in fact has trees that require costly removal due to old age and instability.

Stress Can Grow on Trees

If one were to approach a medical doctor and ask the secret to a long life, no doubt



Live oak root borer

eliminating stress would be near the top of the list of things a person could do to enhance the odds of living longer. Trees, too, respond adversely to stressful conditions. Sometimes these are caused by weather — too hot or too cold, too much rain, or not enough rain. Sometimes stresses are man-induced — soil compaction, construction damage, excessive traffic, improper mulch applications — all elements that lead to stress and a shorter lifespan for trees.

These early stresses create conditions that weaken tree defense systems against insects and disease. Often these changes occur over a period of weeks or months and are not perceived by the owner until the tree exhibits blatant signs of demise. These early stresses are really the first step in a process of helping eliminate a weakened tree. The old observation that in nature the strong survive is not limited to animal species alone; members of the plant kingdom too follow an order of survival of the fittest.

For hardwood trees the presence of insects that cause damage by boring just under the surface of the bark may indicate a tree is far along in a struggle for survival. Sometimes called secondary invaders, these insects attack weakened trees and if left unchecked will hasten the demise of the host. This presents a two-fold problem for the landscape manager wishing to retain specimen trees: elimination of the insect problem and, more importantly, determining what caused the stress that invited the beetles in the first place. It is of course not enough to determine what caused the stress — something must be done to eliminate it.

Borer Facts

Types of wood-boring insects are diverse, spanning four taxonomic orders including Coleoptera, Lepidoptera, Hymenoptera and Diptera. Not all species attack stressed trees. There are those that invade healthy, living organisms, but for purposes of this article we are concerned with those borers whose role is to invade weakened trees in an effort to further weaken them and bring about their demise.

For the valuable oak species, wood borers of concern typically center around two types: flat-headed borers, which as adults appear as metallic colored beetles, and roundheaded borers, which become longhorned beetles in the



Oak tree in decline, with thinning canopy

Joseph O'Brien, USDA Forest Service

adult stage. Primary damage to trees occurs during the larval stage, when the tunneling activity of the larvae result in extensive galleries that run throughout the tree's vascular tissue. Larval feeding activity severs the tissues of xylem and phloem bundles, robbing the tree of valuable nutrients and disrupting the flow of water.

The tunneling activity of the borers is very subtle and often goes unnoticed until trees are well into decline. Symptoms that draw attention to trees under attack include wilting or browning leaves, sloughing of exterior bark, and reduced canopy. Further examination often reveals sawdustlike material in the lower bark and around the base of the tree or caught in spider webs near base of the trunk.

Borer Management

Once borers are discovered, it must be determined whether efforts should be invested in saving the tree or if removal is the most prudent option. Factors to consider include how much damage has occurred to the tree, potential for recovery, value of the tree to the property or to the landowner, and potential costs of the recovery tactics, particularly the time that will be required to insure a thorough effort. Finally, assuming beetles can be successfully removed, it must be determined whether the factor that caused the initial stress has been identified and can/will be corrected.

If removal is elected, it should occur as soon as practical to reduce potential for damage from storms or, over a longer period, damage from general demise of the tree. Moreover, falling branches become a safety issue and create maintenance problems, while the general appearance of a declining tree has a negative effect on the look of the property.

If treatment is the desired option, there are systemic materials, particularly imidicloprid, that can be applied for absorption into the tree. A second treatment may be needed in the spring of the following year. At the same time the treatment for borers is initiated, a plan should also be implemented to correct the cause of stress on the tree in the first place. This may be as simple as laying a soaker hose at the drip line of a tree during periods of hot, dry weather and applying ¾ inch of water two times a week until the drought passes, or it may require a complex procedure such as air spading to relieve compaction around the roots.

Because tree problems are often complex and affected by many factors, it may be prudent to consult outside sources for assistance to determine the actual initial cause of stress and to develop a plan of action for stress reduction. Extension agents are available in each Florida county as one source of information, and the International Society of Arboriculture maintains a listing of consulting arborists who are certified by the Florida chapter. These are assessable by zip code to identify an arborist in your area.

Benjamin Franklin is credited with the quote "an ounce of prevention is worth a pound of cure," and it is no less true in this day than it was in his. Awareness of weather, traffic, soil compaction, root damage, age of trees, and other factors are all considerations for landscape managers in preventing problems in mature landscape trees. As with human health, early detection and a timely response are key factors in preserving trees. Once beetles arrive and lay eggs in stressed trees, the road to recovery is long, difficult and often unsuccessful. **PP**

David Holmes is County Extension Director IV at UF/IFAS Marion County Extension Office.

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Four Need-to-Know Web-Market Trends for 2018

Alain Parcan



AS WE kick off the new year, now is as good a time as any to reflect on how web marketing trends have changed over the past year, and start to prepare adjustments for this year.

Market Hardware's team of web marketing experts put their heads together to come up with a comprehensive list of the four web trends pest control professionals need to be familiar with for 2018. Here's what you need to know:

TRENDING UP

TRENDING UP: *Responsive website design, because mobile WILL rule the web in 2018.*

According to Pew Research Center, about 77 percent of American adults own a smartphone and roughly 50 percent own a tablet of some kind. The mobile trend has shown no sign of stopping recently. If you're ready to upgrade your site, then responsive website design is a must-have in order to impress anyone using their phone or tablet. Studies consistently show that if a visitor lands on a site that is difficult to navigate and requires zooming in and out, they'll simply exit and move on to a new site.

Moreover, Google has firmly hitched its wagon to the mobile trend. Since April 2015, mobile-readiness has been a huge ranking factor when it comes to identifying what companies show up highest in search results. In other words, Google wants user-friendly sites to rank highest in search results, and has already said that designation will become even more important in 2018.

TRENDING UP: *Web security that can impact your search rankings.*

2017 has witnessed more online scams, internet hacks and security threats than any year since the invention of the web. And the big players in the tech industry are responding accordingly by putting a greater emphasis on security. Tools like two-step password verification, "captcha" fields on online forms, and corporate-level email solutions are becoming more commonplace as the scramble for increased security continues.



Perhaps one of the biggest surprises however, was the growth of SSL certificates. These certificates provide a website with an added measure of security typically reserved for banks and financial institutions. Google shook things up in 2017 by indicating that all websites should have an SSL certificate installed, and that they'd use it as a factor in their search rankings in order to encourage a safer, more secure internet. Expect an increasing number of websites to have these certificates installed in 2018, and keep an eye out for additional security measures to be factored into search rankings as well.

TRENDING DOWN

Consider reducing your focus on the following.

TRENDING DOWN: *Traditional pay-per-click advertising.*

Advertising on Google and other search engines has gotten progressively more expensive over the last one to two years. Industry newcomers know this is the fastest way to get guaranteed page-one placement, and they're not holding back in doing so. New competition is popping up every day, driving up the costs of paid ads across the board. Plus, search engines are reducing the amount of ads that show up for any given search, making placement even more competitive.

Ready for the biggest curveball? Google is aggressively rolling out their local services ads program as an alternative to pay-per-click advertising. It's going to use a "pay-per-

lead" model where businesses can bid on a potential customer's information once they present their interest in a service. Google is requiring background checks and proof of insurance/license in order for businesses to sign up. The program is rapidly expanding to new cities and industries so keep an eye out for these ads in your market and consider signing up if possible.

TRENDING DOWN: *Yellow Pages / newspaper ad spend continues to shrink.*

Surprised? You shouldn't be. Consumers just aren't opening up Yellow Page books or newspapers to find service providers as much as they were 10 years ago. They are far more likely to type a search online and scan a company's website in order to request a service. Businesses have been picking up on this trend for years and have predictably pulled their marketing dollars out of traditional marketing channels.

While there is still a small audience that uses those channels to find local businesses, that audience is dwindling. There might be some value to investing some marketing dollars to target those smaller audiences, but we recommend you focus the majority of your budget in more modern channels.

BRINGING IT TOGETHER

These trends should provide some insight into what businesses like yours might be doing a great job of already, as well as why they might want to work on a few items a bit more. Ultimately, it's important to at least be aware of these trends so you're prepared to adjust on the fly should changes be needed at any point in 2018. The more you're familiar with, the better prepared you'll be to win more business on the web.

PP

Alain Parcan, Director of Marketing for Market Hardware, Inc., contributed this article. Alain brings nearly 10 years of experience in educating businesses so they can market themselves more effectively. Market Hardware helps small businesses compete on the web and offers special discounts for professional association members. You can reach Alain's team at 888-381-6925.



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Bed Bug Warranties, continued from Page 12

On any contract / warranty, among other legal details, the following items may be important:

1. Conditions that could develop as a result of the owners' actions or inactions, which would void the warranty.
2. Concentration of any liquid insecticide application to be used on the treatment, the temperatures to be achieved in heat treatment, or the doses of fumigant to be used.
3. Any bed bug disclosure information required by your state pest management regulatory agency. To find your state pest management regulatory agency, go to www.aspcro.org, click "association directory," and click the state you live in.

Review the paperwork carefully with your customers so they can make a conscious decision. Go over all the costs and treatment procedures carefully. In some states, by law, customers have a grace period during which they can change their mind after signing a service agreement (Home Solicitation Acts).

Remember that regardless of any contract, the customer needs to cooperate with any pest management action. **PP**

Philip Koehler is Endowed Professor and Roberto Pereira is Research Scientist at UF/IFAS Entomology and Nematology Department.

The New 13645 WDO Inspection Report

THE NEW 13645 *Wood-Destroying Organisms Inspection Report*, revised and dated 10/15, is the form that you should now be using. To find and download this form you must go to our website at <http://www.freshfromflorida.com/Business-Services/Pest-Control> and open the 5E-14 rule link on the right-hand side.

In rule, you open section 5E-14.142 and scroll down to Paragraph (5)(c) — also seen below — where the regulations address the requirement to use the 13645 form. You will find the link to the “Florida Rules Gateway,” which hosts the form associated with the rule language. All forms can now be found using the rule itself.

For the folks that do WDO inspections you *now* need to use the 10/15 revised form.

Paragraph (5)(c)

Termite or other wood-destroying organism inspection report:

Pursuant to Sections 482.226(1), (2), (4) and (5), F.S., each licensee having a certified operator certified in the category of termite or other wood-destroying organism control and who makes and reports the findings of a wood-destroying organism inspection in writing shall provide the party requesting the inspection with the inspection findings on the Wood-Destroying Organisms Inspection Report, (FDACS-13645, Rev. 10/15), which is incorporated by reference and available online at <https://www.flrules.org/Gateway/reference.asp?No=Ref-07320>, or the department’s website under the header “Forms” at <http://www.freshfromflorida.com>. The licensee shall not place any disclaimers or additional language on the Wood-Destroying Organisms Inspection Report as incorporated by reference and adopted above. The licensee shall inspect for all wood-destroying organisms as defined in Section 482.021(28), F.S., in accordance with the following inspection standards:

1. The inspection will include all areas accessible by normal means but does not cover those areas that are enclosed or inaccessible, areas concealed by wall coverings, floor coverings, furniture, equipment, stored articles, insulation, or any portion of the structure in which inspection would necessitate removing or defacing any part of the structure.

2. The inspection will be visual but may include probing and sounding of structural members as deemed necessary by the inspector, based upon a preliminary finding of visual evidence of infestation or damage.

3. The inspection shall include an examination for visual evidence of wood-decaying fungi and damage caused by wood-decaying fungi. Wood-decaying fungi

are fungi that can cause damage to wood, such as those that produce white rot, brown rot, poria, and cubical rot, but not surface molds that do not cause damage to sound wood. **PP**

Report by Paul Mitola, Florida Department of Agriculture and Consumer Services.

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Mergers and Acquisitions In a People-Oriented Business

RAND HOLLON

A SENIOR technician — I'll call him Dale Cameron — had worked for a small pest company for nearly 10 years. He enjoyed a great working relationship with the owner, and over time became the guy other employees informally looked to for direction.

When receiving the news that the company he worked for was being purchased, Dale was initially up for a challenge and accepted an employment offer from the buyer. But his experience with the smaller acquired company had not prepared him to work within this new, larger business environment. The acquirer provided virtually no integration support to assist in Dale's assimilation to this different organization and culture.

Within 48 hours of closing, human relations had things teed up. His new boss introduced him around, hit the highlights of his new role within the buyer's business, and then left him to figure the rest out. That was tough in an entirely new culture. Between Dale and his new employer, misconceptions on both parts led to difficulties. And ultimately, Dale's departure.

The People Business

Yes, it's the "pest industry," but we're really in the "people business." For an acquisition to be truly successful, it's necessary for the buyer to be great at both acquired-customer and acquired-employee integration. When employee integration is viewed by acquirers as critical, the rewards of an acquisition are realized faster. A welcome depth is also added to the buying organization's existing pool of talent.

Since its start, I've participated as a presenter in *PCT Magazine's* Mergers & Acquisitions webinars. In those webinars and follow-up print articles, I've often made a special effort to point out a simple fact that "integration is where acquisition failure lives."

The successful integration of an acquired business involves much more on the buyer's part than simple transfer of data. Integration efforts post-close will determine the success or failure of the acquisition as a whole. For success, it's critical that acquired customers continue to accept and pay for services post-close. And, as is often the case, it's the employees of the acquired business who hold the keys to the kingdom when it comes to acquired-customer retention. However, because so much energy is focused on getting the deal done, the need to effectively transition acquired employees is sometimes overlooked.

Acquired employee integration can take many shapes. There's no real continuity to the spectrum of support buyers offer those seller-employees who are "onboarded" after an acquisition. Some buyers may take a sink-or-swim approach where little more is provided than new truck decals, a different uniform shirt, and directions to "go get 'em" as they're pointed to the door.

Other buyers may provide an additional, but still basic, orientation. Company policies and organizational structure ("you-are-here") is simply delivered with no real emphasis as to their significance, and little concern as to whether or not they're understood.

Chief among the steps successful acquirers should use to succeed at transitioning and integrating a newly acquired business is to create supporting alliances within the acquired business.

Creating these "supporting alliances" involves first determining who has influence within the acquired business. An essential part of a buyer's due diligence prior to close, this discovery won't be found in the company's financials or production reports. The buyer will have to ask the seller, and listen.

Most pest industry acquisitions surround small, closely held, family businesses. As many of us know from experience,

influence in the small, closely held family business doesn't always follow the company's organizational chart. It may be a technician or an administrator — those working in the business informally look to for direction.

Successful acquirers work to identify influencers within the selling organization pre-close. Once identified, a buyer and seller can work together to custom-design a more complete, fast-tracked integration to create the familiar, supporting alliances needed to reduce near-term operational hiccups and identify or overcome any company cultural differences. Value is increased and risk is reduced.

Effective integration can harness an acquisition's potential more rapidly and rewards can be reaped that much sooner. Value is increased and risk is reduced.

Value and Risk

Buyer assumptions regarding a seller's value versus the risk associated with a deal is what drives the money used in a transaction. When acquirers excel at integration post-close, it's reflected in offers they bring to the table pre-close.

It's critically important both parties know their good decisions rely on making the right assumptions. And, it's easier to make those right assumptions when buyer and seller's good decision rides on knowing there's more to the deal than just getting to the closing table. Their good decision is also based on what happens next! **PP**

Rand Hollon, a graduate of Florida Southern College, is a second-generation pest industry veteran. Preferred Business Brokers has exclusively served the pest industry for 30 years. Working exclusively in the pest industry, Hollon has led transaction processes and brokered pest industry deals throughout the United States and the Caribbean. Over the years, Hollon has also authored M&A-related articles for several pest industry publications and has served as an M&A participant/speaker for numerous local, state and national events.

These Exotic Invasives with Yellow Flowers Are Easy to Spot in Fall, Early Winter

Doug Caldwell

BECAUSE they are recently in flower, now is a good time to identify two invasive plants that should be removed. Both of these species are on the Florida Exotic Pest Plant Council as a Category 1 threat. This means the plants are altering native plant communities by displacing native species, and there are some other ecological impacts. Visit www.fleppc.org



Earleaf acacia
REMOVE

Earleaf Acacia

The first plant, the earleaf acacia, *Acacia auriculiformis*, is native to Australia. This one is easy to spot, as it grows to 40 feet and the canopies are full of 2-to-3-inch-long fuzzy, yellow flower spikes. It is very attractive and as Frederic Stresau stated in *Florida, My Eden*, “The favorite tree of many land developers for its fantastic growth and rock-bottom purchase price.”

Too bad it is so invasive. It has unique leaves that are curved, bladelike, and 4 to 6 inches long with parallel veins.

This is a really fun leaf to quiz beginning botany students about which class of plants it belongs to. Is it a monocot with parallel leaf veins, or a dicot with a — usually — netlike leaf vein pattern? This dicot has leaves that break the normal rule with parallel veins.

There are almost always exceptions to the rule in taxonomy. The seed pod of this legume is about 4 inches long, coiled, and resembles, if you use your imagination, an ear.



Christmas senna
REMOVE

Christmas Senna

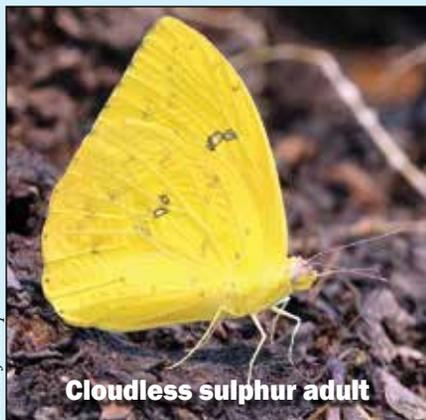
Now, this next plant may be in use by butterfly enthusiasts — some of whom are unaware of its invasiveness. I am seeing it pop up in some preserve areas around the Goodlette-Frank Road and Orange Blossom Drive areas. It is the Christmas senna, *Senna pendula* var. *glabrata*, and it is the bad species that needs to be avoided.

This is sometimes referred to in the landscape and nursery trade as *Cassia bicapsularis*. Some common names include Christmas senna, climbing cassia, and butterfly cassia.

This plant has, after a few years, an obvious clambering growth habit and will grow 15 to 20 feet into nearby trees. Other cassias do not have this climbing habit. However, if the Christmas senna is grown in the open, it will tend to remain shrubby.

The easiest way to determine if you have the invasive Christmas senna is to look at the

Continued on Page 34



Cloudless sulphur adult

Charles J. Sharp



Cloudless sulphur larva

Marc Minnow

Senna species serve as host plants for the larvae of cloudless sulphur butterflies, shown above. If you desire the yellow flowers and the acrobatic flight of the yellow butterflies, these other *Senna* species are recommended by Mike Malloy, a Florida Yards and Neighborhoods Extension educator.

RECOMMENDED SENNA SPECIES



Candlestick or candleabra plant, *S. alata*, with beautiful, large, compound, tropical-looking leaves.



Popcorn senna, *S. didymobotrya*, with beautiful leaves and flowers with a wonderful popcorn fragrance. It is commonly seen in roadway medians.



Glossy shower, or glaucous cassia, *S. surattensis*. It needs constant thinning, but it is a long-flowering, prolific-blooming tree.

Several sennas are shorter and more constrained in growth, such as Chapman's wild sensitive plant, *S. Mexicana* 'Chapmanii', and privet wild sensitive plant or Bahama cassia, *S. ligustrina*.

Stephen Brown, UF/IFAS

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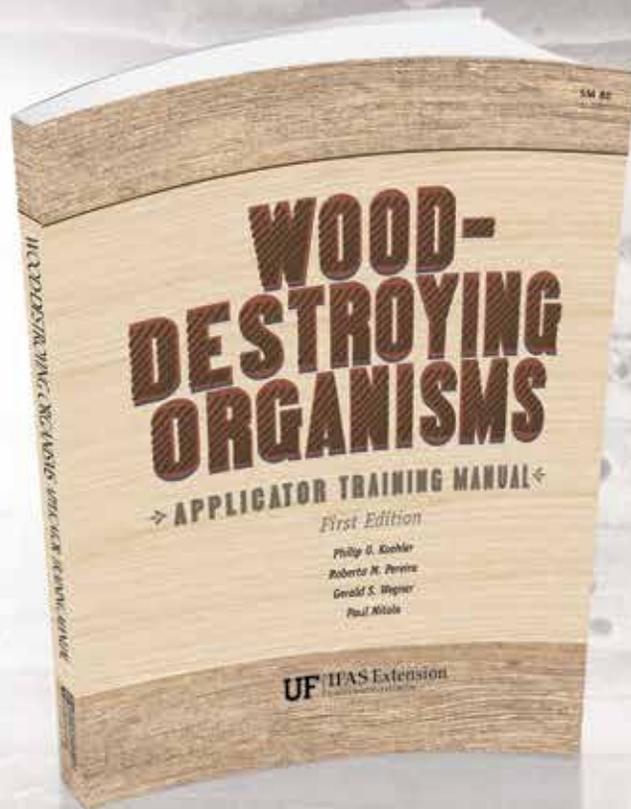
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CAPITOL Corner



Sean Brantley and Suzanne Graham

AT 12:01 AM, December 13, 2017, the Florida Department of Agriculture went live with the full functionality of the fumigation reporting website. The website is where fumigators must go to report all fumigations 24+ hours prior to commencement.

In addition, the latest functionality, beginning this past July 1, requires fumigation operators to list all of the company's clearance devices along with proof of current calibration verification records (via uploading these documents directly).

All fumigation operators have received numerous emails and very detailed instructions on the purpose, the scope and the requirements to perform these recordkeeping operations. Those emails from DACS also included very detailed instructions, including pictures and examples to follow the steps.

The entire process of updating your clearance device records takes about 20 seconds. Beginning July 1, the Department began implementation of the new Rule and required users to enter their information. Vendors who service the equipment may also enter the records on behalf of the fumigator and most services performed since July 1 have been entered directly to the site on behalf of the fumigator.

But on December 13 at 12:01 AM, nearly 200 emails were sent to fumigators by DACS warning them of clearance devices that were out of calibration and also automatic issuance of stop-sale orders to those fumigators lacking proper clearance devices. At first it was a huge shock, and many fumigation companies were caught in a situation that forced them to drop everything to get reinstated to continue

purchasing fumigant. Some companies were certainly in need of such a serious violation because they were in fact quite guilty of non-compliance with label and law. Other companies were caught in the system due to their own lack of updating the records for units they own and maintain. Still others were caught up in the system that were not in fact structural fumigation branches at this time.

When all was said and done, DACS' system was in play and was doing its job listing companies that had clearance devices out of compliance, issuing notices for those that were in compliance with more than two approved devices and another that was expired or by issuing stop-sale orders to companies that were missing approved clearance devices or had less than two in compliance.

While it was a sudden and serious morning, the system itself proved it works. Some branches that didn't perform fumigation were discovered and were removed from the notification site, some branches that were no longer in business were discovered and removed, and the balance remained in compliance or in noncompliance simply by the state of their recordkeeping.

This was the intent of the system going live. It was the test to see what we have built and maintained to achieve another safety stop along the way for fumigation compliance. And it worked. As I write this article just days after this system was turned live, there are companies in stop-sale status that earned it all on their own.

This new tool for our industry's compliance speaks for itself by catching people who refused to comply with label and law, common sense, and safe process. As we move forward it will force companies to comply, and that is a great thing.

THE 2018 LEGISLATIVE session is already something to behold. Hidden video cameras, private investigators, accusations of sexual misconduct and harassment, pay-for-play schemes and a host of craziness that only sounds like a really bad movie script are all in the backdrop of this session. Everyone is walking on eggshells.

The show will go on, no matter how distracted it will be. But those distractions are real and are already impacting committee weeks and bill proposals. This session will be unique, and I don't doubt that we will have a lot of business left on the table, including matters of importance to Floridians and partisan issues squelching good bills. I bet we go into special session or extended session. It just feels like producing quality is already on the back burner at the capitol. And that is a shame.

Two major hurricanes, Irma and Maria, are major focuses in the legislature. Hurricane Irma has brought our state much concern and many questions as our leaders research the impacts on the budget, the bond rating, the environment and of course our citizens and property. Trust funds have been swept and emptied to evacuate the state, repair our infrastructure, restore public safety (like mosquito control efforts) and need restoration from other funding. The bond rating is an important piece of the puzzle for Florida to keep a AAA rating and to keep that bond rating we must replenish the hurricane catastrophe fund. This will be no easy feat in the budget that already had placeholders from constitutional amendments and carryover from last year. The impact of Hurricane Irma is real even this far in time from its impact on our state.

Meanwhile, Hurricane Maria's devastating impact to Puerto Rico

has forced major rifts between the governor and the legislature. The funding needed to support evacuees from Puerto Rico was and is a major financial impact to our state. There is going to be a significant budgetary impact and funding needs will continue.

We can certainly expect to see budget and appropriations discussions including the network of funds needed for these two major storms as we move forward in the session.

Worker's compensation is alive and on the docket. The bill includes many changes including direct payments to attorneys for claimants, increase wage replacement from 104 weeks to 260 weeks, provides a gap filler for when the wage replacement ends and actual return to work clearance begins, allows a judge to award hourly fees departing from the attorney fee schedule (up to \$150/hr.), provides the worker is responsible for remaining attorney's fees if required by the retainer agreement, caps insurance companies to 5% premium reductions, gives the authority to fill gaps between statutory limits of coverage allowance for medical care, requires specific guidance on attorney/claimant contracts, eliminates charge-based reimbursement with Medicare, requires the authorization or denial of medical care authorization requests and provides for collecting additional information on attorney fees. The bill has no financial impact on state and local government revenue, a positive impact on state and local expenditures and both positive and negative impact on the private sector. This bill would become law July 1, 2018.

There are several proposals we are following that are general

Continued on Page 34

Florida Pest Management Association
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Active Member Employees and Branch Offices

Any firm with an Active membership in the Association, having branches or separate offices has the option of registering any and all branches or separate offices as Active Branch Offices. Active Branch offices have voting privileges and can hold office. The member licensee shall inform the Executive Vice President in writing of the individual's name who will have the voting privileges for the Branch Office(s).

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D	\$300,001 - \$450,000	\$459
E	\$450,001 - \$700,000	\$598
F	\$700,001 - \$1,000,000	\$884
G	\$1,000,001 - \$2,500,000	\$1,638
H	\$2,500,001 - \$3,000,000	\$2,949
J	\$3,000,001 - \$4,500,000	\$4,699
K	\$4,500,001 - \$7,000,000	\$5,897
L	\$7,000,001 - \$10,000,000	\$6,989
M	\$10,000,001 - \$15,000,000	\$10,924
N	\$15,000,001 - \$20,000,000	\$12,139
P	\$20,000,001 - \$25,000,000	\$14,574
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Dues to FPMA are not deductible as a charitable contribution but may be deductible as an ordinary business expense. A portion of dues, however, is not deductible as an ordinary and necessary business expense to the extent that FPMA engages in lobbying. The non-deductible portion of dues for 2015 was 8.0%..

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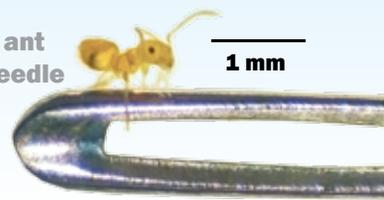
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Little yellow ant on a sewing needle



Little yellow ant, Big Impact

April Nobile

IN EARLY 2017, a new invasive ant species was discovered in the continental United States. It was found in a residential neighborhood of Ft. Lauderdale, Broward County, which is in South Florida.

Its name is the little yellow ant, *Plagiolepis alluaudi*. It is native to Madagascar and is already invasive in several Caribbean islands, including Barbados, St. Lucia and Nevis, among others. The ant has also previously been detected in Australia and Hawaii.

As its name indicates, it is a little, tiny ant, completely yellow, and has the potential to become a major pest problem in the coming years. When it was first found, we first thought it was the ghost ant, but after using liquid baits, we noticed massive foraging trails and multiple queens coming to the bait, something the ghost ant would not do. A closer look revealed that contrary to the ghost ant, it has an entirely yellow body and head, while ghost ants have a dark head. It is even smaller than the ghost ant and forms much larger colonies.

The little yellow ant population builds up in vegetation debris in the landscape surrounding structures. The ants feed on nectar sources and tend to aphids, mealybugs and scale insects.

LITTLE ANT, BIG PROBLEMS

One of the problems with this new ant species is that it can create super colonies, with several thousands of ants in a single small twig, dozens of queens, and all the colonies interconnected. This can make control difficult. If the population builds up in the environment, there are few ways to knock down every single subcolony unit.

In addition to little yellow ants becoming dominant in the environment, the bigheaded ants that used to be the most common ant species in the area were apparently displaced by this tiny yellow ant over a period of six months.

It was quite surprising, because *Pheidole megacephala* has been dominant for decades in this neighborhood. This means that the new ant species can strongly alter the ant community where they invade, like many other tramp ant species.

Little yellow ants can find their way into structures and establish in cracks in bathrooms and kitchens, where they can find food and moisture. While it does not sting or bite, it can be a major nuisance. The ants can come by the thousands to scout every square inch of a house and can recruit massively if they find sweet food. Homeowners have complained that it is even more annoying than the ghost ant. After baiting, ant trails can reform within a few days, and the reinvasion occurs from the outside landscape.

THE PROBLEMS SPREAD

Their ability to create interconnected subcolonies increases little yellow ants' chance to disperse rapidly. A single potted plant can host enough ants to be transported and infest a new location. We suspect that this is the way the ant found its way to Florida, via infested plant material from the Caribbean.

In addition, the recent Hurricane Irma may have contributed to increasing their spread. A lot of plant debris was scattered

during and after the storm. Hurricane debris pickup services have taken fully infested material and transported it to several locations in Florida for disposal. It may have been a way for the ant to hitchhike and establish in new locations.

LOOKING AHEAD

We hope that this little yellow ant will be contained to South Florida. It is known to be established in tropical areas, but one worry is that it could easily establish in green houses in nurseries beyond South Florida. Their ability to move around with potted plants and their excellent ability to associate themselves with aphids and mealybugs can turn this household nuisance into a real agricultural pest. Unfortunately, we know very little about this new ant species. We only recently started investigating it, so it will take time to figure out what impact this new ant will actually have on Florida communities.

The discovery of this new ant species will be reported in an article published in an upcoming issue of *Florida Entomologist*. **PP**

Thomas Chouvenec is Assistant Professor in Entomology at the UF/IFAS Ft. Lauderdale Research and Education Center. His research focuses on invasive species of termites and ants in South Florida. Email tomchouv@ufl.edu.



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UF/IFAS Termite Lab Study:

If Termites Eat Bait for One Day, They Die Within 90

GAINESVILLE, Fla. — Termites that feed on a well known bait for one day are eventually doomed, which is good news for those who want to protect their property from the destructive pest, a University of Florida entomologist says.

Within 30 days of that first day of feeding, the bait significantly weakens termite colonies, said Thomas Chouvenc, a UF/IFAS assistant professor of entomology and lead author of a new study. After 90 days, the insecticide kills the termite colonies, Chouvenc said. This process is far shorter than scientists originally thought, he said.

“Within a month after feeding on the bait, termites became sluggish and slowed their feeding activity. Therefore, even if the termites were still alive, they would not be causing much damage,” said Chouvenc. “This study supports the use of baits for control of subterranean termite colonies,

especially for aggressive species such as the Formosan subterranean termite and the Asian subterranean termite.”

In the study, scientists used an insecticide called a chitin synthesis inhibitor (CSI), used in the Sentricon® termite baiting system, which was invented by UF/IFAS entomology professor Nan-Yao Su. CSI has been an established termite killer for more than 20 years, but until now, scientists didn’t know how long termites had to eat the bait to be killed.

For their study, Chouvenc and Su raised colonies in their laboratory for more than four years. That way, they could expose the CSI bait to whole colonies, while monitoring the termites.

Researchers kept the termite colonies in large containers in the laboratory and let them feed on CSI baits for one day. After a day, scientists removed the bait and monitored termite deaths for 90 days.

That’s when they found the dead termite colonies.

The study’s findings come as helpful news to anyone who wants to protect their home or business from the pest, say UF/IFAS entomologists. Termites cause huge economic costs to society — as much as \$40 billion dollars per year worldwide, according to UF/IFAS researchers. Half the structures in South Florida will be at risk of infestation by subterranean termites by 2040, UF/IFAS entomologists estimate.

In addition to killing termite colonies in less time, scientists showed they need tiny amounts of the active ingredient in the insecticide to kill them, said Chouvenc, who along with Su, is a faculty member at the UF/IFAS Fort Lauderdale Research and Education Center.

The study by Chouvenc and Su is published in the *Journal of Economic Entomology*. **PP** — Brad Buck, UF/IFAS

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business-impacting bills. At this point and time there is no specific bill pointing to our industry and we are grateful for that. We have no reason to believe that we will be looking at any legislative issues directly impacting pest control. With that said, we have a lot still to follow, and interact with, in this session. Stay tuned for the show, or whatever this session shapes up to be.

The constitutional revision committee is still going strong. Over 103 proposals are on the docket and too many to cover in this article. Google it and get on board with your comments. These proposals cover a variety of issues including judiciary, public schools, criminal justice, elections, environmental issues, ethics, and higher education.

When you review the proposals please note that several “shell” proposals exist that have no available language and will need to be tracked closely. You have to ask yourself why those are there and what the intent is to leave them undescribed. This CRC is quietly happening if you aren’t paying attention. Trust me, you want to pay attention. These are Florida constitutional amendments they are proposing. This is big stuff, and some of them are completely stupid, while others are completely needed — your opinion may vary. Spend some time and review this, please. **FP**

Sean Brantley and Suzanne Graham are Co-Chairs, FPMA Government Affairs Committee



A Christmas senna scrambles into the canopies of cypress and pine trees

Stephen Brown, UF/IFAS

Invasives, continued from Page 27

flower. It has bodacious, brown-tipped anthers that curl upward like a handlebar moustache. The petal above the brown moustache has a slight notch at the tip. It has compound leaves with eight to 14 leaflets. The seed pod is a brown, slender pod, cylindrical, and 3 to 5 inches long.

The glossy shower or glaucous cassia has smaller anthers. A green area is visible at the base of the flower, looking into the flower. Its compound leaves have six to 10 blunt-oval leaflets up to 2 inches long. Seed pods are 6 inches long, 2½ inches wide, and indented between seeds.

Be on the Lookout

Go out and take a stab at identifying some of these yellow-flowering plants in your neighborhood. It is fun, and you may find you have some plants that need to be removed. **FP**

Doug Caldwell is the Commercial Landscape Horticulture Extension Educator with the University of Florida Collier County Extension. The Extension Service is an off-campus branch of the University of Florida, Institute of the Food and Agricultural Sciences and a department of the Public Services Division of Collier County government. E-Mail dougbug@ufl.edu or call (239) 353-4244 ext. 203.

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Contacts:

Ms. Ruth Brumbaugh (first contact)

Academic Advisor
(352) 273-3912 | brumbaugh@ufl.edu

Dr. Heather McAuslane

Graduate Coordinator
(352) 273-3913 | gradc@ifas.ufl.edu

Dr. Philip Koehler

Certificate Coordinator
Pest Control Technology and Urban Pest Management
(352) 392-2484 | pgk@ufl.edu

Dr. Jennifer Gillett-Kaufman

Certificate Coordinator, Landscape Pest Management
(352) 273-3950 | gillett@ufl.edu

Dr. Roxanne Connelly

Certificate Coordinator, Medical Entomology
(772) 778-7200 ext. 172 | crr@ufl.edu

Mailing Address:

University of Florida Entomology and Nematology Department
Steinmetz Hall, 1881 Natural Area Drive
Gainesville, FL 32611-0620

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