JULY/AUGUST 2023

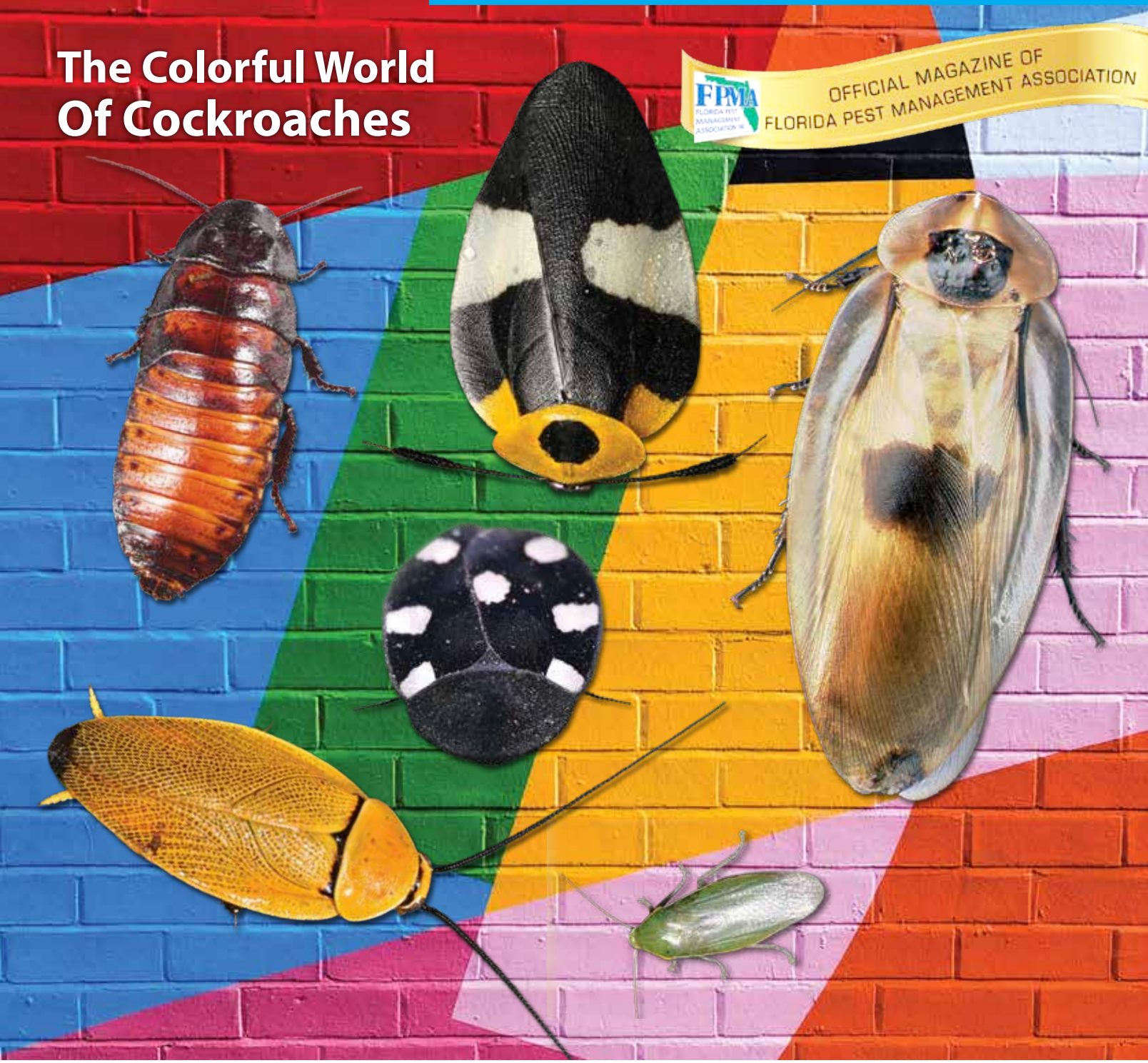
Take-All Root Rot | New Mosquito | Powderpost Beetles

PESTPRO

From Pest Management Education, Inc. to Landscape and Pest Managers

Pool Pals! Aquatic Insects In Florida

The Colorful World Of Cockroaches



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CEUs, Business Sessions, Exhibit Hall

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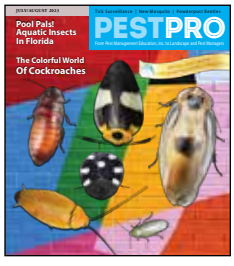


Background by Fatih

ON THE COVER

Colorful cockroaches of the world, from left: Bush cockroach, Madagascar hissing cockroach, seven-spotted cockroach, tri-color cockroach, Cuban cockroach, and giant cave cockroach.

Photos: Jean Hort; public domain; Saravanaraja Vicki; Andreas Kay; Rebecca Baldwin (Cuban and giant cave).

President's Message

It's All About the People!

THIS YEAR'S Summer Conference featured a stellar speaker lineup, a sold-out exhibit hall, and plenty of food, fun and camaraderie with just enough relaxation time tucked in to make for a thoroughly enjoyable event. As they say, a picture is worth 1,000 words.

I would like to sincerely thank again all of our sponsors, vendors, speakers, and attendees for a fun and memorable Summer Conference. This conference would not have happened without the careful planning and superb execution of our event planner, Stacey Miller, as well as the strong support of our EVP, Leslie Herren, and her team at HQ. I also want to thank the Education Committee for putting together top-notch content.

New Committee Focuses on Hiring Vets

Lest you think nothing serious got done, we always hold a Board of Directors' meeting at our major events. We review what has transpired during the first six months and then discuss plans for the remaining months and upcoming events such as our Behind the Scenes, Clay Shoot, EXPO, and now TECH Days.

We are always looking to develop and grow value for our members, and many fantastic ideas on how to better serve them come out of our committees. The latest is the formation of an FPMA4VETS committee, which has now been approved by the Board. To learn more about this exciting new endeavor, see FPMA4VETS under the Community tab on our website.

The idea for FPMA4VETS came organically as we sought to find a way to help our members deal with the perennial problem of finding good employees. As our Summer Conference speaker, Steve Mock, a vet himself, pointed out, vets very often make excellent employees. Their acquired training and skill-sets dovetail well with job descriptions within pest control companies. It was a natural leap to come up with the idea of doing a job fair helping member companies source vets for employment. Plans for a Job Fair are now under way so stay tuned.

Business Development Program

Along with the job fair, the Education Committee — Steve Mock (Chair), Andrew de la Chapelle (Allied Member Representative to the Board), Derek Pumphrey (North West Region Director), and Cory Goeltzenleuchter — are formulating a business development program that will be conducted through a series of business presentations at regional meetings across the state. The idea is to stimulate local networking through physical attendance but also enable anyone to participate in the series remotely. The aim is to provide information covering all aspects of running a pest control company — from understanding your numbers, to your recruitment, retention and training programs, sales, marketing, and more.

If you have an idea for a topic you would like to see covered, let us know. If you are a subject matter expert, let's see if we can work together! Again, we expect to roll this out after the summer busy season.

FINALLY, as our Summer Conference slogan says, it's all about the people. On behalf of the FPMA Executive Committee, Board of Directors and HQ, we wish you a happy, healthy and profitable summer season. PP

Chris Cavanagh
President, FPMA

Visit **flpma.org** for currently scheduled meetings and more.

Pest Pros Recover from COVID Shutdown, Attend On-Site CEU Events

EVERY PLACE you look you can see where the economy and people are returning to normal. Pest control companies are able to get supplies as needed. It is easier to get replacement service vehicles. It is easier to find good-quality employees. And it definitely is easier to get sprayers and insecticides. Along with the recovery, we now see people returning to face-to-face educational meetings.

During the shutdown, almost all education was provided online. There were webinars, seminars, podcasts and other forms of education that provided CEUs so the industry could maintain pest control certifications. People used TEAMS and Zoom extensively, along with other online channels of communication.

Eventually, everyone learned to hate the online platforms of delivering education and CEUs. What was missing was the interaction with other professionals. Much of education is achieved not only with the presentations, but also with the discussions pest management professionals have with others. At meetings, folks would stand around the snack and break table and learn in that informal setting. The online information was delivered, but it was not as interactive and engaging as the in-person meetings.

Southeast Pest Management Conference Brings Folks Together

May 9–11, we at UF Entomology held our 26th annual Southeast Pest Management Conference at the Physics Building on UF campus. This conference was cosponsored by Pest Management Education, Inc., the nonprofit corporation that publishes *PestPro* magazine. Florida Pest Management Association was also great in supporting the event.

It was a great time for folks to network and learn in an informal setting. The meeting lasted three days — Tuesday, Wednesday and Thursday.

We had over 240 people attend and more than 30 exhibitors. Even though the talks were great, we always allowed more time for breaks than the usual break time at educational meetings. We offered plenty of snacks, soft drinks, water, and coffee as well as bagels, granola bars, crescent rolls, cookies, apples, oranges, and other treats.

In order to get these snacks, the attendees passed the exhibitors and learned about new products. They also formed new friendships with the manufacturer representatives. Of course, pesticide labels were provided, problems encountered during the year were discussed, and solutions presented. What a great way to learn: Informal exchange of information and knowledge.

All the breaks did not take away from the great talks and education that were presented by the leading educators for the pest management industry in the United States. We had Dini Miller, professor of entomology at Virginia Tech, Dan Suiter, Orkin endowed professor of urban entomology at University of Georgia, David Oi, a famous USDA ant scientist, Roberto Pereira, FPMA endowed professor of urban entomology at UF, Thomas Chouvenc, associate professor of entomology at UF, Adam Dale, assistant professor of entomology at UF, Gail Hansen, associate professor of environmental horticulture, and Brian Unruh, professor of turfgrass science.

We also had industry leaders like Larry Stretz, formerly with Syngenta, Bennett Jordan of EcoLabs, Michael Bentley from NPMA, Danny Dye, formerly with Florida Pest Control, Paul Mitola and Johanna Welch with FDACS, Whitney Qualls with Anastasia Mosquito Control District, and Cory Goeltzenleuchter with McCall Service. You will never see a more talented and dedicated group of industry educators on one program.

Of course, we had our own students present their cutting-edge research as part of their education about the importance of the pest management industry. Students not only educated the industry but learned about potential jobs at the conference.

The SE Pest Management Conference also offered Associate Certified Entomologist tutoring to help attendees pass the qualification exam. Dr. Rebecca Baldwin coordinated the session, which ended with the qualifying people taking the exam. After passing, those individuals that pass can put ACE behind their name.

The highlight of the SE Pest Management Conference was the Sapp/Walkup Cookout. This one-of-a-kind event featured fish, chili and the best steaks that anyone has ever experienced. The event was sponsored by Syngenta, Corteva, and Douglas Products. It was wonderful to see an entire evening of people from various pest control companies visiting with each other and socializing over good food and drinks.

You might want to mark your calendar to attend next year's SE Pest Management Conference on May 7 and 8, 2024. It is unsurpassed pest management education and socialization for building the industry.

More On-site Opportunities

Not only do UF and Pest Management Education, Inc., hold the SE Pest Management Conference, we also host the Northwest Florida Pest Management Conference in Ft. Myers and the Southwest Florida Pest Management Conference in Niceville. These events host more than 100 pest control operators — who can attend for no cost — at each conference. We at UF are pleased to provide these on-site opportunities for the industry.

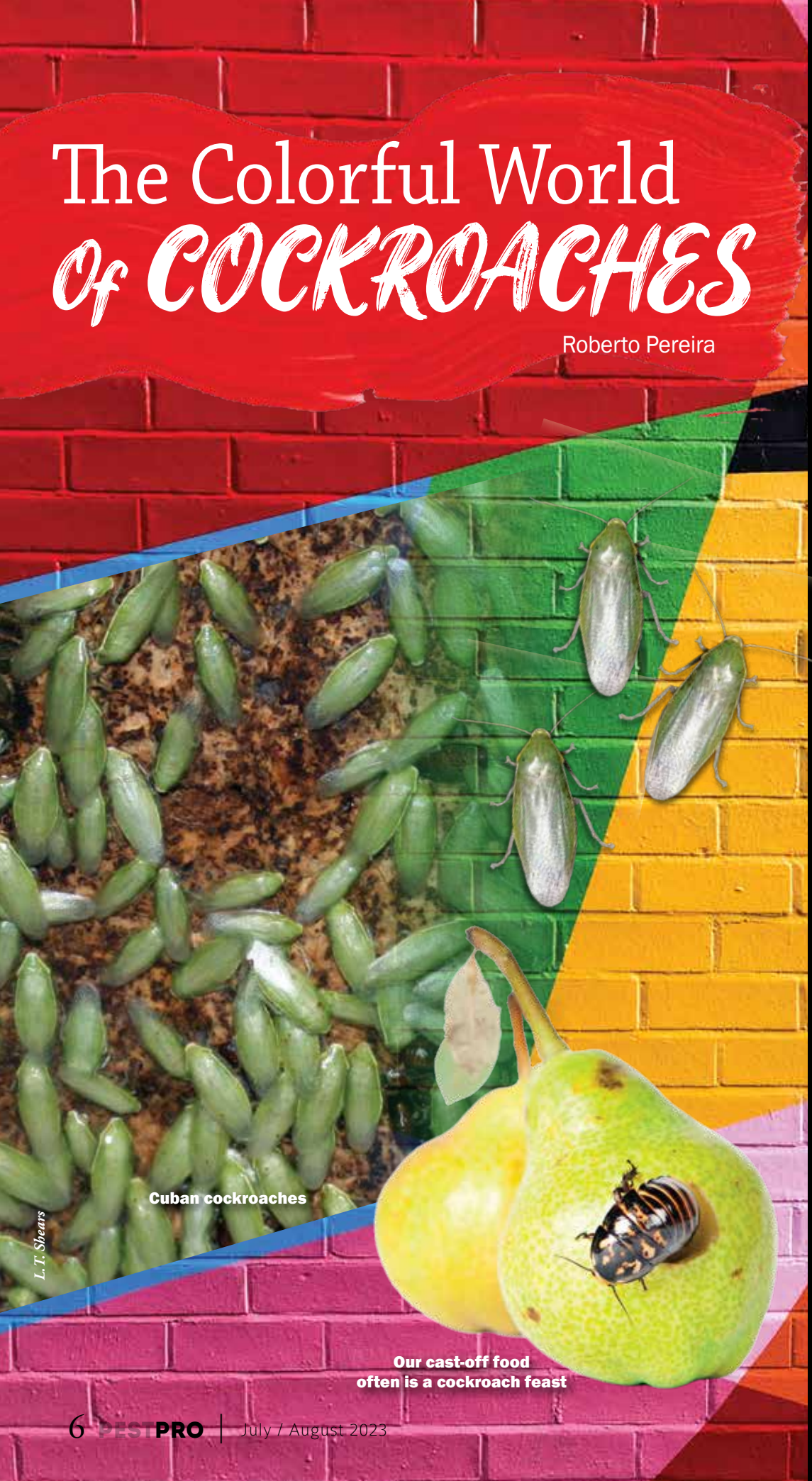
If you are tired of sitting and listening to information online and want to interact with other professionals, plan on attending one of these meetings. You will not only learn but socialize with others in the business of professional pest management.

Remember, industry professionals need and want onsite educational events. Attendance has rebounded, and the industry is profiting from the presentations and socialization uniquely provided on-site. PP

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

The Colorful World of COCKROACHES

Roberto Pereira



Cuban cockroaches

L. T. Shears

Our cast-off food often is a cockroach feast

Madagascar hissing cockroach

THE AESTHETIC aspect of the cockroach is a fascinating point to ponder. Most of us would probably agree that there is nothing especially appealing in the looks of your everyday pest cockroach. But there are some cockroaches out there that could win a beauty contest.

In fact, the world of cockroaches is full of colorful, visually appealing species that could compete with any jewel beetle. The death's head cockroach comes to mind among the ones we have in the UF lab, and the Cuban cockroach, with a yellow band around the light green body, does appeal to my Brazilian side.

Exploring the Colorful World of Cockroaches

Maybe after a day of applying gel bait for German cockroach control, you want to relax as you appreciate the beauty of some of the numerous colorful cockroach species that exist throughout the world. A simple internet search for "colorful cockroach" or "beautiful cockroach" will open your mind to a world you did not know existed. You may even gain a little perspective and incentive to eliminate the dull, ugly cockroaches that infest your clients' properties.


Death's head cockroach


Cuban cockroach


Pale-bordered field cockroach

Photo credits from left: Acrocynus, David D. Yager, Robert Webster

We Might Occasionally Encounter Colorful Cockroaches in Florida

IF YOU grab a canned beverage as you relax and gain some new perspective, remember that the last drop of that beverage, which you can never get out of the can, is one of the sources of nutrients for cockroaches everywhere. Given the number of canned beverages consumed daily in our country, and the careless disposal of the containers, it no wonder that cockroaches have access to a lot of liquid nutrition that will not even cost them in terms of energy to consume and digest.

And it is not only the little remaining beverage that helps the cockroach populations to grow. What we call garbage, and the disposal of it, is a major factor in a lot of the urban pests we deal with.

Cockroaches, and specifically the household pest species we are so used to, are so strongly associated with human habitats that they are part of our cultural background, regardless of where we come from on the globe. Cockroaches have had a close association with humans and human housing probably from the time humanity started occupying certain locations for more than a few days.

With more than 4,000 cockroach species thriving around the world, some of them are bound to be a little more appealing than your everyday cockroach.

Madagascar Hissing Cockroach

One nonpest cockroach species that seems to get a lot of publicity is the Madagascar hissing cockroach. Because of its large size and relatively slow movement when compared to faster and more agile cockroaches, the Madagascar hissing cockroach is often used in movies as a ferocious alien invader or pest. This portrayal really misrepresents this photogenic cockroach, which is very docile and not a pest.

Death's Head Cockroach

At 3 inches long, this colorful cockroach is one of the largest in the world. A nocturnal scavenger, this species has invaded South Florida from its native Caribbean home.

They prefer a natural habitat and can be found on forest floors, hiding in leaf matter and rotting wood. The death's head cockroach has a dark, skull-like marking on its yellowish thorax and it has jet-black wings. It emits a strong odor as a defense mechanism against predators.

Cuban Cockroach

The Cuban cockroach is a genuine "American" cockroach. These Cuban cockroaches may not be a problem in too many households in Florida, but they are a problem in certain agricultural fields in South Florida. They also occur in coastal areas along the Gulf of Mexico. With increasing use of packaging combine machines, which harvest and package produce in the field, the chances of Cuban cockroaches ending up in supermarket produce increases too.

Pale-Bordered Field Cockroach

Some folks consider the pale-bordered field cockroach a "pretty" cockroach. It is brightly colored with a reddish head shield and yellow markings around the border of the pronotum and wings. Its face and antennae have orange markings. This species is reported in Florida and other southeastern states.

This is a timid species that is good at hiding. Because of this, the pale-bordered field cockroach can be hard to find and identify. If you do find one, its bright colors give it away.

German Cockroach

Not so beautiful, but a common pest worldwide, is the German cockroach. According to a University of Florida publication by Dr. Steve Valles, a researcher at the USDA–ARS laboratory in Gainesville, Florida, the German cockroach is the species that "gives all other cockroaches a bad name."

I am not sure the American, Australian, and Asian cockroaches would agree with this German-centric view of pest cockroaches, but the little German cockroach — which is not originally from Germany at all, but from Asia — is a huge problem in many areas of the world, including Brazil, where it is referred to as *barata francesinha* — "little French cockroach." This cockroach has not only spread everywhere, but apparently it assumes a different nationality in different locations! *Continued next page*

ANCIENT EUROPE
Neolithic homes for humans — and cockroaches?

Orange-spotted cockroach
Malaysia, Indonesia

Seven-spotted cockroach
India, Sri Lanka

Cape zebra cockroach
South Africa

Tri-colored cockroach
Ecuador, Brazil, Peru

Mitchell's diurnal cockroach
Australia

What Good is a Cockroach?

Because humanity has mastered the art of rearing cockroaches in and around our houses and other buildings, perhaps we just have to find a good use for them. In fact, there may be some good uses for cockroaches: a) source of antimicrobial materials, which cockroaches produce to survive in places with high microbial counts; b) engineering model, because the function and strength of the cockroach legs and body are very strong and efficient; c) decomposer and recycler of nutrients in nature; and d) a food source!

Because cockroaches are a constant companion to human civilization, they generally get blamed for a lot of problems, many of them deservedly so. There are exceptions to this general rule. Positive associations of cockroaches appear to be based on the idea that cockroaches are able to survive anything, and that they are indestructible.

Folks in pest control know that is not the case, but some populations of cockroaches live up to that image due to the accumulation of resistance to several pesticidal active ingredients. That resistance is created mostly by constant use of similar pesticides over a long time. Avoiding that mistake is one thing that should be part of any pest management training program.

Beauty Queens

Colorful, sometimes beautiful, cockroaches occupy mainly tropical and subtropical regions around the world. These are just a few eye-catching species found in far-flung parts.

Photo credits from top left down: Msone, Amrithajpk_24, Nearwildhelen, Andreas Kay, and V. Winter.

The rather plain American cockroach, Periplaneta americana, is the favored species reared at cockroach farms.

Food for Thought

Around the world, rather than fight an endless war against cockroaches, people have decided to use cockroaches' voracious appetite as an economical asset. Cockroach factories in Asia produce huge numbers of insects, utilizing discarded food items and industrial residues. Because the insects can transform waste into protein and other products in which there is money to be made, the populations of these cockroaches are not in danger of disappearing from the earth.

This may not help the urban pest control industry in any way, but it certainly brings a different perspective to the work you do: You may want to check out some videos online about cockroach farms in China, at least to gain appreciation for the fact that you can make a living getting rid of cockroaches, and you do not have to have these creatures climbing all over you without killing them immediately.

Even the farmed cockroach ends up being killed, but the motivation and the final use of those cockroaches are a bit different than the pests in someone's home. PP

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

Giant water bug ventral view

David Hoover

Giant water bug carrying eggs

Noise Collusion

Giant water bug

Brett Hondow

Pool Pals!

Aquatic Insects in Florida

Erin Harlow

SWIMMING, boating, and fishing are at the top of everyone's summer vacation list. Before jumping in the nearest body of water, check out these interesting insects that can be found in Florida's freshwater. Occasionally, they find their way into urban environments, where they pique the interest of curious homeowners.

Giant Water Bugs

Giant water bugs, *Lethocerus* spp., are one of the more interesting insects to find their way into local bodies of water and even large parking lots. This large insect is in the Order Hemiptera with the characteristic piercing-sucking mouthpart. As a strong flyer, it is often attracted to parking lot lights and large paved areas that it thinks are large bodies of water.

Reaching a length of 3 to 4 inches, it is one of the largest aquatic insects one might encounter. Several species are found worldwide.

In Florida, it is affectionately known as a "toe-biter," because of its modified front legs. It has been known to grab toes of unsuspecting swimmers and even bite them. While it may hurt, the bite is nontoxic. The insect grabs and holds onto prey while it pierces it with its long beak. Once the giant water bug has grabbed its prey, it injects a digestive saliva into the prey and then sucks up the fluids. Predators of tadpoles, small fish, and the like, the giant water bug occasionally comes into contact with people if they pick them up. It can inflict a wound if it stabs with its beak or pinches with its front legs. They are otherwise harmless and people should leave them alone.

Like other aquatic insects, giant water bugs have a unique way of breathing underwater. They have an appendage attached to the back of their abdomen that allows them to breathe while remaining almost completely submerged. Sometimes you will see them tipped at an angle, breathing at the water's surface. When they dive they take a bubble with them. The bubble is stored under the wing, where it is absorbed into the insect's body while underwater.

Continued on Page 11

Tips to Manage INSECTS IN POOLS

SKIM the pool surface.

APPLY extra chlorine for shock treatment as needed to reduce algae, because algae attracts insects. Always follow label directions.

APPLY algaecide to kill algae remaining in the pool, per label directions.

VACUUM the pool floor to remove debris, and scrub pool ladders and liners to remove algae.

REMOVE vegetation within 10 feet of the pool edge, and trim overhanging branches.

POSITION lights at least 10 feet from the pool, as lights attract some aquatic insect species.

Traveling maggots missed their flight at LaGuardia

DON'T read this while eating. We've got a grubby story to tell, and this will probably bug the heck out of you.

Just when we thought we've seen it all, fleshback to last week when our officers at LaGuardia Airport (LGA) discovered this gag-inducing luggage. Odor at the airport!

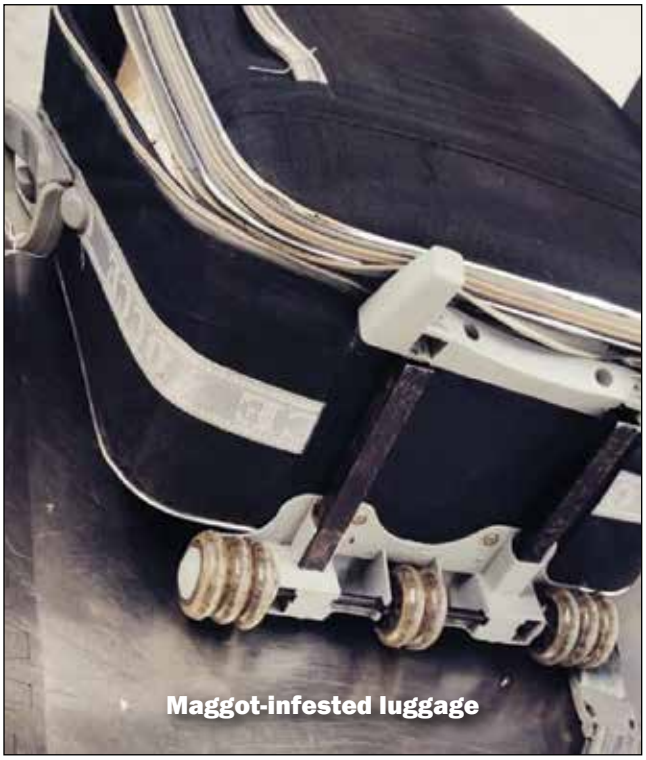
This reeky suitcase set off one of our security detectors, causing our officers to egg-xamine the suitcase further. They unzipped the pockets and main suitcase flap, and <dry heaves> out rolled the maggots.

"The stench of the bag prevented us from getting any closer [after opening]," said one of our officers at LGA.

They didn't waste any time vacating the area, and a full cleaning crew came in to decontaminate. Not a great start to the weekend, but our terminators stepped up to stop these creepy crawlies from ever taking flight. Just be lucky that those of you reading this don't have smell-a-vision.

We know it stinks when we tell you what you can't bring on an airplane. Larva it or hate it, we've got a travel tip for you: Please make sure to check all pockets of your suitcase for any stale food or any bug infestations while packing. It's probably been a while since you've traveled, so if you're heading out, make sure nothing wormed its way into your bag. **PP**

TSA, LaGuardia Airport



Maggot-infested luggage

Water Scorpions, or Water Stick-Insects

Another member of the order Hemiptera are water scorpions, *Ranatra* spp. They also have the characteristic rostrum or piercing–sucking mouthpart. Even though their common name is water scorpion or water stick-insect, these hemipterans are neither scorpions nor stick insects.

They do have a very long breathing tube at the back of their abdomen that may be confused with a stinger. They also have raptorial legs like the giant water bug. The water scorpion is an ambush predator that eats small fish, tadpoles, and other insects. Once they capture their prey, they use a venom to paralyze it before consuming.

They generally live in the thick, floating vegetation that can be found in Florida's many lakes, ponds and rivers. This insect uses setae, or hair, that is water repellent to trap air bubbles against its forewings and abdomen.

Zoosnow

Water scorpion, or water stick-insect

Common Backswimmers

A common insect found in many pools is the common backswimmer, *Notonecta* spp. As its name implies, it swims on its back. Similar to giant water bugs and water scorpions, this insect also belongs in the order Hemiptera. It is also a predatory insect that feeds through its rostrum after catching other insects, fish eggs, and even mosquito larvae.

Backswimmers also benefit from their first and second set of raptorial legs to help catch prey while using an ambush approach. Their most unique feature are their long back legs which are fringed and help propel them through the water upside down. Backswimmers have hair or setae that covers their bodies and holds air that they can then absorb. It can be seen by the naked eye and looks like a sheen on the insect.

Peter O'Connor

Issempa

ABOVE: The water boatman swims right side up.

LEFT: Common backswimmers in their typical upside down swimming position. Notice the sheen of fine air bubbles on the wing, visible in the bottom left photo.

Water Boatmen

Water boatmen are easily confused with the common backswimmer, *Notonecta* spp. Water boatmen are classified in the order Hemiptera, family Corixidae. It is the largest family of aquatic insects.

Boatmen look very similar to backswimmers, other than one very obvious trait: The backswimmer swims upside down, while the boatmen do not. They live in similar areas of freshwater with vegetation, they are both strong flyers and often end up in pools, and they both have large, paddlelike hind legs they move like oars to propel themselves through the water. But check to see how the insect is oriented for identification.

Boatmen are also the least harmful of those being discussed. They are not predatory insects, but rather feed on algae and plant material and, unlike the others, cannot inflict a painful bite. Boatmen breathe by carrying a bubble under the wings and abdomen. **PP**

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

WHY JOIN FPMA?

MEMBER BENEFITS

MEMBER SAVINGS PROGRAM
FPMA offers exclusive member-only discounts on a variety of products and services designed to save you money and time.

ONGOING TECHNICAL AND BUSINESS EDUCATION
FPMA conducts CEU classes at Regional Meetings, our annual TECH Days and EXPO, as well as live, online classes. Insightful business sessions at EXPO and Summer Conference cover topics of greatest interest to you and are presented by subject-matter experts.

FRIENDSHIP, NETWORKING & RELATIONSHIP BUILDING
FPMA builds ample opportunities for face-to-face networking into its events, making it easy to create your network of referrals and professional advisors, and to build relationships within a supportive community.

ADVOCACY - YOUR VOICE IN TALLAHASSEE AND BEYOND
FPMA's Government Affairs Committee and professional lobbyist track Florida legislation and regulatory changes and provide "boots on the ground" representation with the Legislature and Department of Agriculture and Consumer Services (DACS).

FIND A PRO ONLINE DIRECTORY
FPMA's online membership directory allows you to customize your listing to maximize your visibility with potential customers.

COMMUNITY INVOLVEMENT
FPMA supports causes important to our members through partnerships with the FPMA Foundation, P.E.S.T. Relief International, Professional Women in Pest Control (PWIPM), and The Wounded Warrior Project.

(407) 293-8627 www.flpma.org

Take-all root rot with patches in turf

Large area of dead grass indicates widespread rot

Take-All Root Rot Thrives In Rainy, Stressed Conditions

Sheila Dunning

Elizabeth Bush, Virginia Tech

Damage by the fungus that causes take-all root rot, shown on zoysia.

To confirm the presence of take-all root rot, submit a sample to the UF Pathology Lab at https://plantpath.ifas.ufl.edu/extension/plant-diagnostic-center/

Also called Bermudagrass decline, this sneaky fungus can damage and kill large areas of St. Augustinegrass and other warm-season turf in Florida. Be on the lookout.

DOES YOUR yard have patches of dead grass or areas that look thin and weak? The last two summers of heavy rain and the stress of December's freezing weather have contributed to widespread outbreaks of take-all root rot.

This soil-inhabiting fungus, *Gaeumannomyces graminis* var. *graminis,* causes yellow grass patches ranging in diameter from a few inches to more than 15 feet. The symptoms first appear in spring, but the disease can persist all summer and survive the winter. Over time, the entire area dies as the root system rots away.

The pathogen is naturally present on warm-season turfgrass roots. High rainfall and stressed turfgrass trigger the disease. Because the roots are affected, they are not able to efficiently obtain water or nutrients from the soil, nor are they able to store the products of photosynthesis, which result in the loss of color in the leaves. By the time the leaf symptoms appear, the pathogen has been active on the roots for several weeks and probably longer, potentially years. If the turfgrass is not stressed, leaf symptoms may never be observed.

Managing Take-All Root Rot

This disease is very difficult to control once the above-ground symptoms are observed. Measures that prevent or alleviate stress are the best methods for controlling the disease. Any stress — environmental or man-made — placed on the turf weakens it, making it more susceptible to disease. Remember that every maintenance practice, fertilizer application, and chemical (especially herbicide), application has an impact on turfgrass health.

Cultural practices that impact the level of stress experienced by a lawn include proper turfgrass species selection, mowing at the correct height, irrigation timing, frequency and volume, fertilizer nitrogen and potassium sources and application quantities, thatch accumulation, and soil compaction issues. The selection of turfgrass species should be based on existing soil pH, sunlight exposure, use of the area and planned maintenance level.

Continued on next page

This photo of damage to St. Augustinegrass shows the characteristics of take-all root rot in the root structure: Stunted roots, brown or black roots, and the appearance of burned roots.

Mower blades must be sharp to avoid tearing the leaves. Additionally, turfgrasses that are cut below their optimum height become stressed and more susceptible to diseases, especially root rots. When any disease occurs, raise the cutting height. Scalping the grass damages the growing point. Raising the cutting height increases the green plant tissue available for photosynthesis, resulting in more energy for turfgrass growth and subsequent recovery from disease.

The amount of water and the timing of its application can prevent or contribute to disease development. Most fungal pathogens that cause leaf diseases require free water (rainfall, irrigation, dew) on the leaf to initiate the infection process. Irrigating every day for a few minutes is not beneficial for the turfgrass because it does not provide enough water to the root zone, but it is beneficial for turfgrass pathogens. It is always best to irrigate when dew is already present, usually between 2 AM and 8 AM, and then only apply enough water to wet the root zone of the turfgrass. If an area of the lawn has an active fungus, washing or blowing off the mower following use will reduce the spread of the disease to unaffected areas.

Fertilizer, Thatch, and Compaction of Soil

Excessively high nitrogen fertility contributes to turfgrass diseases. The minimum amount required for the grass species should be applied. Potassium (K) is an important component in the prevention of diseases, because it prevents plant stress. Application of equal amounts of nitrogen and potassium is recommended for turfgrass health. When turfgrass roots are damaged from disease, it is beneficial to apply nutrients in a liquid solution. However, nitrate-nitrogen increases the severity of diseases, so their use should be avoided when possible. Ammonium-containing fertilizers are the preferred nitrogen sources. Heavy liming has also been linked to increased take-all root rot. Since most turfgrasses can tolerate a range of pH values, maintaining soil at 5.5 to 6.0 can suppress the development of the pathogen. When the disease is active, frequent foliar applications of small amounts of nutrients are necessary to keep the turfgrass from declining.

Additional maintenance practices that need to be addressed are thatch removal and reduction of soil compaction. Excessive thatch often causes the mower tires to sink, which can result in scalping and reducing the amount of leaf tissue capable of photosynthesizing. Thatch and compacted soil prevent proper drainage, resulting in areas remaining excessively wet, depriving root systems of oxygen.

Lawn Renovation

Since recovery of take-all–damaged turfgrass is often poor, complete renovation of the lawn may be necessary. Removal of all diseased tissue is advised. As a native, soil-inhabiting pathogen, take-all root rot cannot be eliminated. But suppression of the organism through physical removal followed by proper cultivation of the new sod is critical to the establishment of a new lawn. Turfgrass management practices, not chemicals, offer the best control of the disease.

It is acceptable to use fungicides on a preventative basis while rooting in the sod. Azoxystrobin, mandestrobin, fenarimol, myclobutanil, propiconazole, pyraclostrobin, thiophate methyl, and triadimefon are all fungicides that can be utilized to prevent disease development while having to excessively irrigate newly laid sod. Ideally, the turf area should be mowed and irrigated prior to a fungicide application. Unless the product needs to be watered in, do not irrigate for at least 24 hours after a chemical treatment. Do not mow for at least 24 hours, to avoid removal of the product attached to the leaf blades.

Final Thoughts

Now that we have added another major stress with springtime heavy rains, it will be very important to continue monitoring the turf and be cautious about the cultural practices used. Take-all root rot is likely to flourish. Do not encourage its development.

If damaged areas are small, it may be possible to encourage turfgrass runners to grow back into the space. Application of 50/50 blends of sphagnum moss and coarse white sand can be used to top-dress damaged areas. Add no more than 1 inch of the mixture per application.

After the stolons have crept into the voids and received a mowing, more top-dressing can be applied. Repeat until the grass stops growing in the fall. Fungicides applied in the spring and fall will help keep the *Gaeumannomyces graminis* var. *graminis* suppressed.

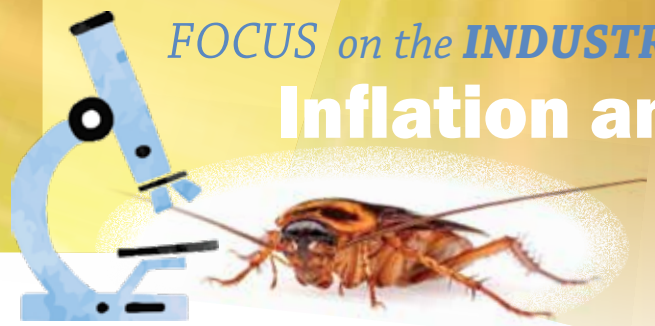
If this sounds like too much work, check out the Florida-Friendly Landscaping list of plants at the link below, and create a new plant bed. PP

For more information on take-all root rot go to https://edis.ifas.ufl.edu/publication/LH079

For the FFL Plant List go to https://ffl.ifas.ufl.edu/resources/apps/plant-guide/

Sheila Dunning is Extension Agent III, Commercial Horticulture, UF/IFAS Extension Office, Okaloosa County, Florida.

Inflation and Cost of Goods Sold



By Grant Sinnott

AS PRICES continue to rise, there are three core areas operators can focus on to protect their profit and loss statements. Fleet, labor and chemicals are the three main cost of goods solds, or COGS, in a pest control company. There are several ways to manage those expenses in a high-rate and high-inflation environment.

Our current economic environment is probably affecting your profit and loss, or P&L, and COGS in particular. There are real steps we can take to actively manage these expenses that will help keep your profits in line during these challenging times.

FLEET

Starting with the fleet, the price of new vehicles has continued to climb. During 2021 and 2022, the global supply chain was disrupted with semiconductor shortages and factory shutdowns coinciding with rising prices to create a bottleneck at dealerships. While economists had hoped that rising rates would contribute to a decrease in prices, borrowers have not been deterred.

As you think about your fleet today, it is important to check your interest rate on your loans. If you have a low, fixed rate, it probably makes sense to continue to use that relatively cheap money the bank gave you for that vehicle. If, however, you financed a vehicle with a floating rate or if you purchased a truck with a higher fixed interest rate from a dealership, it may make sense to use cash from the business to pay down those loans. While that money could earn you money in the market, paying off high rate loans is a guaranteed way to save a cost. If the cost of the loan (interest expense) is greater than your return on your money in the market then it is beneficial to pay off the loan early if you can.

It is more important now than ever to maintain the trucks you have on the road. A simple spreadsheet that tracks service dates can go a long way to increasing the life of your fleet. Change your oil often. If you have a team safety meeting, consider having a mechanic change the oil on the company vehicles during that time. This will help prevent engine damage and extend the lifespan of the vehicles, reducing the need for expensive repairs or premature replacements.

Don't be afraid to keep vehicles longer than normal in this economic environment as long as you keep them maintained, safe and looking good.

LABOR

Labor costs are another significant factor to consider in the pest control industry. With inflation on the rise, wages and benefits are increasing, and attracting and retaining skilled technicians can become more challenging.

To mitigate the impact of rising labor costs, it's important to focus on employee productivity and efficiency. Implementing technology solutions such as route optimization software can help streamline operations and maximize the number of jobs completed in a day. This not only increases revenue but also ensures that technicians are utilizing their time and skills effectively.

Route density (stops per day or miles driven per day per truck) is a critical operational focus in this environment. If you are already utilizing route optimization software, you can review all recurring and active accounts on a map. Are there any major outliers? If so, consider increasing their rate due to an increased cost to service. Or refer them to another company that has more density in that area.

"Canceling" a customer may sound counterintuitive when we often preach retention, but, as example, a customer that's 30 minutes out of your way could be a huge drain to productivity.

Additionally, investing in training and development programs for employees can have long-term benefits. By providing ongoing education and opportunities for career growth, you can enhance employee satisfaction and loyalty, reducing turnover and associated recruitment costs. Consider partnering with industry associations or offering certifications to further enhance the skills of your workforce.

CHEMICALS

The third major cost component in the pest control industry is chemical cost. As inflation impacts the prices of raw materials and manufacturing, it's important to optimize your chemical usage. Conduct a thorough review of your pest control procedures to identify any areas where you may be using excessive amounts of chemicals. Implement integrated pest management (IPM) techniques that focus on prevention, monitoring, and targeted treatment.

Continued on Page 26

Rebecca Baldwin displays an insect collection in her office at the University of Florida

Dr. Rebecca Baldwin with, from left: Dr. Keith Gerber, former entomology major and now veterinarian; Neil Najagopal, Ph.D. student in materials science and engineering; and Alex Weaver, undergraduate entomology researcher and engineering major

Dr. Rebecca Baldwin, associate professor of entomology and nematology in the UF/IFAS College of Agricultural and Life Sciences, recently received the National Teaching and Student Engagement Award from the United States Department of Agriculture.

This award is one of two given in the past year, celebrating university faculty in the food and agricultural sciences for their use of innovative teaching methods and service to students.

Rebecca Baldwin

Dr. Koehler

Dr. Hall

Dr. Barfield

Budding Entomologist

Rebecca began her journey as an entomologist in her final year of elementary school in Ouachita Parish, Louisiana, when a 4-H leader recruited her for an insect identification competition. Through this competition, Rebecca began to appreciate the importance of insects in agriculture and to our daily lives.

"I am from the Bayou State of Louisiana," Rebecca said. "I grew up playing outdoors, going on great adventures, and yes, eating some of what was caught on some of those adventures."

Rebecca went on to receive her bachelor's and master's degrees in biology from the University of Louisiana–Monroe. In 2001 Rebecca moved to Florida with her husband, Richie Baldwin, to attend the University of Florida. She became a student of Dr. Phil Koehler in the Urban Entomology Lab where she researched crawling pests and earned her Ph.D. in entomology from UF in 2005. She is grateful for the support of the pest management industry including FPMA, NPMA, CPCO and Pi Chi Omega for supporting her through travel grants and scholarships while a student. After working for a few years in School IPM and at Pest Management University with Dr. Faith Oi, Rebecca turned her attention to teaching entomology and mentoring students. She accepted a full-time teaching and Extension appointment at UF in 2010.

Teaching and Extension

In her current role as associate professor, Rebecca teaches both undergraduate and graduate courses and serves as the undergraduate coordinator for the UF/IFAS Entomology and Nematology Department, inspiring the next generation of entomologists.

"Dr. Baldwin's energy in the classroom and commitment to her students is unmatched," said CALS Dean Elaine Turner. "She is constantly seeking out innovative methods to connect with students, and I'm proud that she is being recognized as a leader in teaching."

Rebecca recognizes the positive impact of her teaching mentors like Dr. Phil Koehler, Dr. Don Hall, and Dr. Carl Barfield, and strives to be the same kind of resource for her students, both inside and outside the classroom.

Students Brett LaBella and Jordyn Ranfone, previous president and vice president of the Entomology Club, acknowledge their advisor's impact on their time at UF, writing, "We wholeheartedly believe our college journey would not have been so successful if we had not met Dr. Baldwin. She taught how us how to effectively communicate science to people of all backgrounds."

Continued on next page

Rebecca Baldwin leads an outreach event with UF students Becca Perry and Matthew Bordon, both now proud Gator grads.

ALONG with her dedication to student mentorship, Rebecca has also worked with UF organizations to ensure that underrepresented, first generation, low-income and disabled students are introduced to career and graduate school opportunities in the biological sciences. Under Rebecca's leadership, the department has doubled the number of entomology and nematology majors, tripled the number of students seeking the entomology and nematology minor, and has extended its availability to students taking courses online. In fact, if you were to seek a UF certificate in one of the pest management tracks, she may very well be your first instructor.

"Dr. Baldwin's creative approaches to classroom and outreach activities, and her dedication to make education more accessible to all students set a high standard for what engagement means on our campus," Turner said.

Rebecca serves as the faculty advisor for the undergraduate Entomology Club, the coach for the graduate Entomology Team and, through the Bugs and People course, has developed a mentoring program where students develop into peer leaders. Through the UF Preview orientation, she has had the opportunity to share the importance of communication to nearly 70,000 first-year students.

Outside of the classroom, Rebecca uses insects to promote science communication and STEM initiatives through directing the Bug Club Entomology Education and Outreach Program, through which she has developed the Entomology Field Camp, also known as Bug Camp, and the Florida 4-H Insectathon. She also hosts an annual Associate Certified Entomologist (ACE) workshop at the Southeast Pest Management Conference, and through association meetings and Extension programming provides CEU credits for both urban and public health entomology in 29 states.

Rebecca's teaching and Extension contributions have been recognized by UF College of Agricultural and Life Sciences, the Florida Entomological Society, Florida 4-H, the Entomological Society of America Certification Board, the Entomological Society of America and the North American Colleges and Teachers of Agriculture. *Continued on Page 20*

Risky Business

Allen Fugler

Revolutionizing Pest Control: Harnessing AI to Optimize Operations and Efficiency

ARTIFICIAL INTELLIGENCE, or AI, has made significant strides in revolutionizing various industries, and the pest control sector is no exception. By integrating AI technologies into their operations, pest control businesses can streamline their processes, enhance customer satisfaction, and achieve unprecedented levels of efficiency.

One notable application of AI in this industry involves the utilization of routing software combined with self-driving cars, enabling companies to minimize driving time and maximize their productivity. In this article, we will explore how AI can transform pest control businesses and enhance their overall effectiveness.

Enhanced Pest Detection And Monitoring

AI-powered technologies have the potential to significantly improve pest detection and monitoring systems. Intelligent sensors and cameras can be strategically placed to identify and track pest activity, enabling businesses to detect infestations early on. These sensors can leverage machine learning algorithms to analyze patterns and identify potential risks, providing real-time alerts and enabling prompt action. By automating the monitoring process, pest control companies can ensure a proactive approach and address issues before they escalate.

Efficient Resource Allocation

Optimal resource allocation is crucial for any pest control business. AI algorithms can analyze historical data, such as customer locations, pest types, and infestation patterns, to optimize routes and allocate resources effectively. By considering factors such as traffic, time of day, and proximity, routing software can create optimized schedules for technicians, reducing driving time and improving overall operational efficiency. This not only saves costs but also enables technicians to attend to more customers in a shorter span of time.

Minimizing Driving Time With Self-Driving Cars

The emergence of self-driving cars presents an exciting opportunity for the pest control industry. By combining routing software with autonomous vehicles, businesses can further optimize their operations and minimize driving time. Self-driving cars equipped with AI algorithms can navigate through traffic, select the most efficient routes, and reach customers' locations without the need for manual intervention. This automation reduces human error, lowers fuel consumption, and increases the number of service calls a technician can attend to in a day.

Predictive Analytics For Pest Control

AI can leverage predictive analytics to enhance pest control strategies. By analyzing vast amounts of data, including weather patterns, historical pest trends, and environmental conditions, AI algorithms can forecast potential pest outbreaks. This information allows pest control businesses to proactively target high-risk areas, deploy preventive measures, and allocate resources accordingly. By acting in advance, businesses can reduce the likelihood of infestations, minimize customer complaints, and build a reputation for proactive pest control services.

Improved Customer Experience

Incorporating AI into pest control operations can significantly enhance the customer experience. By utilizing intelligent chatbots or virtual assistants, businesses can provide customers with immediate assistance and answer common inquiries 24/7. These AI-powered interfaces can offer personalized recommendations, provide information about preventive measures, and schedule service appointments efficiently. The integration of AI in customer interactions not only improves response times but also ensures consistent and accurate information delivery.

The integration of AI technologies, including routing software and self-driving cars, has the potential to transform the pest control industry. By automating and optimizing various aspects of their operations, businesses can achieve higher levels of efficiency, reduce costs, and provide superior customer service. From enhanced pest detection and monitoring to efficient resource allocation and predictive analytics, AI empowers pest control companies to proactively address infestations and deliver tailored solutions.

As the industry embraces AI-driven innovations, we can expect a future where pest control services are not only more effective but also more sustainable and customer-centric. PP

Allen Fugler is the President of TermiTek, LLC, a manufacturer and marketer of innovative termite technologies. He also provides risk management consulting services for pest management companies to lower claims rates, enhance employee safety and productivity, and improve insurability and insurance carrier underwriting consideration. He can be reached at 505-310-6992 and allenf@termitekllc.com.

Dr. Baldwin in her lab at UF


Emperor scorpion glows blue under UV light

Rebecca Baldwin, continued from Page 18

Research

Rebecca's research interests stem around education and training for the pest control industry. Her research consisted of testing low impact pesticides using fatty acid salts that can be utilized in environments with children. The target environments include schools and daycare centers, and the target pests include ants and cockroaches.

One of Rebecca's favorite quotes is from famous cockroach researcher P.B. Cornwell: "The cockroach is probably the most obnoxious insect known to man."

"Actually, cockroaches are amazing animals and are well adapted to their environment," Rebecca said. "If you have the chance to visit Florida, you will learn that they are commonly called 'palmetto bugs,' to be a little more tourist friendly."

Rebecca's research also includes testing training materials for the pest control industry and for youth entomology programs. Other research has included being part of a team evaluating mosquito management techniques in the aquatic environment and their impact on honey bee water foragers, developing more efficient ways to mass rear mosquitoes, and she helps lead a group of undergraduate researchers in their projects working with ants, flies and cockroaches.

Rebecca's USDA National Teaching and Student Engagement Award was presented at the 135th annual meeting of the Association of Public and Land-Grant Universities, held in Denver last November.

With a yellow jacket nest

Rebecca Baldwin Quick Facts!

Friends Describe Me As:
- Chatty and friendly
- The "Bug Girl"
- Always ready to share a buggy phrase

My Hobbies:
- Mission and humanitarian work through Westside Baptist Church
- Spending time with my husband of 25 years
- Playing the flute
- Insect collecting
- Fellowshipping with friends
- Visiting family in Louisiana

Fantasy Dinner Guests:
- The Apostle Paul
- C.S. Lewis

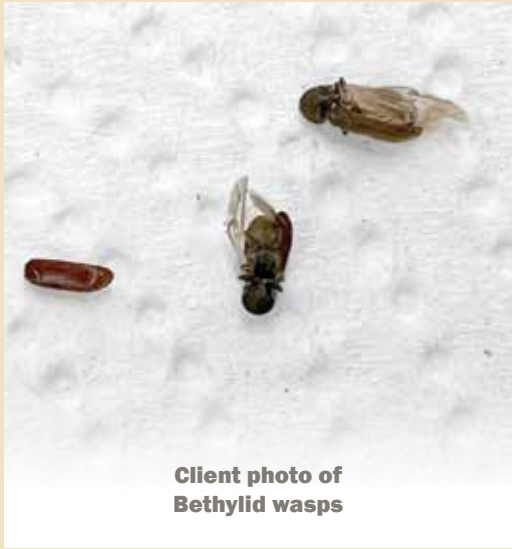
Little-Known Fact:
I am a certified scuba diver

Known for:
Wearing arthropod brooches, including a roach brooch given as a gift by a student. PP

Adapted from an article by Clayton Bush, UF Student

Bethylid wasps (top) and silky anobiid

Lyle Buss, UF/IFAS



Client photo of Bethylid wasps

UF Insect ID Lab client photo

Bethylid Wasps

Lyle J. Buss

I RECENTLY got a call from a Tampa resident who was trying to figure out what kind of bug was attacking her in her home. She had been bitten or stung four times in the past couple weeks, but could never find a bug on her at the time. Several minutes after a bite, the spot would itch, lasting 20–30 minutes.

She texted me a photo of a couple insects that she had found in her home. I recognized them as beetles in the family Anobiidae, but beetles wouldn't attack a person like this. I asked her to mail me a sample of insects from her home, and she agreed. The sample included the beetles from her photo, and also a couple of tiny, antlike wasps, only 2 mm long. The beetles were a type of wood borer called the silky anobiid, *Priobium sericeum*. The wasps were a type of parasitic wasp belonging to the family Bethylidae. A specialist further identified the wasps as the species *Sclerodermus macrogaster*. Bethylid wasps have both winged and wingless forms, but most tend to be wingless females.

Bethylid wasps, in the genus *Sclerodermus,* parasitize larvae of wood-boring beetles, such as longhorned beetles (family Cerambicidae). Usually they live in forests, but they can occur in structures when their hosts are present. In this case, the wasps were almost surely parasitizing the larvae of the silky anobiids. The female wasps use their stingers to subdue their insect prey, but are also known to sting people, likely in self-defense. My theory was that the anobiid beetles were infesting wood in the home, and the wasps were parasitizing the beetle larvae in the wood. Since a couple of the stings occurred on the back of my client's neck, maybe the infestation was in the attic, and the wasps were falling from the ceiling onto her and then stinging after getting trapped between skin and clothing. I advised her to discuss it with her landlord and have the building inspected for wood borers.

The Insect ID Lab gets a lot of "invisible itches" cases where people feel sensations in their skin that they mistakenly attribute to bugs. Those in the pest control business a while may be familiar with these cases. When this client first told me she was getting stung in her home, I did wonder whether it was a real bug issue or an issue of a more medical nature. However, the fact that she felt only a few distinct stings rather than constant skin sensations made me suspect it could be real bugs. I'm really glad that I asked her to send in a sample! PP

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

James Gathany, CDC

Remove or regularly clean objects outdoors that retain water

Kids' toys	Tarps
Buckets	Trash
Bird baths	Flower vases
Gutters	Animal troughs and bowls
Old tires	Untreated pools

Mosquitoes:
Prevent and Protect

THOUGH mosquito control programs strive to reduce populations, mosquito control is a community effort. Everyone can play their part by participating in source reduction (removing common larval habitats).

This is primarily done by removing and cleaning objects around the home that may retain water.

For larger objects and/or permanent water sources, contact your local mosquito control program for guidance or treatment options. Some programs may be able to provide native fish that naturally prey on mosquito larvae.

In addition to residential mosquito prevention, it is important to protect yourself from adult female mosquitoes when participating in outdoor activities. Remember to wear proper attire, including a long-sleeved shirt and long pants, and to apply insect repellent registered with the U.S. Environmental Protection Agency (EPA). For more information on insect repellents, visit the EPA website.

Report by FDACS

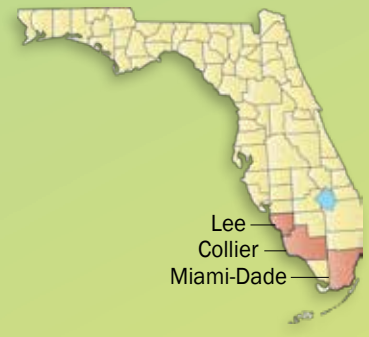
Lawrence Reeves, FMEL

ABOVE
A close-up look at adult Culex lactator mosquitoes collected by Lawrence Reeves of Florida Medical Entomology Laboratory.

RIGHT
Lawrence Reeves collects mosquitoes from a trap in South Florida.

New Culex Species *Reported in Florida*

COLLIER, Lee, and Miami-Dade are the known counties of Florida in which the new mosquito species *Culex lactator* is reproducing.



ANOTHER new mosquito species has made its way across the tropics into Florida, making a permanent home in at least three counties. Scientists are concerned because of the rate of new mosquitoes arriving in Florida and the potential for them to transmit mosquito-borne diseases.

A mosquito known only by its scientific name, *Culex lactator,* is the latest to establish in the Sunshine State, according to a new study published in the *Journal of Medical Entomology* by faculty at the UF/IFAS Florida Medical Entomology Laboratory.

This species was first discovered in Miami-Dade County in 2018 by UF/IFAS faculty while they hunted for other nonnative mosquitoes. Since then, thriving populations have been recorded in Miami-Dade, Collier and Lee counties. Scientists are concerned there hasn't been enough research on the species and their potential disease risk.

"There are about 90 mosquito species living in Florida, and that list is growing as new mosquito species are introduced to the state from elsewhere in the world," said Lawrence Reeves, lead author of the study and an assistant professor and mosquito biologist at the UF/IFAS research center in Vero Beach.

Mosquitoes are among the most studied insects because they can transmit diseases. However, there are large gaps of knowledge, said Reeves.

"That's particularly true for species from the tropical forests, where mosquitoes are diverse and understudied," he said. "Introductions of new mosquito species like this are concerning because many of

Continued on next page

Reeves collects mosquitoes with an aspirator from a site in Florida.

New Culex, continued

our greatest mosquito-related challenges are the result of nonnative mosquitoes, and in a case like this, it's difficult to anticipate what to expect when we know so little about a mosquito species."

Globally, there are more than 3,600 types of mosquitoes. When a new mosquito is found in Florida, it could be any of these species. Reeves and his team used DNA analysis and other tools to not only discover they had found a new mosquito species, but to identify it as *Culex lactator.*

Will It Vector Diseases?

Culex lactator is found in Central America and northern South America and is a member of the *Culex* group of mosquitoes. This group includes important species that transmit West Nile and St. Louis encephalitis viruses, but it is unclear whether *Culex lactator* will contribute to the transmission of these viruses in Florida.

Every year, Florida faces challenges from mosquito-transmitted diseases like West Nile virus, eastern equine encephalitis virus, dengue virus, chikungunya virus and others, explained Reeves.

"It's too early to know whether *Culex lactator* will exacerbate these challenges, but the implications are often difficult to predict because not all mosquito species are equally capable of transmitting a particular virus or other pathogen," said Reeves.

Each mosquito-borne virus is transmitted by only certain mosquito species, said Reeves.

"We need to be vigilant for introductions of new mosquito species because each introduction comes with the possibility that the introduced species will facilitate the transmission of a mosquito-transmitted disease," he said.

Cx. lactator Sites in Florida

The initial specimens of *Culex lactator* were collected in 2018 from rural sites in southern Miami-Dade County south of Florida City, followed by additional adult and immature specimens collected through 2022 in the same locations. Each set of mosquitoes were collected from traps set by associate professor Nathan Burkett-Cadena, doctoral student Kristin Sloyer, and Reeves while looking for other recently introduced mosquitoes.

In 2022, scientists with the Collier Mosquito Control District and Lee County Mosquito Control District found *Culex lactator* in their counties, indicating that *Culex lactator* has likely spread from its initial point of introduction.

Currently, *Culex lactator* is known to live in Collier County south and east of Naples, Lee County west of Fort Myers, and in the Homestead area of Miami-Dade County, though it may have also spread elsewhere in the state, said Reeves.

"*Culex lactator* is physically similar to mosquito species already known from Florida. It looks like other more common mosquito species," said Reeves. "Because of that similarity, the presence of *Culex lactator* in an area can be easy to miss."

Watchful Waiting

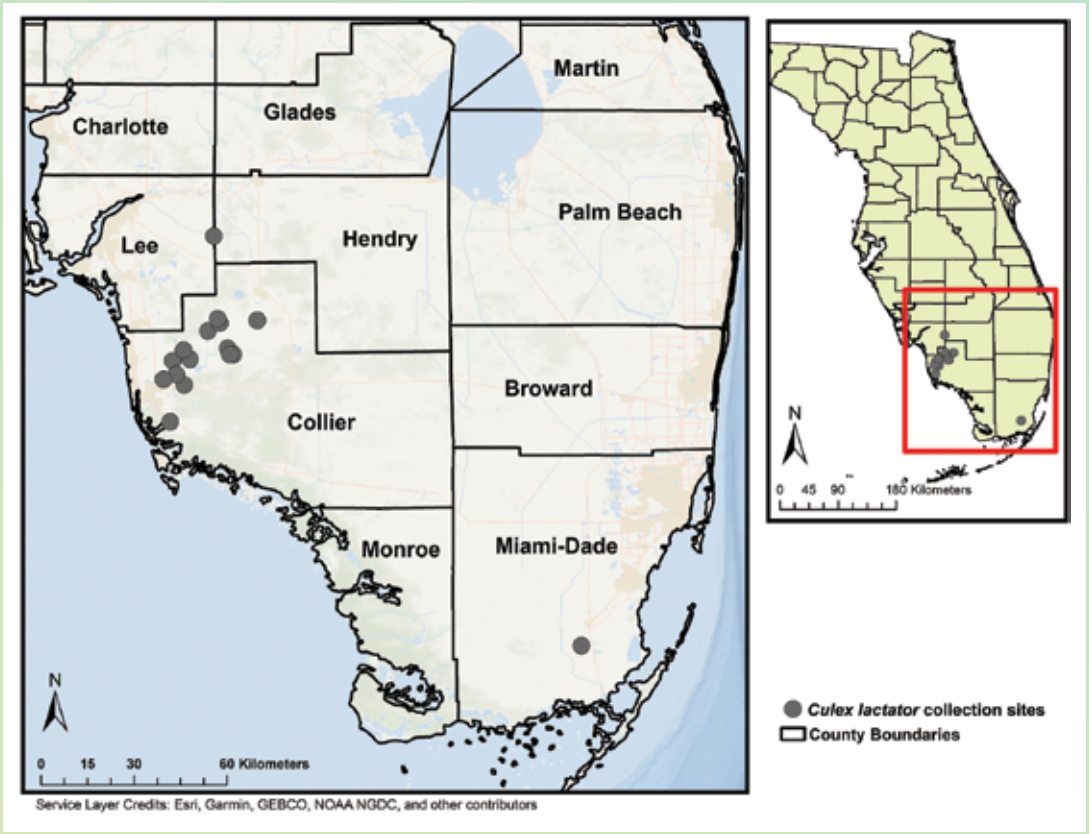
Reeves and his team stress it's important to monitor for *Culex lactator* as it is likely to spread within the state into areas that are environmentally suitable.

Florida's proximity to the tropics and climate conditions make it ideal for nonnative mosquito species. Scientists are concerned about the rate and frequency of new species establishing in Florida. As many as 17 nonnative mosquito species are established in the state. Researchers stress that the detections of nonnative mosquito species are increasingly frequent, with 11 of 17 nonnative species first reported in the past two decades, and six of these 17 detected in only the past five years, said Reeves.

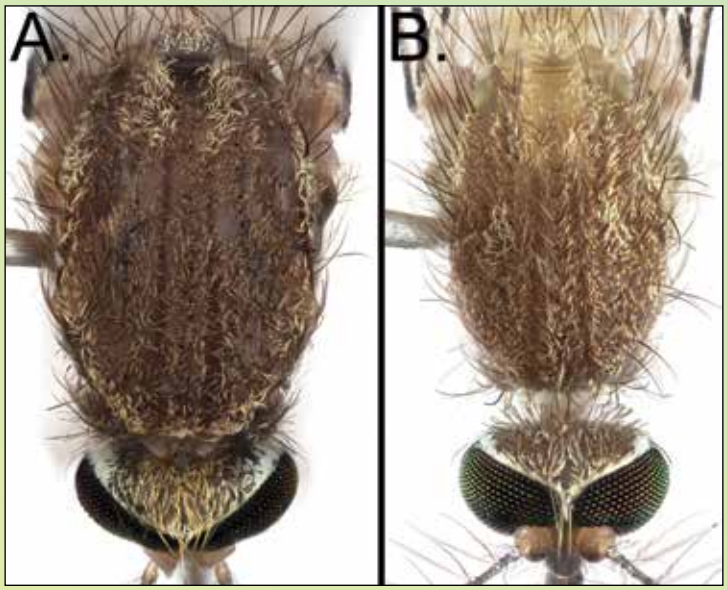
The mosquitoes *Aedes aegypti, Aedes albopictus,* and *Culex quinquefasciatus* — among the most important disease vectors in the United States — like *Culex lactator*, are nonnative species, introduced from the tropics.

"Climate change may improve the chances of tropical mosquito species becoming established once they make it to Florida if the state becomes warmer," adds Reeves. "Increasing storm frequency and intensity could also blow in more mosquitoes and other species from the Caribbean, Central America, and elsewhere. PP

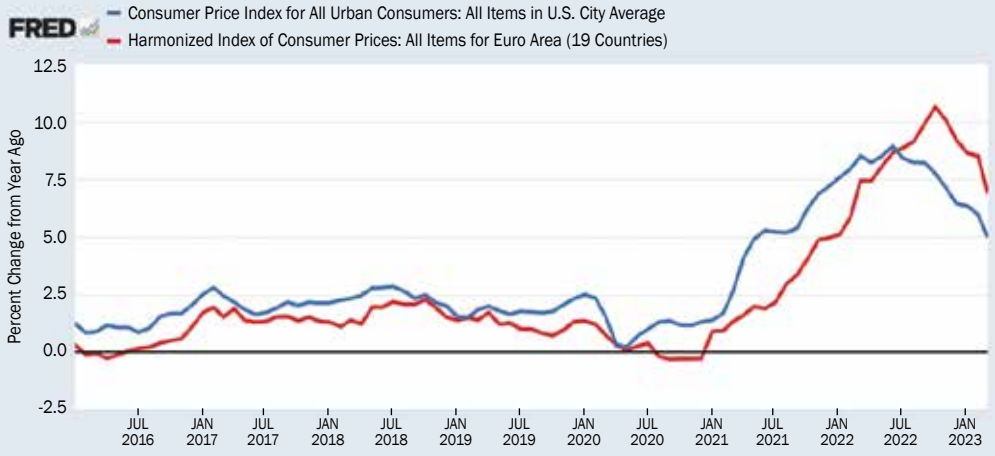
By Lourdes Mederos
UF/IFAS Communications



Map of southern Florida indicating where Culex lactator was collected between May 2018 and September 2022. Inset at the top right shows the location of the enlarged map to the left relative to the Florida Peninsula.



Scutum of Culex (Phenacomyia) lactator (A; collected near Florida City, Miami-Dade Co., Florida) compared to Culex (Culex) coronator (B; reared from larva collected in Sebastian, Indian River Co., Florida). Note pattern of golden and brown scales on scutum of Cx. lactator. This character distinguishes Cx. lactator from all other Culex species currently known from Florida.



Inflation rate, United States and Eurozone
January 2016 Though March 2023

Inflation, continued from Page 15

Another consideration is the use of generic products to help save money. Just make sure you are comparing apples to apples with the products' active ingredients that you are considering. This approach can help minimize the need for excessive chemical application, resulting in cost savings and reduced environmental impact. Consider normal chemical costs to be below 5% for pest control, below 10% for termite services, and below 15% for lawn-related services. Of course, there is an endless number of service lines to keep an eye on as it relates to chemical cost management, but these are the "big three" in most companies.

Furthermore, consider building relationships with suppliers to negotiate better pricing, or explore alternative suppliers that offer competitive rates without compromising on quality. Take advantage of bulk purchasing opportunities, and keep a close eye on market trends to make informed decisions about when to lock in prices or adjust your purchasing strategy. Stay strategic and nimble when managing costs, especially around commodities like chemical and fleet expenses.

IN CONCLUSION, as prices continue to rise in the pest control industry, focusing on fleet management, labor optimization, and chemical usage can help protect your profit and loss statements. Paying attention to interest rates on vehicle loans and implementing regular maintenance schedules for your fleet can save costs in the long run. Investing in employee productivity and development can mitigate the impact of rising labor costs. Finally, optimizing chemical usage through integrated pest management techniques and strategic supplier relationships can help control expenses.

By proactively managing these core areas, pest control operators can navigate the challenges posed by inflation and maintain a profitable business in a competitive market. PP

Grant Sinnott is an Account Director with Kemp Anderson Consulting.

Avoid Bringing Powderpost Beetles Home from Yard and Estate Sales

SUMMER is the time of year when people are easily lured to yard and estate sales. The finds can be great, ranging from antiques to nearly new items. One thing to keep in mind when choosing wooden items like furniture, frames and baskets, is always scout for signs of insect infestation such as holes or sawdust.

During summer in Florida, our Extension office receives phone calls from garage and estate sale bargain hunters looking for help to treat their furniture against insect infestations. This usually coincides with when they bring their purchases into their air-conditioned home after having sat in their garage or in previous infested locations.

Unfortunately, standard homeowner's insurance does not cover the powderpost beetle removal. These pests are active all year in Florida and may be dormant up to five years. Infestations develop slowly, but wood can be reinfested year after year. Once they are established in your home, they are harder to get rid of.

Damage

These beetles are harmless to humans and do not bite. However, powderpost beetles can be serious pests of your structures!

Beetle larvae live in and consume dry, seasoned wood.
This includes:

- beams, sills, joists, studs, subflooring and plywood, and
- both hardwood and softwood furniture, wall paneling, window and door molding, and hardwood floors.

Signs

Look for signs of feeding damage on your furniture. Signs of infestations include recent holes ranging in size from 1⁄16 – 1⁄8 inch in diameter, powderlike dust, sawdust, or gritty frass. The sound of feeding may be heard — a clicking or rasping sound. I have used my stethoscope to listen.

Prevention

- Sealants deter beetles. Paint, varnish or wax to seal the wood. Once treated, reseal existing holes to prevent reinfestation.
- Replace localized damaged wood with clean, treated wood.
- Spray or paint insecticide to penetrate into infested wood, creating a protective barrier.

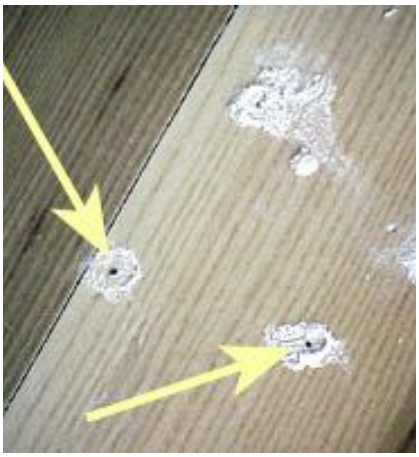
Continued on next page

Gyorgy Csoka

Furniture damage from powderpost beetles

UF/IFAS

Anobiid powderpost beetles



North Carolina State Univ.

Powderpost damage of hardwood floors due to feeding. Note sawdust at entry holes.

A fumigation chamber can be used to treat powderpost beetle infestations in furniture.

Powderpost Beetles, continued

Treatment

To remove the pests, lumber can be kiln-dried for hours *prior* to using in construction such as shelves, woodworking and flooring. Borate wood-preservative treatments such as BoraCare® and Tim-bor® Professional with low-toxicity products can be used. Follow label directions for use.

If you have an isolated piece of furniture that needs treatment, contact your local pest control company that offers fumigation chambers. They tend to charge by furniture weight and offer the most effective treatment within 12–24 hours. Compare prices, as it varies by location and size of the furniture.

For more information on powderpost beetles, contact your local UF/IFAS Extension office. **PP**

Karen Stauderman is Commercial Horticulture Agent III at UF/IFAS Volusia County Extension Office in DeLand, Florida.

PCO Pointer

Employee Identification Cards in 2023

482.091 Employee identification cards. —

(1)(a) Each employee who performs pest control for a licensee must have an identification card.

(b) Either the licensee or the licensee's certified operator in charge must apply to the department for an identification card for each employee who will perform pest control there for within 30 days after employment of that employee, on a form prescribed by the department. The licensee and the licensee's certified operator in charge are jointly responsible for obtaining such identification cards.

(b) The identification card shall be carried on the employee's person while performing or soliciting pest control and shall be presented on demand to the person for whom pest control is being performed or solicited, to any inspector of the department, or to any of such other persons as are designated by the rules of the department.

(c) An employee may not perform pest control without carrying on her or his person a current identification card affixed with the employee's signature and current photograph.

THE DEPARTMENT started to allow identification cards to be photographed and carried on a smart device. However, before taking the photos of the front and back you must sign the front and place a current photo on the back as required in Section (c).

I have seen photos of I.D. cards that are only of the front and without a signature, or only the front with a signature but no second picture of the back with the current photo attached.

The Department made this concession to make it easier for the industry to be in compliance. However, it must be done correctly. PP

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

CLASSIFIED ADS

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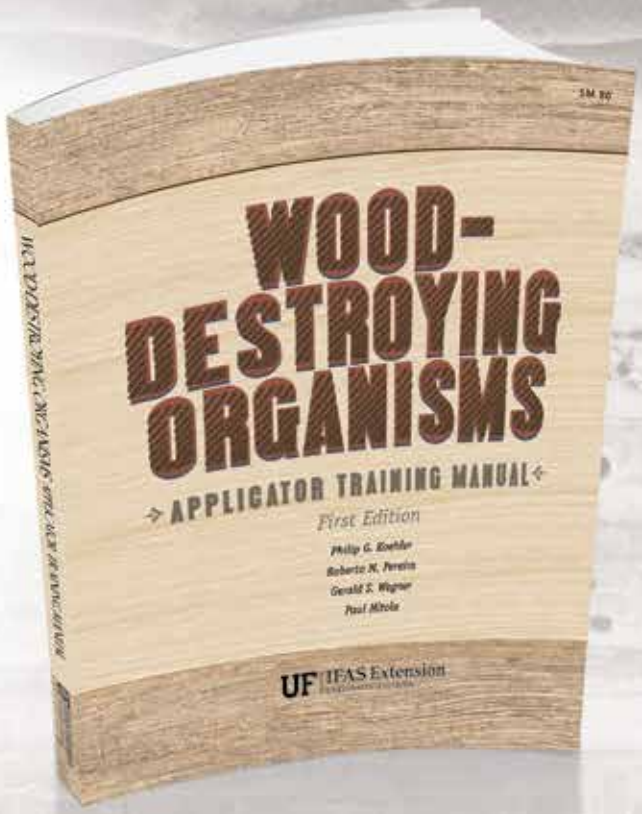

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