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Fumigation in Florida: A Preview

Pests Associated With The Holiday Season

OFFICIAL MAGAZINE OF FLORIDA PEST MANAGEMENT ASSOCIATION

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ON THE COVER

Wild turkey. The "naughty list" of holiday pests starts with **bird lice** and **bird mites** on turkeys, both farmed and wild. Learn how bird parasites and other pests on the list can pester humans during the holiday season.

Photo by Jens Lambert Photography

Looking Back, Moving Forward

Message from the President of FPMA, Suzanne Graham

AS THIS year's last issue of *PestPro* 2021 goes to press, and we begin our dues renewal process for 2022, I'm struck by how much FPMA has changed over the past year, how well we have endured our challenges, and how much we have to be grateful for and look forward to.

Change is Inevitable

FPMA undertook the most significant revision of its by-laws in many years. Highlights include:

- The number of regions, and therefore Regional Directors, was reduced from 16 to eight.
- Voting privileges were capped at eight (one per region) for our larger members.
- Pest Control Identification card holders were added to those eligible to become Associate Members.
- Any meeting of the Board of Directors, including the Annual Business Meeting, may be held by conference telephone, video communication, internet meeting, or other communications equipment.

To see the new bylaws in their entirety, go to the FPMA website under About.

Endurance is Key

With the passing of Vice President David Cooksey and stepping aside of President Elect Kyle Varona, the Association was faced with the challenge of filling two vacancies on the Executive Committee for the remainder of the year.

As Immediate Past President, Eric Hoffer was tasked with putting together a Nominating Committee of three past presidents to interview prospects and make recommendations so that the President could make appointments, which then needed to be approved by the Board. The results of that process are that Sean Brantley (Emory Brantley and Sons) will serve as the President Elect, and Chris Cavanagh (Petri Pest Control Services) will serve as both Treasurer and Vice President for the remainder of 2021.

While going through this process, the By-laws Committee decided it was time to recommend a change that has been considered for quite some time: the elimination of the President Elect position. Since this requires a change to the By-laws, members will be voting on this first thing at the 2022 Annual Business Meeting to be held at EXPO at 4 PM on January 20, at the Embassy Suites in Kissimmee.

Gratitude and That Positive Attitude

I would be remiss if I did not thank our Past President Eric Hoffer for his leadership as chair of both the Nominating Committee and the By-laws Committee. Special thanks also go to Anne-Marie Tulp, Tim Brock, and Mickey Nolan for taking the time out of their busy schedules to nominate people best suited to fortify the EC in the face of this double loss.

I want to thank Sean Brantley for his willingness to step up and help us out for the next couple of months. And finally, I want to express my sincere gratitude to Mark Ruff, who was there for us throughout all the discussions and meetings. His counsel is invaluable.

With our house in order and a successful Summer Conference now behind us, we are looking forward to getting together again at our Business and Operations EXPO, which will take place on January 18–20 at the Embassy Suites in Kissimmee (see ad on page 14 for more details).

So much has happened in the past year, but the Association's leadership is firmly in place, and the Florida Pest Management Association remains financially secure. What makes all this volunteer work so worthwhile is you, the members, who show us every day that endurance, gratitude and a positive attitude are key ingredients to success in business and life. PP

Suzanne Graham
President, FPMA

Fall is for Pest Control

FALL is one of the best times of year in Florida. Pests have reproduced all summer, and many pest populations are at their peak. In many other parts of the country, fall means that pest populations disappear for the winter, and companies have to adjust to this change. In fact, some companies end up looking for work. In Florida, fall means increased business and a time to continue to deliver service.

The difference in Florida conditions with the rest of the United States and Canada actually resulted in Florida having the first pesticide certification and pest control company licensing in the country.

These Asian lady beetles were found sheltering under wood trim near a window on a house. *Insect photo by Jason Samfield.*

FLY-BY-NIGHT PEST CONTROL

In the mid-1940s, Florida had a real problem that was perceived by folks like Dr. John Creighton at the University of Florida and members of the pest control industry. The problem was that pest control companies in northern states were coming to Florida during the fall and winter, and they sold pest control contracts to Floridians. They had no business in their home northern states, so they came to Florida for business. Unfortunately, when weather warmed in their home states, these pest control companies went home and left their Florida customers with a worthless contract.

The problem of northern pest controllers abandoning customers was solved by the University of Florida and the leaders in the pest control industry. The joint meeting at the University of Florida resulted in the formation of the Florida Pest Control Association (FPCA), now called FPMA. One of the first tasks taken on by FPCA with UF was to solve the problem of abandonment of consumers by the industry. The Florida legislature was approached with a proposal to certify pest control operators and license pest control companies. What resulted was the birth of Statute 482 of Florida law, which regulates pest control.

Statute 482 defines pest control rather broadly. It includes the use of any method or device or the application of any substance to prevent, destroy, repel, mitigate, curb, control, or eradicate any pest in, on, or under a structure, lawn, or ornamental. It is not just the application of pesticides or control methods, but also includes inspections for pests. The law at first required pesticide certification in either general household pests or wood destroying organisms. Later, it was expanded to certification in lawn and ornamentals and fumigation.

In order to become certified, an applicant would have to have at least three years of practical experience in pest control within the state of Florida. That meant pest controllers who worked in New York, New Jersey, or other northern states would have to live in Florida for three years for their practical experience. Essentially, the requirement of certification protected homeowners from being abandoned by the snowbird pest controllers. Even though the law has changed over the years, Florida does not have much reciprocity for the practical experience in other states. The law still protects homeowners from the snowbird pest controllers.

FLORIDA PESTS PERSEVERE

So pests continue to be a problem in the Florida fall environment. As the temperatures cool, the pests look for a warmer place to live. Cockroaches move from the mulch and trees to the warmer houses. Ants, like fire ants, move their nests to the warm areas under sidewalks and concrete slabs. Occasional invaders, like centipedes, millipedes, and other mulch-infesting pests move indoors. There are not many termite swarms during the fall, but the termites do keep on eating wood in the structure and in trees. Even wildlife like raccoons, squirrels and opossums try to find warmth in the house. So pest control operations thrive during the fall of the year.

Fall is not a time to rest in pest control. In fact, it is one of the most challenging times of the year. Customers who were happy with the quality of service during the summer may now encounter a myriad of problems. Some of these may be invasive insects that look for a place to overwinter.

The Asian lady beetle is a good example. After spending the spring and summer feasting on aphids and mealybugs, Asian lady beetles squeeze into cracks and crevices, entering around windows and doors.

The brown marmorated stink bugs feast on many agricultural and landscape plants during most of the year. But they will also enter houses looking for warmth. The problem is that when disturbed, they really smell bad. The kudzu bug feeds on kudzu and invades homes during the fall and winter. The list goes on with boxelder bugs, jadera bugs, and others that are problems for homeowners and the pest controllers to manage.

PEST PROS KEEP BUSY

It is great to be in a thriving industry during the fall. It is no time to take a few months off for Oktoberfest, Halloween and Thanksgiving. It is a very busy time of year in Florida. The residents of the state can thank the industry for the foresight to protect them from the snowbird pest control operators and companies. We owe that to the University of Florida Entomology Department and the original members of the Florida Pest Management Association. PP

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

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Pests Associated With **The Holiday Season**

Roberto Pereira and Philip Koehler

READY OR NOT, the holidays are here. We will soon feast upon meals made from food products that appear on our table only once a year. When holiday guests arrive, there is always a chance that new pests will enter with them. And watch out — additional uninvited pests may crash the party!

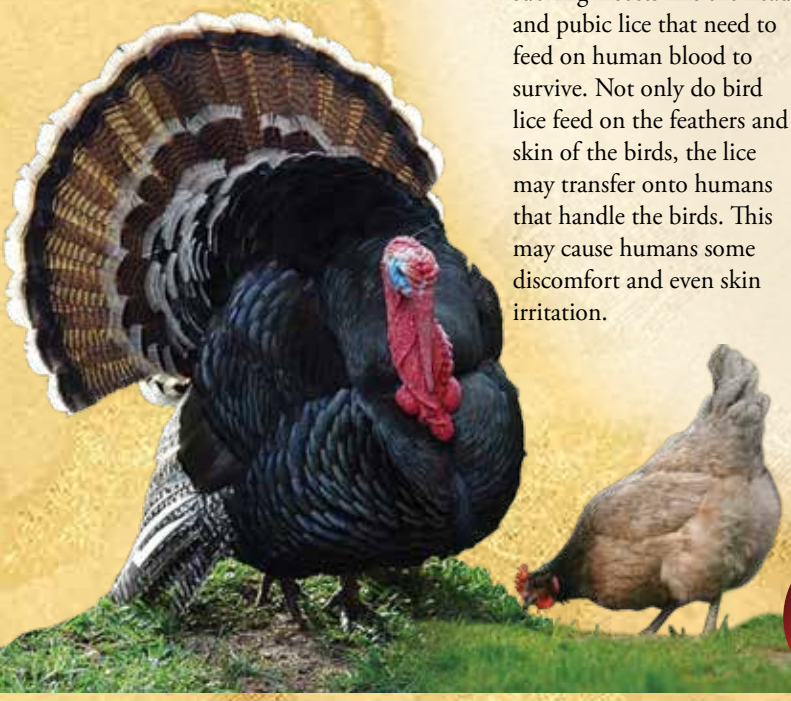
Let's talk turkey

Bird mite and bites

MOST of us will buy the bird, frozen, from a supermarket. That is certainly a safe way to go, but adventurous folks might get a live bird from a farm or even hunt for one in the wild. If you do so, there is always a chance you will introduce a new pest into your household.

There are many insects that may occur on wild-caught and even farm-raised turkeys. Lice are commonly found on turkeys. Several lice species may occur on these birds as well as on many other poultry species. Bird lice are not blood-sucking insects like the head and pubic lice that need to feed on human blood to survive. Not only do bird lice feed on the feathers and skin of the birds, the lice may transfer onto humans that handle the birds. This may cause humans some discomfort and even skin irritation.

Bird lice and bites



Bird mites feed on the blood of birds, including turkeys. These mites cannot live and complete their cycle on human blood. However, that does not mean that bird mites will not bite humans. They will, even though human blood does not allow them to complete their life cycle. In the end, you are left with some irritation due to that temporary infestation with bird mites, and your holidays may be ruined anyway.

Birds as Pest Pros

When we consider the vast number of insects consumed by turkeys and other birds, it is easy to see that some insect control can be attributed to birds. In fact, a great portion of the wild-turkey diet consists of insects, spiders and ticks, which could have become pests in and around our homes had they not been consumed by turkeys and other birds. However, the turkey that you may consume during the holidays was likely raised on a farm, where its diet might not include many insects.

As you stuff that turkey, you could contemplate the fact that insects may be feeding your family in two different ways: a) providing you a target for your pest management activities, and b) serving as food for your favorite holiday meal.

Birds worldwide eat 400 to 500 METRIC TONS of INSECTS a year!

— Science Daily, 2018

Kamran Iftikhar

Drugstore beetle

Udo Schmidt

Cigarette beetle

Red flour beetle

Peggy Greb

Confused flour beetles

Matt Bertone

Salvador Vitanza

Bird lice: Clemson Univ. / Bird mite: Daktaridudu

Matt Bertone

A severe bed bug infestation

HOLIDAY meals often include a series of ingredients that we use only once a year. That means the forgotten pack of exotic flour, fancy spice, or other special ingredient that you want to use again this year will have had a full year to grow some exotic stored product pests.

After a year left alone to grow and multiply on that product, a family of flour beetles or other storage pests may be ready to spread some holiday cheer as you open the jars left alone in the cupboard. Among the pests you may find are cigarette beetles, drugstore beetles, and other tiny beetles that can multiply into large populations in those small containers of their favorite holiday food staples.

All the Party Crashers Want A Piece of the Feast

Ants may come in for the sweets. Cockroaches may come for the leftovers — not the ones in the refrigerator, but the ones left on the dishes in your sink! The insects will offer their help in cleaning up things for you. After all, you look like you need help, since you piled all the dishes in the sink and left them there!

Other visitors during the holiday season may include hitchhikers that your in-laws — it is always the fault of the in-laws! — acquired along their way to your southern home, from the frozen tundra up north.

Yes, the least welcome guests might be bed bugs! You will probably not notice any bed bugs until your human visitors return home — leaving hungry, bloodsucking, permanent guests in *your* home. Fortunately, the numbers of bed bug infestations have declined a bit from past years, but there are still plenty of these insects around that could end up in your house for a long holiday season.

Of course, an important component of the holiday season is the weather. Some of the colder days of the year usually occur around the holidays. That forces many potential pests outdoors to look for a cozier place indoors, or a location where they can hibernate or protect themselves from the cold weather. Cluster flies are well known for seeking shelter from colder temperatures, but other insects do the same.

Multicolored Asian lady beetles have been known to invade homes in large numbers, causing all sorts of problems that include staining light-colored fabrics, a foul smell, and a great annoyance to many humans. Masses of the adult beetles seek protection from winter temperatures by penetrating through cracks and other openings in walls. They may work all the way through the walls and inside buildings, where the heated air may stimulate greater activity.

Solutions for these types of infestations need to include a good inspection of outside walls and the elimination of cracks and other openings that may allow the insects to come in.

Because homes and other buildings offer a relatively warm place during the holiday season, it is easy to see why many bugs may decide that inside the house is a good place to be for the holidays. Whether they come for the food, the warmth, or just for the company, make sure they do not become permanent residents. PP

Roberto Pereira is Extension Professor and Philip Koehler is Professor Emeritus in Urban Entomology at the UF/IFAS Entomology and Nematology Department.

OPSU

BYU / Balaram Mahalder / Erik Kariis

John Gavloski

Multicolored Asian lady beetles

Announcing the 2021 Florida Fumigation Manual

IN Florida, more than 60,000 residential fumigations are performed every year by more than 1,500 certified fumigators in the state. In Florida, structural fumigations are performed to take care of drywood termite infestations, bed bugs, and other household or structural pests.

However, structural fumigation is a very technical process that must be performed safely and accurately. Fumigators in Florida are therefore required to be certified by the Florida Department of Agriculture and Consumer Services to be allowed to perform a fumigation.

Because regulations are complex and extensive, *The Florida Fumigation Manual* has been prepared in a collaboration among FDACS, professionals from the industry, and faculty at the University of Florida, so that individuals who wish to take the state examination can prepare accordingly.

The Florida Fumigation Manual 2021 (Second Edition) is now available for free download.[1] The manual was prepared by Thomas Chouvenc, Ellen Thoms, Sean Brantley, and William H. Kern, Jr. Rudolf H. Scheffrahn served as executive editor.

This manual aims at providing the necessary study material to help prepare for the Florida fumigation state examination (Fumigator and SPID). The manual can be downloaded as a PDF file on computers, phones or tablets.

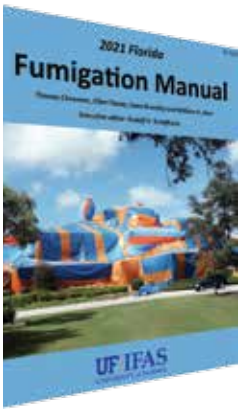
The manual was formatted to be printer-friendly and can be printed as a paper version. No hard copy of this manual was produced because it will continue to change on a regular basis as regulations and labeling are updated at the federal and state levels. When new rules are implemented, we will update the manual to reflect these changes, which you will be able to download to obtain the most recent available version from the website. The fumigation manual will therefore be a live document, always updated and available online.

The *Florida Fumigation Manual* is free of charge. The goal of this manual is to ensure that the industry has access to the most current information so that fumigations are safely performed, following all the current rules, so as to provide quality services to the consumer. However, there is an opportunity to make a voluntary contribution, which will help support the termite research program at the Ft. Lauderdale REC, the School of Structural Fumigation, and future updates of this manual. A link to easily contribute is also available on the website.

This manual complements the training you can receive at the School of Structural Fumigation, held at the FLREC each February and November.[2] PP

Thomas Chouvenc is Assistant Professor in urban entomology specializing in biology, ecology, evolution and control of termites at UF/IFAS Ft. Lauderdale Research and Education Center.

[1] https://flrec.ifas.ufl.edu/florida-fumigation-manual/ [2] https://conference.ifas.ufl.edu/fumigation/



Fumigation in Florida

A Preview of the 2021 Florida Fumigation Manual

Thomas Chouvenc, Ellen Thoms, Sean Brantley, and William H. Kern

STRUCTURAL fumigation is unlike any other category of modern pest control. It demands that a sequence of procedures be conducted in varying and often difficult physical environments using toxic gases and an assortment of heavy, costly and specialized equipment.

Fumigation is the only method of pest control that allows for complete and rapid eradication of target organisms within a defined space. Structural fumigation is a needed and rewarding profession in which the skill, precision and creativity of the fumigator are constantly challenged.

Florida is home to a greater diversity of structural and household pests than any other state. Among the target pests of structural fumigation are drywood termites, wood-boring beetles, bed bugs, aerial infestations of subterranean termites, and the occasional problematic household insect, spider, or rodent infestation. More than 60,000 structural fumigations are conducted annually in Florida, with the majority targeting drywood termites.

The purpose of the *2021 Florida Fumigation Manual* is to provide a single updated study reference for the safe, effective and lawful practice of fumigation in Florida. This manual contains standard procedures that most fumigators in the state have adopted because they are required by law or because they make good technical or economic sense.

No two companies in Florida conduct fumigations in exactly the same manner. It is not the intent of the manual to dictate how a fumigator accomplishes his/her task, only that he/she uses safe practices to control the target pest, abides by the product labeling, and follows all local, state and federal laws.

Why Fumigate?

The great advantage of structural fumigation over other methods of pest control is that all target pests are killed within the confined, fumigated space, regardless of their location. Fumigants follow all the physical laws of gases. Therefore, their molecules diffuse freely through air and infiltrate the minutest of spaces. One disadvantage of fumigation is the lack of residual activity to protect the fumigated space from subsequent infestation.

When to Fumigate?

Structural fumigation is the treatment of choice when the target pest infestation cannot be fully accessed or delineated, when there is evidence of a structural infestation but the source is unknown, or when the target pest must be eradicated because of a quarantine issue.

Fumigations can be conducted at any time of year for rodents. However, when fumigating for insects in structures, the minimum temperature at the pest target site must be at least 40° F.

How to Fumigate?

The procedures for lawful, safe, and effective fumigations are described in this manual.

State Regulation, Certification, and Examination

The practice of commercial pest control in Florida is strictly regulated under the provisions of the Structural Pest Control Act. These laws and regulations are administered and enforced by the Florida Department of Agriculture and Consumer Services. In addition to administrative offices in Tallahassee, FDACS has field inspectors and supervisory personnel located throughout the state to assist in enforcement activities.

The inherent dangers in structural fumigation are recognized in state law and authorize FDACS to issue an immediate stop-use or stop-work order for fumigation performed in violation of fumigant labeling requirements or department rules, or in a manner that presents an immediate serious danger to the health, safety, or welfare of the public, including, but not limited to, failure to use required personal protective equipment, failure to use a required warning agent, failure to post required warning signs, failure to secure a structure's usual entrances as required, or using a fumigant in a manner that will likely result in hazardous exposure to humans, animals, or the environment.

If a stop order is issued, work cannot be resumed until

Church pews are tarped and snaked for fumigation.

corrections are made, verified, and the release section of the stop order is completed by FDACS. The Certified Operator in charge must notify FDACS within 24 hours of any accidental human poisoning or death connected with fumigation or any pest control work performed on a job they are supervising.

State law authorizes one business licensing program (Pest Control Business License) and certification programs that include a Pest Control Operator's Certificate Program. Pest control within the meaning of this law includes all phases of structural fumigation. Each pest control business location must be licensed by FDACS and the pest control operations of the business location must have a designated CO(s) in charge. To issue a business license, the candidate must first either obtain a certificate for each category they plan to perform services in through certain qualifications, working experience, and examination, or obtain the services of a person already certified.

Continued on Page 20

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SOIL HORIZON
The Myakka soil series is the official state soil of Florida. It includes bright white sand that has been leached of nutrients and a dark "spodic" layer where nutrients have accumulated below the sand. *Photo by Rex Ellis, UF*

IMPROVING the Soil In Urban Landscapes

Erin Harlow

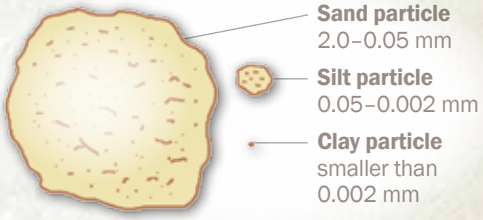
Do you ever stop and revisit concepts you know are important but are sometimes pushed to the back burner for more obvious and pressing issues? Lawn and landscape professionals and technicians spend a lot of time addressing obvious issues, such as pests. We may not have the time to examine other factors that truly may be influencing the health of our plants, such as soil health.

SOIL HEALTH, especially in the urban setting, is an important concept for the overall health of the plant that many times is overlooked or misunderstood. This article will provide an overview of soils in an urban environment. It will also introduce a research-based document every landscape professional should read.

Soils in Your Landscape

Soil is rarely uniform throughout a landscape. To understand the soil on your accounts, you should understand the common soil texture in your area, the amount of organic matter in the soil, the soil compaction or bulk density, and how all of these factors may influence the health of plants.

Soil is divided into three categories depending on the size of the particle: sand, silt or clay. The percentage of each in your soil will determine what type of soil is on your site. The composition of the soil also influences factors such as water retention and how it moves in your landscape.



Relative particle sizes

Most Florida soil is sand, but the panhandle of Florida has more clay layers. The larger the particle size, the larger the pore space, which means that water can flow through these spaces faster. For your plants, this means that water may move out of the root zone quickly, requiring more supplemental irrigation.

Florida soils tend to have low organic matter — less than 4 percent. Organic matter plays a huge role in soil health. Improving the amount of organic matter in your soil can increase the potential for nutrient uptake by your plants (cation

Continued on Page 24

BUSINESS AND OPERATIONS

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Perfect Plants for Florida Pollinators

Sheila Dunning, UF/IFAS / Bee: Johnny N. Dell

Chaste tree, *Vitex agnus-castus*

BRINGING pollinators to your garden is an important step in building a healthy landscape. Several pollinator plants such as anise hyssop, Walter's viburnum, and chaste tree are excellent pollinator plants. Pollinators provide much needed ecosystem services and their presence should be encouraged whenever possible. Each of the following plants has unique characteristics that make them excellent attractors for pollinators throughout Florida.

Anise Hyssop

Anise hyssop is a perennial of the mint family that can be found in upland forested areas, plains and fields. This plant grows 2 to 4 feet tall and is noted for its summer bloom of lavender to purple spiked flowers and its fragrant foliage. It is best grown in dry to medium moisture, well drained soils, in full sun to part shade. This plant performs well in moist soils, but good soil drainage is essential. In order to properly manage anise hyssop, be sure to remove spent flowers to promote additional blooms that will encourage pollinators to forage in the landscape.

Walter's Viburnum

Walter's viburnum makes for an excellent hedge plant. This Florida native features a cluster of small white flowers in spring that attract butterflies, and its fall fruit attracts birds and other wildlife. It's also a favorite nesting site for cardinals and other songbirds. Walter's viburnum prefers full or partial sun and will tolerate a range of different soil types. This is a low-maintenance plant and highly drought-tolerant, but it can produce root suckers. Therefore, regular pruning is a practice that can enhance growth and maturity.

Chaste Tree

Chaste tree features sage-scented gray-green leaves. This tree has several cultivars, which offer a choice in flower color. One variety, 'Alba,' has white flowers that bloom in clusters, while another variety, 'Rosea,' has bright, showy pink flowers.

Chaste tree has a strong ability to attract wildlife. Although not a Florida native species, native butterflies and hummingbirds feed on the nectar. It is also attractive to honey bees and encourages honey production in surrounding hives.

Leave the chaste tree room to grow, since this vase-shaped plant can grow up to 15 feet tall and up to 20 feet wide. These plants develop low, drooping branches when left unpruned. In your landscape this plant will grow best in well-drained soil where standing moisture is not present. Planting a pollinator attractor like chaste tree offers significant aesthetic value to a landscape while also providing valuable ecosystem services. PP

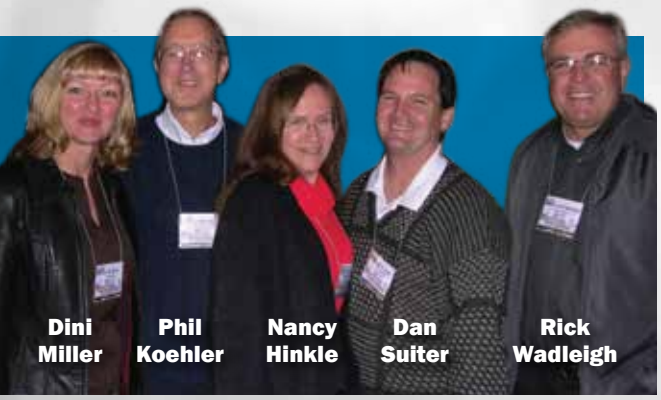
– Luke Miller, UF/IFAS

20th Century

21st Century:
A career in animal health, then and now!

Nancy Hinkle

PROUD TO BE PART OF THE KOEHLER LEGACY



Dini Miller | Phil Koehler | Nancy Hinkle | Dan Suiter | Rick Wadleigh

ANYONE who has met Phil Koehler can appreciate that spending four years in his lab is a life-changing experience. I was particularly fortunate that those four years exposed me not only to Dr. Koehler, but to graduate students who would become valued lifetime friends as well.

Phil Koehler is definitely of the "toss 'em in and see if they can swim" school. Because of this practical experience, I considered myself employed in Extension as of the moment I started working with Phil Koehler.

I had been in Gainesville only a week when Dr. Koehler received a call from a local radio station wanting to do an interview about fleas and their control. He volunteered me.

Despite the fact that I knew nothing about fleas, I had two days to become an expert. Off to the library I went and spent that time reading about flea control. It turns out that most of what I read was wrong, but at that point very little research had been conducted on cat fleas, so most biology and recommendations were extrapolated from rodent fleas.

Opportunities in Animal Health

Even though my research was on fleas — studying their basic biology and the effect of insect growth regulators on the larvae — my perspective was more from the animal health angle, which allowed me to get a position as a veterinary entomologist upon completion.

Dan Suiter

Phil Koehler, Dick Patterson

L–R: Lab mates Nancy Hinkle, Dick Patterson, Euripides Mena, Phil Koehler, Susan Ard, Joe Biondi, Tom Atkinson, Dan Suiter, and Jim Moss

For almost 10 years I taught at the University of California, Riverside, before taking my current position as a veterinary entomologist at the University of Georgia. My research involves fleas, ticks, lice, mites, mosquitoes — just about anything that sucks blood or transmits animal diseases.

One of the most frequently used words in Dr. Koehler's vocabulary is "opportunity." Nothing is a "problem" or even a "challenge," but rather an opportunity. For this reason, his students presented him with the "Opportunity Award" at the 1993 Entomological Society of America meeting, at which he also received the national ESA Distinguished Achievement Award in Extension.

Another "opportunity" was sitting up front with Dr. Koehler in the van. When traveling to meetings, we argued about who had to sit with him, because inevitably that individual would have his or her research completely rearranged. Phil Koehler could produce a lifetime of research objectives in a short drive.

Patterson Helps Ride Herd

Those of us in UF's Urban Entomology program considered ourselves fortunate to have a "twofer," because along with Koehler came Dick Patterson. Like Dr. Koehler, Dr. Patterson had also gotten his PhD at Cornell University, the birthplace of American entomology.

Koehler and Patterson had developed their collaboration in the 1980s, resulting in Koehler and his graduate students being housed in the USDA-ARS Insects Affecting Man and Animals Research Laboratory, now known by the more politically correct name Center for Medical, Agricultural, and Veterinary Entomology. The USDA had some wonderful facilities, and we students benefitted greatly by exposure to the USDA scientists and visiting researchers who regularly passed through.

Plus, you know how bureaucracies work — if there was something that could not be accomplished by working through the UF system, there was usually some way to manage it through USDA procedures, and vice-versa. Enhanced flexibility is one of Koehler's strengths.

During my stint in the Koehler lab, a succession of sharp post-docs came through, including Rick Wadleigh, who was hired by S.C. Johnson & Son, Tom Atkinson, and John Klotz. Interestingly, Tom Atkinson was hired as the Extension Urban Entomologist at the University of California, Riverside, and was then succeeded in that position by John Klotz when Tom left for a job at DowElanco.

The Koehler bunch was constantly challenged to come up with interesting topics to keep meeting attendees engaged; everyone knows how dry earning regulatory credits can be. So Tom Atkinson came up with the "Toughest Roach Contest," and challenged pest professionals from all over Florida to bring a few dozen cockroaches from their hardest-to-control account and pit them against other cockroaches from around the state. Some of these

Continued on Page 26

Nancy Recalls 1990: National News of a Frightful Kind

Dan Suiter, Faith Oi, Bill Kern, Karen Vail, Bettina Moser, and I were all UF students with front row seats for the Gainesville student murders in late August 1990. We worked at the USDA Insects Affecting Man & Animals Lab, which was central to the murder sites of five local students.

Security was tightened, and I had to get special permission to go in on weekends to tend insect colonies and feed the cats on which fleas were raised. Because the USDA had special keys that couldn't be duplicated, I frankly felt safer at the USDA lab than anywhere.

Williamsburg Apartments, the first crime scene, was a few blocks from the USDA lab.

OPTIONS

Steve A. Johnson,
Monica E. McGarrity, and
Dustin Smith

Feral monk parakeets in the wild. Their colony nests may conflict with electric utilities.

Richard Crossley

Cane toad toxin can irritate skin and eyes

Brian Gratwicke

DestructiveEyes

A juvenile pet South American boa constrictor would compete with our native fauna as an adult in the wild.

Before You Buy:

Exotic reptiles, birds and fish are popular pets. However, many species grow large and require special cages or become difficult to handle. Many reptiles and birds require a much longer commitment for care than a hamster or even most dogs — they may even outlive their owners! Before you purchase an exotic pet, be sure you fully understand how big it will get and how long it will live, as well as its current and future housing and feeding needs. Ask yourself, "Is this the best pet for my situation, or should I consider a different one?"

Unfortunately, many well-meaning pet owners choose to release their pets into the wild when they tire of the animals or are no longer able to care for them. In addition to being against state laws, releasing a pet is inhumane because many of these animals die.

However, some released pets beat the odds and survive, and some even find mates and reproduce. These animals are not native to Florida, and some have the potential to cause serious harm to our environment and economy. If at some point you are no longer able to care for your exotic pet, you have several options that are discussed in this brochure — but releasing it is not an option. Never turn a pet loose outside!

What To Do When You Can No Longer Care For Your Exotic Pet?

KEEP IT ANYWAY

If your pet is becoming difficult to handle, getting some advice from an expert may help. Contact your local animal shelter or rescue group for advice on dealing with behavioral problems and keeping your pet healthy (see the Helpful Resources Online section). Remember that you made a commitment to care for this animal.

for UNWANTED EXOTIC PETS

FIND IT A NEW HOME
The best option for dealing with an unwanted pet is to find it a new home. Use the resources listed in this brochure to locate rescue groups, animal shelters, or herpetological societies (for reptiles)— they will usually try to help you place your pet in a new home. You can also post a newspaper or internet ad or post fliers at local pet stores or animal shelters. Contact local science teachers and nature centers — they may want a classroom pet.

RETURN IT TO THE PET STORE
If you are no longer able to keep your pet, contact the pet store where you purchased it. Because of the growing concern about the problems caused by pet releases, many pet stores may be willing to take back unwanted pets rather than risk having them set free. However, you probably will not get your money back!

CONTACT ANIMAL CONTROL
Animal control agencies are usually equipped to take only mammals, but some may be able to help or offer advice. However, these agencies rarely have no-kill policies and most usually cannot place exotic pets in permanent homes.

CONTACT YOUR STATE WILDLIFE AGENCY
Florida Fish and Wildlife Conservation Commission: "Owners may surrender nonnative pets for any reason at any time. The FWC will facilitate the adoption process and make every effort to place the nonnative pet with an approved adopter."

EUTHANIZE IT
Euthanizing a pet is never an easy choice. However, if you cannot find anyone to take your pet, you may have to consider humane euthanasia by a qualified veterinarian (see the Helpful Resources Online section). You should not release a pet into the wild under any circumstances. **PP**

Steve A. Johnson is Associate Professor and Monica E. McGarrity is former Extension Program Assistant at UF/IFAS Department of Wildlife Ecology and Conservation, Gainesville, Fla., and Dustin Smith is Curator of Reptiles and Amphibians, North Carolina Zoological Park, Ashboro, NC

Adapted from EDIS publication WEC 308, Options for Unwanted Exotic Pets

Invasive lionfish continue to menace other tropical reef fish off the coast.

Chad Sparkes

HELPFUL RESOURCES ONLINE

AnimalShelter.org provides a directory of animal shelters by state or zip code. Many shelters are equipped to take only mammals, but they may be able to connect you with local rescue groups that will help place exotic pets in new homes:

http://www.animalshelter.org/shelters/states.asp

Florida Exotic Bird Sanctuary provides permanent sanctuary for exotic birds that cannot be adopted:

http://www.flabirdsanctuary.com/

FloridaPets.net provides a list of localized pet rescue groups:

http://www.floridapets.net/rescues.html

LocalVets.com provides a directory of qualified exotic pet veterinarians, searchable by zip code. Contact them for advice or euthanasia services:

http://www.localvets.com/services/exotic/

The Florida Fish and Wildlife Conservation Commission Amnesty Program:

https://myfwc.com/wildlifehabitats/nonnatives/amnesty-program/

Photo at right: The Floridian, a mansion, under sulfuryl fluoride fumigation in South Florida.

Fumigation, continued from Page 11

THE CO must be certified in the category (or categories) in which the business wishes to operate, must have a primary occupation in the pest control business, and must be employed on a full-time basis by the licensed firm. Presently, the available categories are: General Household Pest and Rodent Control, Termite and Other Wood-Destroying Organisms Control, Lawn and Ornamental Pest Control, and Fumigation. Pest control operator's certificates are issued to persons who pass the written examination(s) given by FDACS. The minimum qualifications for CO examination in fumigation are three years employment as a service employee of a licensee that performs fumigation, or completing a designated number of college level courses in pest control entomology, or related subjects plus one year employment as a service employee of a licensee that performs fumigation.

A CO in charge of fumigation must train and/or verify training to each special identification cardholder (SPID) in proper fumigation procedures as required by regulations and fumigant labeling directions, and to know the location, purpose, use and maintenance of personal protective equipment and fumigant detection and safety devices and when and how to use this equipment.

The fumigation CO must also train each identification cardholder, assigned to fumigation (e.g., with a Fumigation Identification Card endorsement) in basic fumigation procedures, self-contained breathing apparatus (SCBA) use, the proper use of fumigant safety

Fumigator wearing positive-pressure SCBA

equipment, and to report immediately to the CO in charge or his SPID any irregularities or emergencies.

In 2002, the Pest Control Enforcement Advisory Council was created within FDACS. Appointed by the Commissioner of Agriculture for a four-year term, the 11-member panel is to advise the Commissioner on regulatory and enforcement policy of Florida's pest control industry. The Council is composed of representatives from FDACS, the pest control industry, the scientific community, and a private consumer with the goal of ensuring industry enforcement and compliance, consumer protection, and public understanding of the pest control industry. Two of the Council members are to be actively involved and certified in structural fumigation.

The Pesticide Labeling

All labeling language must be approved by EPA before a pesticide can be sold or distributed in the United States. The overall intent of the label is to provide clear directions for effective product performance while minimizing risks to human health and the environment.

It is a violation of federal law to use a pesticide in a manner inconsistent with its labeling. The courts consider a label to be a legal document. In addition, following labeling instructions carefully and precisely is necessary to ensure safe and efficacious use.

Each formulated fumigant has a label and a manual. For all fumigants, including structural and commodity fumigants, the manual is part of the labeling. Fumigation employees should have access to the fumigant manual and label when they are preparing a site for fumigation, introducing the warning agent and fumigant, conducting aeration procedures, and testing for clearance. PP

Thomas Chouvenc is Assistant Professor at UF/IFAS Ft. Lauderdale REC, Ellen Thoms is an Independent Consultant, Sean Brantley is Instructor at UF School of Structural Fumigation, and William H. Kern, Jr. is Associate Professor at UF/IFAS Ft. Lauderdale REC.


Maya cockroach nymph


Maya cockroach adult

Photos by Kyle Kandilian (nymph) and Dave Renoult (adult)

The Maya Cockroach,
An Aquatic Insect

Phil Koehler, Guest Detective

THE MAYA cockroach, *Epilampra maya,* can live in water and does not flounder on top of the water like American or German cockroaches. This lesser-known introduced species will actually submerge and hold its breath.

The Maya cockroach was first found in 1982 near Arcadia, Florida. Live Maya cockroaches were found outside a house by a pest control operator doing a routine inspection for wood-destroying insects. The cockroaches were under the roof overhang of the house as well as in the carport. The infestation extended into the house, with live cockroaches and fecal droppings found in the kitchen and pantry.

A nearby neighbor also reported sightings of the Maya cockroach in his house over a two-year period. The species was later determined to be well established in the area surrounding these houses. The most specimens of Maya cockroach were collected on the banks of a slow-moving stream bordering the properties. All life stages were found, were very fast moving, and scurried into the water.

The Maya cockroach is prevalent in Central America and Mexico. It has also been collected on some Caribbean islands like Granada, Trinidad and St. Lucia. The nymphs and adults of this species are really good swimmers and are usually collected near bodies of water.

The genus *Epilampra* is tropical in distribution and is one of the most important decomposers of leaf litter and insect carcasses in tropical rainforests. It has been estimated that more than 5 percent of leaves and other organic debris is digested by this group of cockroaches.

The Maya cockroach infestation has spread to other parts of Florida from the first reported populations near Arcadia. A recent sighting was near New Port Richie. Again, the cockroaches were collected near water. This cockroach species is now probably established throughout peninsular Florida. Since it is a tropical species, it is not expected to spread north of peninsular Florida.

Most pest species of cockroaches in the United States were introduced through international commerce. In fact, the American, German, Oriental and brownbanded cockroaches have become established nearly worldwide through human transport of goods and vessels. Because of the pest potential of introduced cockroaches, there are strong measures to prevent the introduction of new species into the United States. In spite of these efforts, new species have been introduced and become established cockroach pests. One well known example is the Asian cockroach. It is now established throughout the southeastern states and is an important pest species. PP

Phil Koehler is Professor Emeritus in Urban Entomology at the UF/IFAS Entomology and Nematology Department.

Proposed Revision of the Florida Rule

WE AT Pest Management University are very excited to announce the publication of a proposed revision to the Florida Rule! What is the "Florida Rule?" Its official title is "Performance Standards and Acceptable Test Conditions for Preventive Termite Treatments for New Construction," FAC 5E-2.0311. This rule defines the performance standards for products that our industry uses to protect consumer homes during the new construction phase.

The Rule has not been reviewed or modified since its adoption in 2003. Why is it important to re-examine rules that impact the registration of products for new construction periodically? Very simply, innovation and product evolution has outstripped the original Rule.

Products change. Our proposed revision includes termiticides, termite baiting systems, wood treatments, pesticide combinations, physical barriers and exclusion devices as well as termite resistant building construction, and new application methods.

Termite species change. Florida has the highest number of invasive species of any state in the U.S., and we need to consider how we will protect what could be our customers' most important asset: their homes. Recent records have identified six invasive termite species, five of which are now established in Florida: Formosan and Asian subterranean termites, conehead termite, West Indian drywood termite, and the western drywood termite.

Why should the industry care? Companies can incur significant liability for new construction treatments. Did you know that according to FS 482.051(5), a licensee must "maintain for 3 years the record of each pre-construction treatment" and that FAC 5E-14.105 requires that companies must provide a warranty for a least one year, with a homeowner option to renew for up to four years for new construction treatments? So a company is potentially liable for new construction treatments for up to five years.

However, FAC 5E-2.0311 currently requires that products for new construction only show efficacy for one to five years depending on the product type and inspection method used during the evaluation process.

Photo: Formosan subterranean termite damage

We believe the proposed revision will protect consumers, reduce liability for companies. provide guidance to registrants on experimental design which can help regulators in approval decisions for future products. We thank FDACS for funding this project. PP

Faith Oi is Extension Associate Professor, UF/IFAS Entomology and Nematology Department.

Female Formosan leads a male Asian

Ask IFAS: *How do two termite species coordinate their mating behavior for hybrid colony success?*

DAVIE, Fla. – By studying two of the most invasive termite species in Florida, scientists have gained insights at how animals living in groups — termites particularly — coordinate their leader-follower behaviors to thrive.

Thomas Chouvenc, an assistant professor of urban entomology at the UF/IFAS Fort Lauderdale Research and Education Center (REC), collaborated with colleagues at Arizona State University on new research. In the study, scientists used Formosan subterranean termites and Asian subterranean termites — two of the most invasive species in Florida.

A new paper, "Coordination of movement via complementary interactions of leaders and followers in termite mating pairs," explores the hidden relationship between termite species behind the behavioral traits of leaders and followers.

Basic biology

The key to mating success is in the female's pheromones. During the mating season, winged termite individuals fly from their colonies to find a mate and create a new colony. The female produces a pheromone that allows a male to find her. In this interaction, the female is the leader, while the male is the follower, as both partners look for a place to start a colony.

The rules of engagement guiding the behavior of leader–follower are often species-specific. Also, the rules are believed to result from the fine-tuning of two opposite behavioral traits — leading and following — through natural selection.

Interspecies tango

South Florida presented a unique opportunity to further test that hypothesis, which is why researchers turned to the termite lab at UF/IFAS Fort Lauderdale REC, where Chouvenc specializes in termite biology. Studies on the biology of termites yield insights into pest management strategies, but also provide novel understanding of complex evolutionary processes.

"In South Florida, we have these two established invasive termite species that cause a lot of damage to structures and trees," said Chouvenc. "They sometimes engage in interspecific mating activity with a potential for hybridization, which gave us the ideal opportunity to test this hypothesis."

A finely tuned dance

"It is challenging to test the hypothesis that the leader-follower behavioral rules are finely co-evolved in an animal species. Such two behavioral traits are inherently linked and difficult to dissect," said Nobuaki Mizumoto, who led the study as a postdoctoral researcher at Arizona State University and is now at Okinawa Institute of Science and Technology.

This new study revealed that both the leader and follower have evolved to expect a set of cues from their partner, and if these expectations are not met, then the coordination falls apart, said Mizumoto.

"Our results have implications on how large groups of animals came to coordinate their efforts through natural selection, or how sexual selection has shaped sex-specific traits to meet a differential expectation between partners," concluded Mizumoto.

Chemistry counts

Because Asian and Formosan subterranean termite species evolved separately for about 18 million years, the lead–follow rule between the two species can be slightly different, Chouvenc said.

"Despite sharing the same pheromone, Formosan subterranean termite females produce much more pheromone than the Asian subterranean termite females," he said. "We therefore hypothesized that the leader-follower rule discrepancies between the two species would reveal a lack of optimization through evolutionary fine-tuning."

This unique approach allowed the team of researchers to show that males of Formosan subterranean termites cannot properly follow females of the Asian subterranean termite. Meanwhile, males of the Asian subterranean termite are fully capable of following Formosan subterranean termite females.

"This asymmetric result was remarkable because it indicated that male Formosan subterranean termites were not capable or were not motivated to follow females of a species that produce little pheromones. On the other hand, males of Asian subterranean termites were perfectly able to follow females of the Formosan subterranean termites, which produces far more pheromone than these males evolved to track," added Chouvenc.

"In a previous collaborative study, we were able to show that males optimize their movement to keep up with females, while the females adapt her movements depending on the feedback from the male following her," Mizumoto said. The current study highlighted that such optimization was the result of evolutionary processes.

While the discovery of the two termite species finding love in Florida remains a concern for their potential impact on our houses, it provides opportunities to test a unique hypothesis that helps understand how coordination behaviors of animals have evolved, Chouvenc said. PP

– Lourdes Mederos, UF/IFAS

Soil core sample

Urban Soil, continued from Page 13

exchange capacity), increase the porosity of the soil, provide food for microbes, bind pollutants, and reduce compaction. Most labs that test for soil nutrients can test for organic matter, including the University of Florida Extension Soil Testing LaboratorySoil compaction is another factor that can influence plant health.

Soil compaction is measured in the lab by bulk density. Unlike testing soil for organic matter, it is much more difficult to test soil for compaction. The soil sample has to be prepared correctly. If the sample becomes loose it will affect the results, since you are testing how tightly the particles hold together. Your local County Extension Office can help you prepare and submit soil samples.[1]

Soil compaction reduces the air space between particles, making it difficult for plants' roots to penetrate into deeper soil for more efficient water uptake. In urban sites, soil compaction often is a result of heavy equipment used during the construction phase altering the soil structure. Once altered, it can take years to return the site to one where plants will thrive. To speed up this process, many professionals turn to incorporating soil amendments.

Soil Amendments

Soil amendments comprise a vast category of organic and inorganic products such as compost, manures and biosolids. Factors affecting urban soils such as low organic matter, high pH, poor drainage, and structure can begin to be addressed by incorporating some of these amendments.

The most important decision when choosing a soil amendment is to consider the source and process by which it was created. Not all soil amendments are created equal. For instance, manures not processed long enough may introduce pesticides onto the site, depending on the feed stock to the animal. Compost that has not been processed long enough or at hot enough temperatures can introduce weed seeds or fungal pathogens. It is important to use a reputable source for soil amendments.

It is best to incorporate soil amendments at the beginning of a project, before planting. However, many times that is not possible if the landscape is already existing. Soil amendments can be incorporated into these sites but may cost more due to labor. It is important, whether pre- or post-planting, that the material is incorporated at least a little into the existing soil and that thick layers are avoided. These can cause changes in water flow.

Amendments in turf areas might most easily be applied after aeration or can be top-dressed in low amounts. In the landscape, amendments can be incorporated during planting or when beds are refreshed. Research has shown that using properly prepared, quality amendments can greatly increase plant health, which in turn affects pest pressure, fertilization and water needs, and reduces applications, saving you money.

Check This Out!

To assist in understanding the process of improving the soil of your urban site, how to incorporate amendments, and the characteristics of each, University of Florida researchers have developed the publication "Guidance for Amending Urban Soils with Organic Amendments." This wonderful resource provides research-based guidance on working with urban soils.[2] It is definitely worth the read. PP

Erin Harlow is Horticulture Agent III at Columbia County Extension Office.

[1] http://sfyl.ifas.ufl.edu/find-your-local-office/

[2] https://ffl.ifas.ufl.edu/media/fflifasufledu/docs/guidance_amending_urban_soils.pdf

Standing, from left: Ricky Vasquez, Brian Eisenberg, Phil Koehler, Randy Stout, Joe Jonovich, Matt Remmen, Dan Suiter, Jerry Gahlhoff, Dini Miller, Richard Martyniak, and Clay Scherer.

Seated, from left: Rebecca Baldwin, Stephanie Hill, Cara Congdon, Kim McCanless, Nancy Hinkle, and Faith Oi.

Nancy Hinkle, continued from Page 17

roach populations were very resistant to a range of insecticides, so it was interesting to see which ones survived and which succumbed.

Colleagues Near and Far

In 1992 Dini Miller moved from California to Florida to start a graduate program with Dr. Koehler, and stayed at my condo while apartment-hunting. A few months later I moved from Florida to California, to keep the continent balanced. Dr. Miller is now Professor of Entomology at Virginia Tech, so the Koehler influence has spread there, as well.

With Dan Suiter talking about cockroaches, Faith Oi handling termites, Bill Kern covering vertebrate pests, and me talking about fleas, we dealt with most of the major pests. One of our memorable opportunities to provide training for pest management professionals was when Disney invited us to train their people at Disney World. Since their sessions started at 4 AM, they gave us rooms at the park so we could drive down to Orlando, sleep a few hours, and be on-site for an early start. They then allowed us to spend the rest of the day at EPCOT, enjoying the rides and exploring the attractions.

Everyone in Florida, and in urban pest management in general, knows Dr. Faith Oi, Director of UF's Pest Management University. Faith and her husband, David, were integral to our cohort during the early 1990s, both working on social insects — David specializing in ants and Faith doing a PhD on termites. They both got jobs in Gainesville, Faith with UF and David with USDA, and continue to live there with their son, Colin, now a UF student.

Continued on Page 30

Photo at right: Borja López-Gutiérrez, Ph.D., a UF postdoctoral researcher, holds a pipette that transfers serum samples for further testing to detect antibodies of the pathogen that causes Chagas disease. From left to right are lab manager Nicole Bender, López-Gutiérrez, research coordinator Rodrigo F. Alcala Arana, and Norman Beatty, M.D. *Photo by Louis Brems*

Cotinis

Kissing bug

Q: Who can get Chagas disease?

A: Anyone. However, people have a greater chance if they:

- Have lived in rural areas of Mexico, Central America, or South America.
- Have seen the bug, especially in these areas.
- Have stayed in a house with a thatched roof or with walls that have cracks or crevices.

— CDC

UF Health Scientists Study Prevalence of a Kissing Bug Disease Among Latin Americans in Florida

Bill Levesque

IT ISN'T the "kiss" that sickens. The parasite that can slowly kill lurks in the feces, and not the bite, of the triatomine insect, commonly called the kissing bug.

The illness the kissing bug transmits is called Chagas disease, which is endemic to Latin America. An estimated 7 million people carry the disease, with most of those asymptomatic and unaware they are infected with the chronic illness. About 300,000 people in the United States are thought to be infected.

A University of Florida Health researcher is now leading what is thought to be the first effort to measure the prevalence of Chagas disease in Florida's Latin American community, an effort that is hoped will bring more awareness of the disease that is mostly unknown in the United States, even among some physicians.

"We want to educate on the importance of screening for Chagas disease because it can be fatal," said Norman Beatty, M.D., a UF Health infectious disease specialist who is leading the prevalence study. "The fear is that patients would go without a diagnosis until it is too late."

In collaboration with several UF Health clinics, including the UF Equal Access Clinic Network and the UF Mobile Outreach Clinic, Latin Americans at-risk for Chagas disease will be given the option of receiving two rapid diagnostic tests for the disease using a finger-prick blood draw.

"We'll have an answer for them during the encounter," Beatty said. Results are returned in about 20 minutes.

A bigger blood sample will also be taken for serological testing looking for antibodies created against the parasite, which is called *Trypanosoma cruzi*. Further molecular testing looking for the parasite's DNA will be done with more advanced testing.

Additionally, a health screening will be conducted. One of Beatty's goals is to see if those

who are infected have higher rates of other comorbidities such as diabetes and high blood pressure compared with people who are uninfected.

The kissing bug's name is something of a misnomer. Bite marks can sometimes be found on the face, where the kissing bug takes a blood meal while someone sleeps, hence the derivation of the name.

"Some of the studies I've done actually show that people are bitten more commonly on the arms and the legs under the covers," Beatty said.

In any case, the bite doesn't spread the disease-bearing parasite. Instead, the feces of the bug, which carries the parasite that causes Chagas disease, can be rubbed into a bite site or even ingested through the environment, especially in contaminated food or fruit juices.

Death often comes through heart complications, including congestive heart failure. Serious gastrointestinal problems also can occur.

Increased awareness is of critical importance in the United States since most people will not exhibit any symptoms of Chagas disease when they are infected. A minority of people experience fatigue, fever, body aches, among other symptoms, in the first few weeks of the disease that they might easily pass off as the flu or other less severe illness.

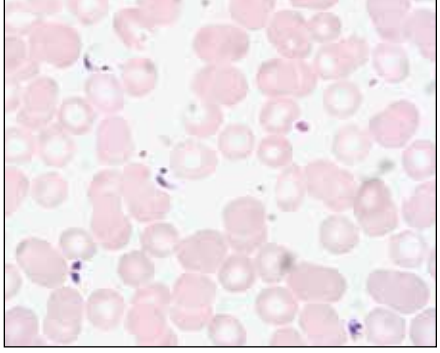
But the symptoms dissipate even as the parasite remains hard at work for decades, eventually triggering chronic inflammation in the tissues it targets, such as the heart and gastrointestinal tract.

If patients and medical practitioners are unaware of the disease, diagnosis can be delayed many years until the infection is so advanced that the odds of survival are diminished.

BEATTY, an assistant professor in the UF College of Medicine's division of infectious diseases and global medicine, said fewer than 1 percent of the 300,000 people in the United States infected by Chagas disease have been diagnosed.

While triatomine insects are found in Florida and throughout the southern half of the United States, locally acquired Chagas disease in the United States is thought to be a rare occurrence, with approximately 78 cases nationally described in the literature. But Beatty said we know very little about how people are infected in the United States.

Beatty has enough funding to screen 500 people initially, but he hopes to greatly expand that as more money becomes available. Scientists believe 18,000 people in Florida have Chagas disease, but there is much uncertainty



Highly magnified image showing tiny Chagas parasites, *Trypanosoma cruzi,* among blood cells. *Photo by Ed Uthman*

in that number. Florida trails only California and Texas in total estimated cases.

"I would suggest it is likely that this disease is significantly underrepresented," Beatty said.

If caught early enough, the disease can be treated using antiparasitic medications. In advanced cases, heart transplantation might be the only option. Beatty said 30 percent to 40 percent of those infected can go on to develop chronic illness.

Rodrigo F. Alcala Arana, a recent UF graduate who is Beatty's research coordinator and a native of Venezuela, said South Americans are especially fearful of Chagas disease. He said one of his uncles died at age 60 from heart problems caused by the infection.

"People know the bug is dangerous," said Alcala Arana, who earned a degree in microbiology and cell science. "My family was very afraid of Chagas disease. We tried to pray to avoid things like that. Since it's really not known here, people don't really check for it often or thoroughly."

Beatty has received funding for his project from Mundo Sano, an international nonprofit focused on the prevention of tropical diseases. He also said Rhoel Dinglasan, Ph.D., M.P.H., M.Phil., a professor in the UF College of Veterinary Medicine's department of infectious diseases and immunology and the UF Emerging Pathogens Institute, provided the project with important support.

One interesting piece of trivia about the kissing bug: Its bite is typically not painful. That's because it injects an anesthetic as it takes its blood meal.

The pain comes later. PP

Bill Levesque is Science Writer at UF/Health.

PCO Pointer

Facts from FDACS: Termite Contract Renewal Requirements

I SEE a serious lack of documentation in termite annual renewals. Remember, the thickest file usually wins in court!

Annual renewal inspection requirements according to Chapter 5E-14.105(6): When periodic reinspections are specified in wood-destroying organisms preventive or control contracts, the licensee shall furnish the property owner or his authorized agent, after each reinspection, a signed report of the condition of the property with respect to presence or absence of wood-destroying organisms covered by the contract and whether re-treatment was made. A copy of the inspection report shall be retained by the licensee for a period of not less than three years.

The company must put consumers on notice of any conditions that would prevent the company from re-treating or repairing the structure (conducive conditions) that are in the contract and give them 60 days to correct the condition. But here is the kicker: Most companies do not go back out at the 60-day interval and check to see if the repairs have been done, therefore accepting the condition and the liabilities that go with it.

Chapter 5E-14 states in 105(8)(c): A licensee may not use a limitation, exclusion, or condition clause of a contract to deny treatment of a termite infestation or repair of termite damage to the holder of a contract, unless the termite infestation or damage was primarily caused by the subject of the limitation, exclusion, or condition clause in the contract, and, if the licensee was aware of the condition that is subject to a limitation, exclusion, or condition clause in the contract, the licensee provided written notice to the property owner or agent of that condition within sixty days of discovery and provided the property owner the opportunity to correct that condition. If the property owner did not correct the condition within 60 days of the written notice, then the licensee may use the limitation, exclusion, or condition clause in the contract to deny repair or retreatment.

All this must be done in writing! Unfortunately, most companies do not go back out and check so they can amend or cancel the contract, thereby accepting the condition. How many of the company's inspectors are aware of the limitation, exclusion or condition clauses in the termite contracts so that during the inspections they can identify the limitation, exclusion or condition and notify the consumer to make the repairs to remedy the condition?

One last note: How many companies use graphs when doing annual renewals to make sure the structure has not been altered since the last inspection (i.e. room additions)? I don't see this enough! I have been made aware of cases where the consumer is suing the company not for termite damage but the lack of notification of a conducive condition that causes damage. Document, document, and document! PP

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

CLASSIFIED ADS

Nancy Hinkle, continued from Page 26

IN 1992 I applied for a faculty position at the University of California, Riverside, and was offered the job. Having this job waiting for me spurred me to complete my research, finish my dissertation, and wrap up everything so I could move to California in October. Despite a lot of drama, including having my wallet stolen the day of my exit seminar, I made the deadline, got all my belongings shipped to California, and flew out to start on November 1. After nine years, the University of Georgia advertised a similar position, allowing me to be hired for it and move back to the Southeast.

Those of you who know me recognize that I am an animal person, preferring to spend time with animals more than most people I know. And even after 40 years in entomology, I still do for pleasure exactly what I did as a nine-year-old — I wander around in the woods, turning over logs and looking for interesting bugs. Being part of the Koehler legacy has allowed me to have my dream job and enjoy an entomological career that permitted me to indulge my interests. PP

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