MARCH/APRIL 2019

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PESTPRO

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

Powerful Stings

Insecticidal Soaps

Common Web Spiders In the Landscape

OFFICIAL MAGAZINE OF FLORIDA PEST MANAGEMENT ASSOCIATION

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"In your face" is where this spider web might end up if you don't look out. Abundant and bright is the crab orb weaver, *Gasteracantha cancriformis*. Beware of close encounters in Florida woods and landscapes. Luckily, it is harmless to humans!

Spider closeup photo by Judy Gallagher

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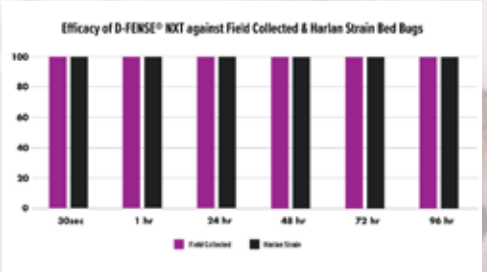

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Knowledge Through Networking

Message from the President of FPMA

Eric Hoffer

IF THE SUCCESS of the 2019 Florida Pest Management Association Expo is any sign of how the rest of 2019 will go for the Association, then I can easily say it will be epic. We had an excellent meeting with great vendors and engaged members.

My "theme" as president this year, *Knowledge Through Networking,* was in full effect in the Exhibit Hall, in between the enlightening business classes, and most importantly, after hours at dinners and into the hotel lobby bar.

No matter how many times I attend one of these events, I always hear something that amazes me and that I am able to use as a takeaway to better my business. Go for it, just ask a question — you'll be surprised at the answers you get.

The Association's past presidents — the most recent being Steve Lum — did a great job in lighting the path for me so I can hit the ground running as I step in as president.

Exciting Events in 2019

We have many great learning and networking opportunities coming up this year. Just after this issue of *PestPro* hits, we will be fully engaged in Tallahassee for our Legislative Days, taking place April 1 and 2. Even if you haven't signed up yet, you still have time to get on board and make a difference with us. Additionally, I promise you will come away with a much more enlightened perspective on the machinations of politics in Tallahassee. These machinations affect us all — big and small — so join us and make your voice heard.

Our FPMA in Paradise Summer Conference this year will be held in my hometown of Boca Raton at the beautiful Boca Raton Resort & Club. Make sure to clear your calendar for June 17–20 so you can network through the Exhibit Hall, classes or poolside. It doesn't matter where. Just get out there. Learn something new. Try something different. I guarantee you won't be disappointed.

We also have our Urban Lab Tour at UF in Gainesville, which is scheduled for August 12, as well as our extremely popular, "Behind the Scenes" company visits that will take place sometime in the beginning of November (stay tuned for exact dates). I am a huge fan of this event as I have learned so much this way over the years. Now that FPMA puts this together as an event, I have heard so many people comment on what an amazing opportunity participating in a visit has been for them.

A Healthy Year is Within Reach

We are continuing to add to our list of value-added benefits and are particularly excited knowing we are so much closer to being able to offer our members a truly exciting benefit of health insurance. Please keep an eye out for any correspondence from Select Source — the company helping us put this together. It is our hope that our members will finally be able to get affordable and useful health insurance. Together we have leverage. It is amazing what we can accomplish when we pull together.

Final Thoughts

Finally, I would like to thank the membership for allowing me to become FPMA's 72nd president. I am truly humbled to serve such a diverse and successful group of people. Our industry is one of the most open and sharing ones out there. I know this because I have asked around. I hope that all our members and future members will join me this year in gaining *Knowledge Through Networking.*

I look forward to working with the FPMA Board of Directors and the membership in making 2019 FPMA's most successful and transformative year yet. PP

Eric Hoffer
President, FPMA

History of *PestPro* Magazine

THE UF Urban Entomology Lab has just completed our fourth year of publishing *PestPro* magazine for the industry and our second year of serving as the official magazine of the Florida Pest Management Association.

PestPro magazine was first produced by a commercial publisher 14 years ago. The Urban Lab collaborated with *PestPro*, providing articles and information from our research.

In December 2014, we had a meeting with the publisher. Usually at that December meeting we would plan the articles for the next year. But the 2014 meeting did not turn out as expected. The publisher told us they were discontinuing the magazine, and no magazine issues would be produced in 2015. That announcement was a complete shock to us at the meeting. I hated to see it end.

This great educational tool had been a unique and valuable resource for thousands in the pest management industry. Also, we were facing the ending of a great relationship among our authors, who were mainly University of Florida faculty members and the publisher. I felt the loss of something we had produced for the previous 10 years and wondered whether there was a way for us to continue providing current information on pests and pest control.

Without thinking, I asked whether the publisher would consider transitioning the magazine to us at the University of Florida. We were already providing most of the content, so it made sense for a transition.

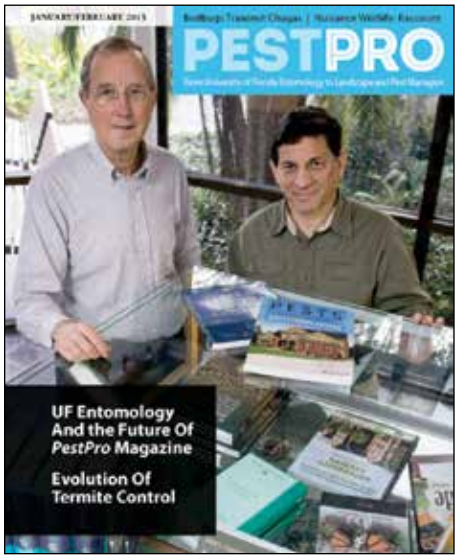
Of course, we had never published a magazine. I had never even thought about wanting to publish a magazine. I had written lots of fact sheets, circulars, books, and scientific papers, but a magazine is a whole lot different. So a transition was what I was hoping for.

The publisher said, "*PestPro* is yours." There was no transition, no time to think it over. It was now ours to publish or stop publishing.

POWERING UP IN 2015

I was shocked that we now owned a magazine and would not have any training in taking on its publication. It was completely ours. We got the mailing list so we could continue sending it out to the entire industry.

The first problem we faced was to not miss issuing the magazine for even a month. The magazine is published every other month, and the next issue needed to go to the printer by the end of January 2015. At the beginning of December, we had no layout artist, no advertisers, no salesperson, and no company



Our first issue of PestPro, January 2015.

to produce the magazine. Even though we had authored many articles for the previous *PestPro*, we had no experience with its production.

After we left the meeting with a magazine and a mailing list, Roberto Pereira and I met and laid out a plan. I was hoping that Jane Medley, who had produced many publications for me, would take on the job of putting the magazine together. She would soon retire after working with me for more than 30 years at the University of Florida. She agreed to take on the task.

A BIG problem was that we did not have time to line up advertisers. We had articles that could be used for the magazine. Articles by Bill Kern, Lyle Buss, and Laurie Trenholm paved the way for future *PestPro* authors. The content was there, but we did not have a company to produce the magazine.

So we made the decision to put out our first issue in January/February 2015 without advertisers or anything except an idea of what needed to be done. Jane got bids from several printers and settled on one. She took the articles and laid out our first magazine.

We realized we needed a company to publish the magazine. So, we asked Sandee and Tony Weston to help us. They are the parents of Josh Weston, who was a student in our program. Sandee and Tony had just discontinued their pest control company in Port Orange. So we recruited Sandee to help us form Pest Management Education, Inc., a nonprofit 501c corporation. And to help us guide the magazine content, we formed a board of directors, made up of manufacturers and pest control operators.

Everyone was really supportive. The corporation we formed was set up to provide any profits to Urban Entomology at the University of Florida. We interviewed and hired Sandra Krempasky to manage advertising sales. Even with the structure in place, we were a long way from dealing with any profits.

We got the first issue out in the first week of February 2015, less than six weeks from the time that we had taken on the task. During the next year, we ran up debts of more than $40,000 paying for printing and mailing the magazine for free to all pest control operators in Florida — more than 12,000 PMPs.

In 2016 we worked with Florida Pest Management Association to link with them and draft a contract to become the official magazine of FPMA. It has been wonderful working with them to include information on the association and business-related issues. In January/February 2017 we issued the first magazine officially representing FPMA. We have had a wonderful partnership with the Association, and finally were ahead of costs in 2018.

FUTURE ENDEAVORS

Our goal is to keep producing a quality magazine. We have learned a lot about publishing. We have a lot of loyal readers who enjoy the technical material along with the important industry and association news. At one of the recent meetings, a PMP told me that our magazine is better than the national magazines. That was a huge compliment to our authors, Jane Medley, and everyone who came together to make sure the magazine is truly educational for the pest management industry.

This past month we were contacted by *Cuticle* magazine, which publishes for pest managers in Israel. They are now using our articles translated into Hebrew to educate their industry.

It has been a long, hard road, but we are proud that we can continue to educate the pest management industry. As far as we know, there is no other university-related urban entomology group publishing a magazine for the industry.

We certainly appreciate our advertisers, who help us make the magazine available for free to our subscribers. I want to thank everyone for their support. We look forward to many more years of providing *PestPro* to the industry. PP

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

ALIEN INVADERS!

24th Annual Southeast Pest Management Conference

May 7 — May 9, 2019, University of Florida, Gainesville, Florida

May 7, 2019: General Household Pests (GHP)

7:00 AM – 8:30 AM		Registration and Exhibitor Set-up
8:30 AM – 9:20 AM	GHP	Intercepting Pests at the Border — Amanda Hodges, PhD, UF/IFAS
9:20 AM – 9:40 AM		Break
9:40 AM – 10:30 AM	GHP	Identification and Management Strategies for Wasps and Bees — Gerry Wegner, PhD, BCE Emeritus
10:30 AM – 10:50 AM		Break
10:50 AM – 11:40 AM	GHP	LED Lights for Attraction and Control of Mosquitoes and Flies — Randy Buckley and Don Foster, UF/IFAS
11:40 AM – 12:00 PM		SEPMC, Urban Entomology Lab, and FPMA: Partners in PCO Education
12:00 PM – 1:15 PM		Lunch Sponsored by AMVAC, Parking Garage on Gale Lemerand Drive
1:15 PM – 2:10 PM	GHP	Vector-Borne Diseases We Do Not Want In the USA — Phil Koehler, PhD, UF/IFAS
2:10 PM – 3:00 PM	GHP	Research Updates: What is New in UF Urban Entomology Research — Dr. Koehler's Students, UF/IFAS
3:00 PM – 3:20 PM		Break
3:20 PM – 4:10 PM	CORE	Protecting Pollinators — Cameron Jack, PhD, UF/IFAS
4:10 PM – 5:00 PM	CORE	Changes are Everywhere — Paul Mitola, FDACS
5:00 PM – 7:00 PM		Sapp - Walkup Tailgator Steak Dinner, Parking Garage on Gale Lemerand Drive

May 8, 2019: Wood-Destroying Organisms (WDO)

7:00 AM – 8:30 AM		Registration and Exhibitor Set-up
8:30 AM – 9:20 AM	WDO	Termites in New Orleans — Claudia Reigel, PhD, City of New Orleans Mosquito & Termite Control Board
9:20 AM – 9:40 AM		Break
9:40 AM – 10:30 AM	WDO	Termites in Trees — Ben Hottel, Florida A&M Univ.
10:30 AM – 10:50 AM		Break
10:50 AM – 11:40 AM	WDO	Jacksonville Response to New Termite Infestations — Erin Harlow, MS, UF/IFAS, Duval County
11:40 PM – 12:00 PM		SEPMC, Urban Entomology Lab, and FPMA: Partners in PCO Education
12:00 PM – 1:15 PM		Lunch Sponsored by B&G: Gator Low-Country Boil, Parking Garage on Gale Lemerand Drive
1:15 PM – 2:05 PM	WDO	Little-Known Facts About Termites and Wood-Destroying Organisms — Thomas Chouvenc, PhD, UF/IFAS
2:05 PM – 2:55 PM	WDO	Invasive Termites in the Florida Panhandle — Johanna Welch, PhD, FDACS
2:55 PM – 3:15 PM		Break
3:15 PM – 4:05 PM	CORE	Tool Time: Pest Control Tools — Ray Meyers, RJM Contracting, Inc., and Jeff McGovern
4:05 PM – 4:55 PM	CORE	IPM in Urban Pest Management — Rebecca Baldwin, PhD, UF/IFAS

May 9, 2019: Lawn & Ornamentals (L&O)

7:00 AM – 8:30 AM		Registration and Exhibitor Set-up
8:30 AM – 9:20 AM	L&O	Solving Disease Problems in Turf and Ornamentals — Dr. Carrie Harmon, UF/IFAS Plant Disease Clinic
9:20 AM – 9:40 AM		Break
9:40 AM – 10:30 AM	CORE	Incorporating Integrated Pest Management in Florida Landscapes — Dr. Norm Leppla, UF/IFAS Entomology & Nematology
10:30 AM – 10:50 AM		Break
10:50 AM – 11:45 AM	L&O	Research Updates: What Is New in UF L&O Research — Dr. Adam Dale's Graduate Students, UF/IFAS Entomology & Nematology
11:45 AM – 12:45 PM		Lunch Sponsored by McCall Service, Parking Garage on Gale Lemerand Drive
12:45 PM – 1:35 PM	L&O	New and Emerging Pests — Lisa Hassel, FDACS
1:35 PM – 2:25 PM	L&O	New Turf Varieties — Dr. Kevin Kenworthy, UF/IFAS Agronomy Department
2:25 PM – 2:45 PM		Break
2:45 PM – 3:35 PM	CORE	Fate of Herbicides — Dr. Ramdas Kanissery, UF/IFAS Department of Horticultural Sciences
3:35 PM – 4:25 PM	L&O	Controlling Pest Ants — Dr. David Oi, USDA Agricultural Research Service

http://entnemdept.ifas.ufl.edu/sepmc/Main_Page.html
http://tinyurl.com/2019-SEPMC

John Flannery

Male velvet ant is more wasplike

Judy Gallagher

Elongated twig ant

Alex Bairstow

Roger's ant

Judy Gallagher

Female velvet ant

Powerful Stings:

Velvet 'Ant,' Twig Ant, and Roger's Ant

Philip G. Koehler and Roberto M. Pereira

THE THREE Florida 'ants' discussed in this article all carry a powerful stinger that will hurt you — but only two of these insects are true ants.

VELVET ANT

Velvet ants belong to a large wasp family, the Mutillidae. The species that is commonly observed in the eastern United States is the red velvet ant, *Dasymutilla occidentalis*.

The males have two pairs of transparent, black wings and appear wasplike. Females look like large, hairy ants and are typically ½ inch to 1 inch long. Despite being wasps, the females are wingless and are covered with hairs. The females are solitary, and most species are parasitic on solitary bee and wasp species.

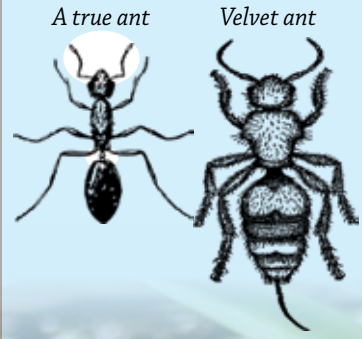
These insects are also referred to as "cow ant" and "cow killer," although cows are probably not bothered by these ants very often. It is doubtful if cows ever get killed by these ants. On the other hand, there is plenty of documentation on calves being harmed and, in some cases, killed by fire ants.

Continued

Velvet ants are *not* ants — they are wasps! How can one tell that velvet ants are not true ants?

1. **All ants have elbowed antennae.** Velvet ants do not have elbowed antennae. The antennae may have a slight bend but not the typical elbow that we see in ants' antennae.

2. **Ants have a small "waist" segment called a petiole.** It separates the gaster, at the hind end, from the thorax in the middle of the body. In velvet ants there is no petiole between the thorax and the gaster.



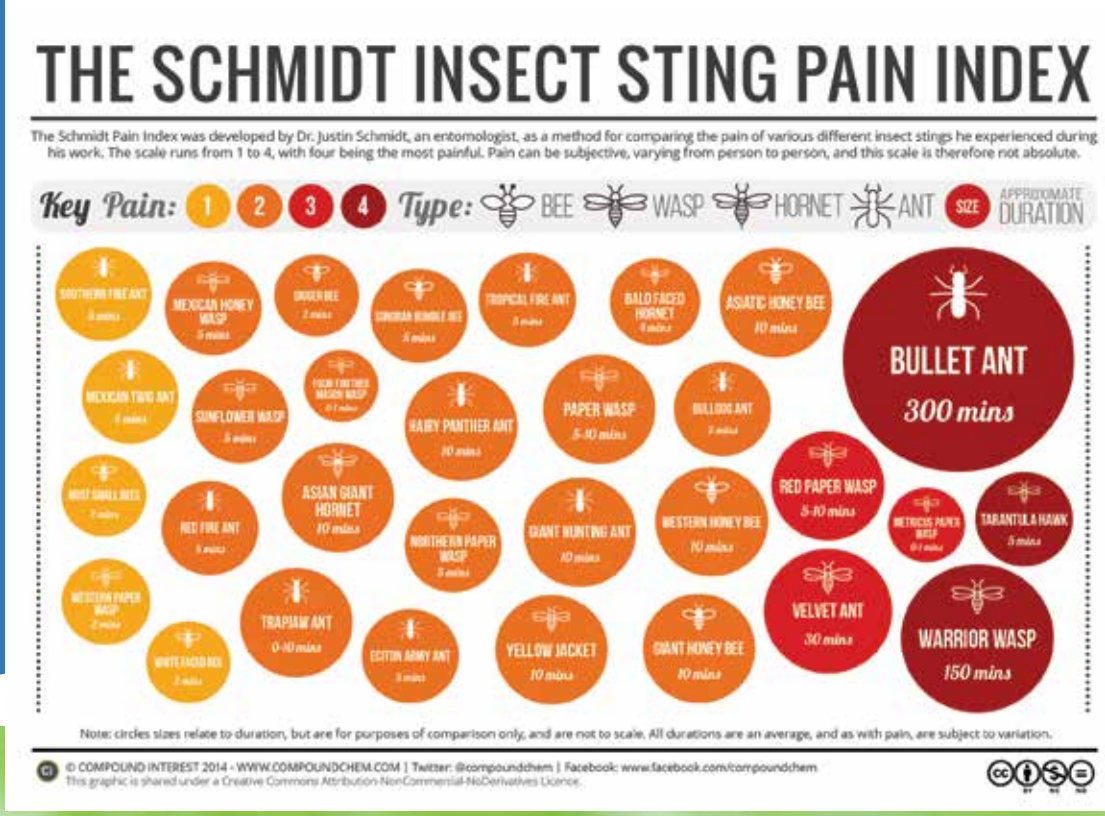
Melissa McMasters

VELVET ANT

30 mins

The female velvet ant is wingless and resembles an ant, but it is a wasp.

ACCORDING to the Schmidt Insect Sting Pain Index, the twig ant rates a 1 in a scale of 1 to 4, and the sting pain may last for five minutes. The velvet ant gets a 3 in the pain scale, and the pain may last for 30 minutes. The Roger's ant has not been scored for sting pain, but we can expect it to be at least a 2.



An elongated twig ant attacks a young praying mantis.

ROGER'S ANT

10 mins

Roger's ant is common but seldom seen, unless a mating queen stings you.

Alex Bairstow

VELVET ANTS are usually shades of yellow and brown or red and black. The females are solitary and are found walking on the ground. Despite the bad reputation, these wasps will sting people only when handled, trapped or otherwise harassed by people. Humans are usually stung when they step with bare feet on a female velvet ant or the insect is trapped against the human body by clothing or bedding.

Velvet ants are not aggressive and will try to escape if trapped, but females will sting if handled. Females use a long, needlelike stinger concealed at the tip of the abdomen.

Adult velvet ants feed on nectar and water, but the larvae are external parasites of bees and wasps that nest in the ground, or in some cases, on flies or beetles. The female velvet ant looks for bees' or wasps' nests and lays eggs inside the nest. The velvet ant larvae feed on the bee or wasp larvae and pupae, killing them.

The velvet ants do not build identifiable nests, and they roam on pastures and fields with sandy soil, where their prey occurs.

Control of velvet ants is usually not necessary. A good grass cover is usually sufficient to prevent any stinging incidents on people because it will discourage ground-nesting bees and wasps from getting established in the area and serving as prey for velvet ants.

ELONGATED TWIG ANT

The elongated twig ant, *Pseudomyrmex gracilis*, is a large ant at almost ½ inch long. It can be recognized by a very long waist formed by two elongated segments that give the ant a wasplike appearance.

Although these ants form large colonies in twigs or other cavities on plants, they are usually encountered as solitary foragers. It is very common for these ants to fall on the neck of a person that is under a tree or mowing the lawn. On contact with the skin, the ant may sting, and that sting hurts quite a bit.

The elongated twig ant is an arboreal ant. The small, single-queen nest occupies hollow twigs. The head and the posterior end of the ant are dark, while the midsection and legs are lighter orange to brown.

The elongated twig ant has very fast movements. It is usually found as individuals and not in large groups and trails.

ROGER'S ANT

Hypoponera Spp.

This species occurs in small colonies in moist habitats. In South Florida it is found nesting in rotten logs or in areas with accumulations of organic matter, usually in disturbed sites. *Hypoponera punctatissima* likes to forage for or live in dung. Breeding sites may vary from

2019 North Florida Pest Management Conference

THE ENTOMOLOGY PROGRAM at Florida A&M University and the Urban Entomology Lab at the University of Florida will hold the first-ever Northwest Florida Pest Management Conference. The conference will take place at the Santa Rosa County Extension Office in Milton, Florida, on April 17, 2019.

There will be great speakers such as Dr. Phil Koehler (UF), Dr. Roberto Pereira (UF), Paul Mitola (FDACS), and others. This one-day meeting will cover updated information on general household pest issues, wood-destroying organisms, and lawn and ornamental pests. We will be applying for CEUs for these topics for Florida, Georgia and Alabama. The best part, pest management professionals get free admission.

For more information on the Northwest Florida Pest Management Conference, please visit **https://tinyurl.com/2019-NWPMC**.

— Ben Hottel, Florida A&M

Public domain

Roger's ant–sting incidents may occur at evening sporting events as the ants fly toward lights.

earthworm-culture bins to mounds of chicken manure or similar locations.

The *H. punctatissima* colony produces a disproportionately large number of alate female reproductives. The dispersing queens fly in large numbers and are attracted to lights such as those around ball parks and other areas where humans congregate. Stinging incidents occur in the summer around evening outdoor sporting events when the dispersing queens, attracted to the lights, land on spectators and sting them.

Ants sting when they are touched, trapped under clothing, or stuck in sweat. Although reports of stinging incidents are sporadic, some occurrences can be severe and cause great concern. These stinging, flying ants have caused outdoor activities to be canceled due to the high number of stinging incidents.

The small, winged ants, approximately ⅛ inch long, are females of either *Hypoponera opacior* or *Hypoponera punctatissima*. They have dark brown bodies and light brown legs. These ants live in natural areas. Their encounters with humans are due to mating flights after rain events, which bring them out into contact with people.

Roger's ants reproduce both by wingless and winged reproductives. Wingless reproductives mate in the nest. Sometimes the males will mate with females that are still in the cocoon.

Application of control measures is unnecessary and difficult due to the location of the nests in natural areas away from residences and businesses. Because these ants live in natural areas and only the alates cause stinging problems, control is mostly impossible. Prevention of stinging incidents can only be accomplished by avoiding late afternoon and early evening functions during the summer when ants have mating flights. Because incidents do not occur regularly, predicting when problems will occur is difficult. **PP**

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

SOAP:

Pest Control Product, Monitoring Tool, or Cleaner?

Any soap can cause plant damage and harm beneficial insects if used incorrectly.

Damage to a stressed sugar-apple (Anona sp.) tree caused by an insecticidal soap application on a hot, sunny afternoon. Photo by Matthew Borden, UF/IFAS

Adam G. Dale and Matthew A. Borden

INSECTICIDAL soaps are great tools for controlling soft-bodied plant pests while providing an excellent product to include in an insecticide rotation. Dish soap mixed with water can also be a valuable tool to survey subterranean insects like mole crickets.

An important difference between these two recommendations is the type of soap being used and its purpose. Unfortunately, if this difference is unclear, there is limited and conflicting information available on the web. However, there are important differences among soap products and their proper, legal and safe use to manage pests.

Common soaps

Insecticidal soaps — Insecticidal soaps are formulated specifically to control insect and mite pests and are intended to be safe for plants when following the label instructions. These products are effective against many soft-bodied pests like aphids, soft scales, mealybugs, and spider mites. However, they require direct contact with the pests to be effective because they have no residual toxicity.

Dish soaps — Typically detergents, these products are designed to strip grease and oily residue off cookware and other surfaces, which makes them great for cleaning and sanitation.

Castile soaps — Castile soaps are produced with vegetable oils. They are often mixed with fragrances and essential oils and sold for a wide range of household cleaning or cosmetic purposes.

Continued

Insecticidal soap label

Insecticidal soap

Dish detergent

Castile soap

Manufacturer photos

Important differences

Just like any proper pesticide, the product label will list the active ingredient(s) responsible for the toxic effect on pests. If the active ingredient on a product's label reads, "potassium salts of fatty acids," then it is an insecticidal soap — a pest control tool. Although potassium salts of fatty acids seems like a convoluted way to say insecticidal soap, it is an important detail. Fatty acids are naturally found in fats and oils from animals and plants. Soap is created by combining fats or oils with a lye and heating them, a process called saponification.

Insecticidal soaps are made through saponification with potassium hydroxide, a traditional lye. Most other soaps are produced using sodium hydroxide, a modern lye. While soaps produced by either process will kill soft-bodied insects, the sodium found in modern soaps can damage plant tissue, causing it to dry out.

Unlike insecticidal soaps, dish soaps are also typically not true soaps but powerful surfactants called detergents. These products are designed to strip grease and oily residue off surfaces.

The third group, castile soaps, are produced with vegetable oils, particularly olive, palm and coconut, and do not contain potassium salts of fatty acids. Although these products are often mistaken as safe pesticides, they are not registered as pesticides and do not meet the EPA's ingredient or labeling criteria to be used as a pest control tool.

Common soap questions

Is dish detergent a safe way to kill pests without harming beneficial organisms? No. Detergents can kill many pests. However, they do not discriminate between harmful or helpful organisms. They also commonly

Continued on Page 16

J. Bryan Cooksey III, McCALL SERVICE, INC., FPMA PRESIDENT 2001–2002

Hometown: Jacksonville, Florida

Where you live now: Jacksonville, Florida

About your company: McCall Service, Inc., just celebrated its 90th year in business. It is where I work as a second-generation PCO who had the privilege of working first with my parents and then my siblings as a family board and now work with my brothers David and John who are my partners and help me run our family business that we intend to pass on to the next generation.

Recently my oldest son, Jennings, joined McCall as our legal counsel and Tallahassee branch manager, and his younger brother James is getting his introduction to the industry with our good friend Tom Forshaw's company.

All of our business success is brought to us by our team of over 126 employees, who work hard every day delivering a customer experience day in and day out that they want to tell their friends and families about.

We currently service the following markets: Jacksonville, Tallahassee, Tampa, Ocala, New Port Richey as Nelson's, Gainesville, Savannah, Ga., and Albany, Ga.

First paying job, and what you learned from it: Mandarin Supermarket. I learned to be on time, do it right the first time, and that customers never check the price on diapers when they need them.

First break in the pest business: Having a dad who was willing to take a chance and hire me straight out of the Army. He allowed me time to figure this business out and invite my brothers to join me.

Best business book: *How to Win Friends and Influence People*, by Dale Carnegie.

Best piece of business advice you received: As a young commercial salesman I got kicked out of a prospecting call by a purchasing manager because I did not know nor could I explain what Copesan was. Finding the answer to that question opened up my future in growing our business and took me on a quest that continues to this day.

J. Bryan Cooksey III

What you would tell someone new to the pest business? Work hard and learn from your mistakes. Treat people the way you would want to be treated. Do your best, and get involved in your Association at first the state and then national levels, Find a mentor who has been there and done that. Growing a small business in America is a dream that few people will get the opportunity to experience. It will reward you, your family, and employees and bring to all the access to information and relationships that create success. This is much more difficult and a much slower learning curve when going it alone.

Where can we find you when you are not at the office? Spending time with family: my wife, Teresa, to whom I have been married for 34 years, our five kids and their spouses, and our five grandkids. Hiking, hunting and snowmobiling. Working to serve others, God, family, country, community, and industry.

What is the most important trait you look for when hiring: A positive, can-do attitude. PP

Mole cricket soap flush is a monitoring tool. A mix of dish detergent and water flushes the pests out so they can be counted.

Soaps, continued from Page 14

contain antimicrobial ingredients and can disrupt beneficial microorganisms, including beneficial insect-parasitic fungi.

Is dish detergent harmful to plants? Yes, it can be. The oil-stripping properties of detergents can disrupt the layer of wax on leaf and fruit surfaces. This waxy layer defends the plant against microbial, viral and fungal invasion and prevents water loss. Stripping off this layer causes plant foliage to dry out and can lead to severe damage or plant death.

Rate and timing

Any soap can cause plant damage and harm beneficial insects if used incorrectly. Improper application rate causes many of the problems associated with using dish detergents and other soaps as pesticides. Properly registered insecticidal soaps usually recommend an application rate between 1–2 percent soap per volume of water to provide safe and effective pest control.

Not only does a registered product label provide consistent rate recommendations, but it also clearly states which species and cultivars of plants may be sensitive and should not be sprayed. For example, crown of thorns, fuchsia, bleeding heart, lilies, many ferns, and plants adapted to drought, low humidity, and strong sunlight, like succulents, are more susceptible to detergent damage.

In addition to specific plant species, those under stress from drought, excessive humidity, or temperatures over 90°F should never be treated with soaps. A helpful practice to reduce risk of plant damage is to always test the soap product on a few leaves or one plant before spraying them all.

Proper timing in terms of the target pest's life stage is also critical to effective pest control. Young, immature stages of plant pests will be much more effectively controlled with insecticidal soap applications.

Suggested Uses

1. Insecticidal soap applications. Consider environmental conditions, plant health, and target-pest life stage. If conditions are appropriate, two applications five to seven days apart can control many soft-bodied pests. Importantly, insecticidal soap sprays must directly contact the pests to be effective because residues that remain on plants after drying have no insecticidal effect. Also, due to the mechanical nature of insecticidal soap toxicity, resistance is not a concern.

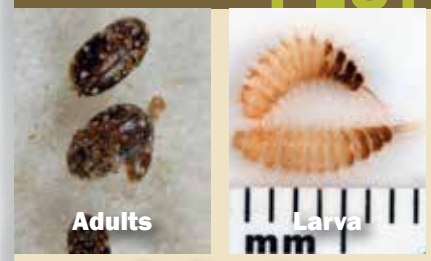
2. Use detergent and water as a scouting tool for turfgrass insect pests. Some pests, such as mole crickets and caterpillars, hide deep in turf or soil and are difficult to detect. Drenching a small area of turf with 2 tablespoons of dish soap per gallon of water can cause these pests to come to the surface, where they can be identified and counted. Remember this is a monitoring tool used to determine pest presence, life stage, and abundance, not a pest control tool.

3. Use soapy water and a soft brush to scrub scale insects off trunks and branches of infested plants (woody plant tissue). Scale insects are difficult to control and even more difficult to clean off of plant tissues. Although time consuming and only practical in small quantities, soapy water can remove dead scales that build up during severe infestations. The cleaner, less obstructed surface also helps future insecticide applications reach their target.

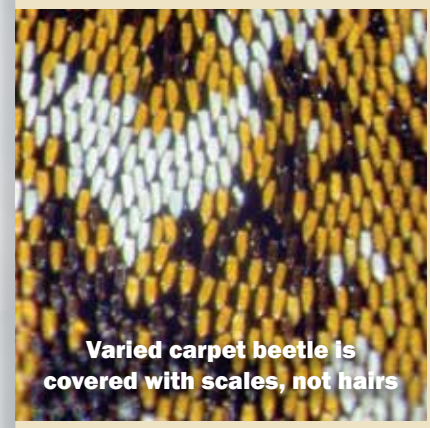
Summary

Insecticidal soap products are chemically similar to other household soaps but are designed for pest control on plants. Dish detergents and castile soaps are not natural pesticides and are not appropriate for pest control in organic or conventional pest management. While other soaps may kill soft-bodied insects and mites, they are not as effective and can damage plants. Therefore, if the soap label does not specify uses on garden plants or as a pesticide then it should not be used as such. PP

Adam Dale is Assistant Professor and Matthew Borden is Graduate Assistant in Turfgrass and Ornamental Entomology at UF/IFAS Entomology and Nematology Department. Dr. Adam Dale can be reached by email at agdale@ufl.edu or by phone at (352) 273-2976. Resources that further explain content discussed here can be found at dalelab.org.



T. anthrenoides



Photos above by Lyle J. Buss. *Shawron Weingarten*

A Cabinet Beetle

Trogoderma anthrenoides

Lyle J. Buss

IN THE January/February issue of PestPro, I talked about the varied carpet beetle. This time I'd like to talk about another type of dermestid beetle, called *Trogoderma anthrenoides*. Unfortunately, it doesn't have a common name, although some Trogoderma species are called cabinet beetles. This is actually the species of dermestid beetle that I receive most often in the University of Florida Insect ID Lab.

Within the United States, this species is known only from Florida, Texas and Hawaii. All of my samples have come from Florida, from Gainesville south to the Florida Keys, except for a sample from Walton County in the Panhandle. It is also found in the West Indies and Central America.

Adults are 2.5 to 4 mm long and have a slightly more elongate shape than the oval varied carpet beetle. Their integument is nearly black with some patches of reddish brown and is covered with hairs that are black, orangish or white. Most evident are the small patches of white hairs scattered over the body. If you examine the beetles under some magnification, you'll see that the hairs are quite different than on the varied carpet beetle. Dermestids in the genus *Anthrenus*, such as the varied carpet beetle, are covered with wide, flat scales, similar to what you would see on a butterfly wing. *Trogoderma* beetles are covered with short, thickened hairs, as seen in the close up photos above.

The larvae are elongate and covered with long hairs. They are usually found rather close to the food source. Adults can fly, so they may be found far away from the infested food.

It is interesting that most of my samples of this cabinet beetle arrive with no host information, meaning that people find them crawling around in their home but don't know where exactly they are coming from. In the few cases where my clients have found the source, the infested products have included dog food, dog treats, clumps of pet hair, rodent bait, corn meal, and a no-bake crust mix. According to the literature, it has been found as a pest in insect collections, dried herbs, and cereal products. Outdoors it has been found in nests of mud dauber wasps, where it feeds on dead insects.

If you run across this species, you can help me out by letting me know what kind of items you find them infesting! PP

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

Randy with son Aidan and daughter Zoey

With wife Theresa

Meet Randy Buckley

Randy Buckley has been an active-duty service member for over 14 years. He is pursuing a Master of Science in entomology under Dr. Phil Koehler at the University of Florida.

BEFORE his acceptance into the Hospital Services Collegiate Program, which has allowed him to pursue his degree full time, he trained as Hospital Corpsman in the United States Navy. His duty locations have included Bethesda, Md., San Diego, Calif., Jacksonville N.C., the island of Diego Garcia, and Fallon, Nev., with two deployments alongside the Marine Corps to Afghanistan and Mauritania.

While serving, Randy has primarily worked as a Preventive Medicine Technician, which deals with a wide array of tasks within the domain of public health such as infectious disease control, prevention and reporting, sanitation and habitability inspections, and public health education.

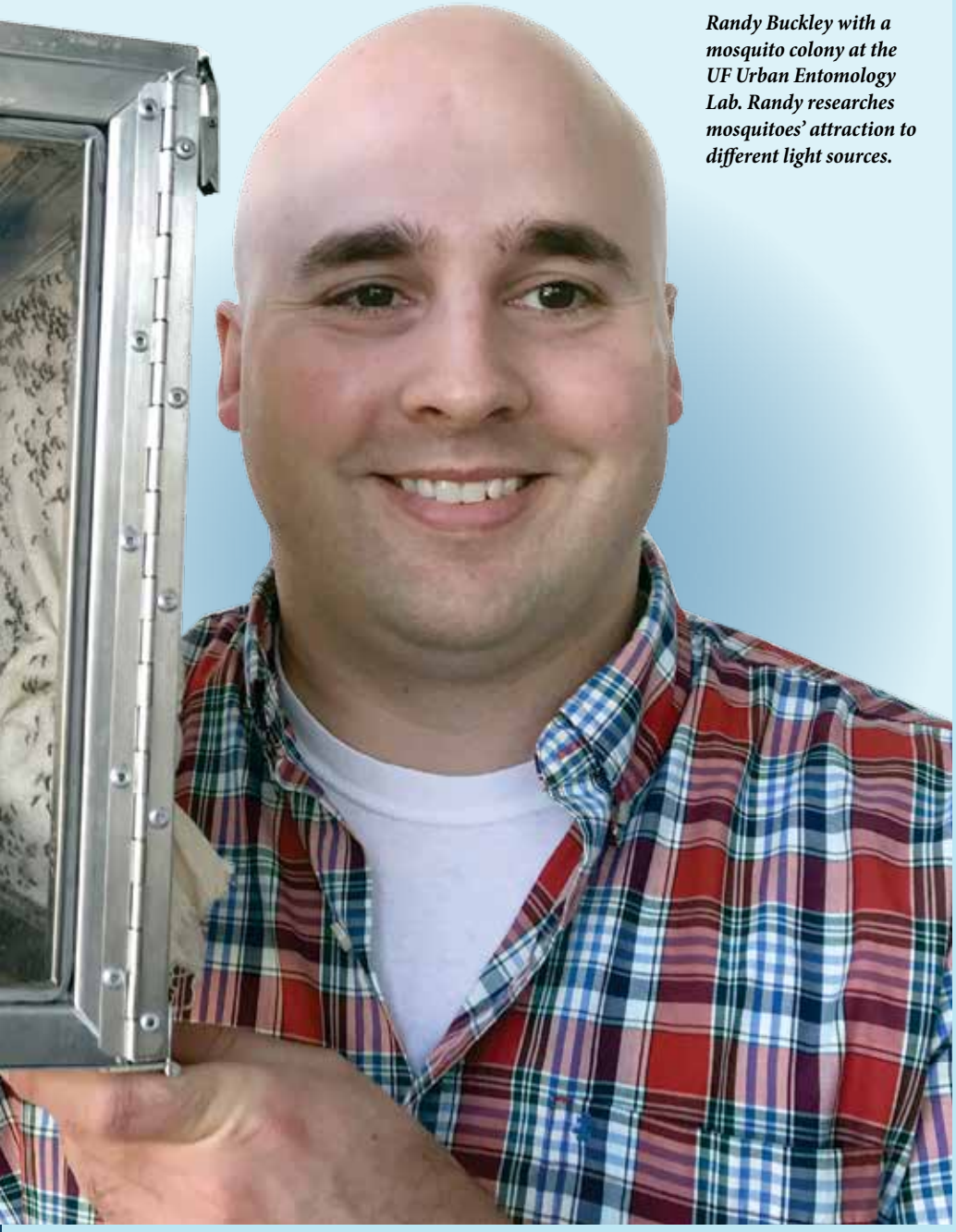
During this time, he worked alongside several entomologists who educated him on the dangers posed by disease vectors such as mosquitoes and ticks. These threats affect not only active duty service members serving overseas but the general population, and quickly inspired Randy's interest in entomology.

Q&A with Randy

What was your reason for enlisting in the Navy?

As with many small towns in the rural Midwest, the city of Marseilles, Illinois, was no exception to having a lack of opportunity for gainful employment as many of the factories have left or seen better days.

After a few years of switching jobs, I decided to pursue a career that I felt had some deeper meaning, which led me to the Navy. Enlisting was easily the best decision I could have made for myself and has led to many opportunities that would have never been available otherwise.



Randy Buckley with a mosquito colony at the UF Urban Entomology Lab. Randy researches mosquitoes' attraction to different light sources.

During your job selection for the Navy, what drew you to the medical field?

After discussing the extensive amount of jobs available, the Hospital Corps route seemed a solid choice. The medical field looked to provide an ability for employment if I decided to get out of the military after my first enlistment. It wasn't until my medical training that the time-honored traditions of the Hospital Corps became clear to me. Much more than merely a job, the Navy holds great pride in their "rates," or job assignments.

You mentioned specializing as a preventive medicine technician. What does that entail?

Many of the enlisted rates of the Navy have specialized school you can attend, referred to as "C" schools or NEC, as a means of progressing in your career and diversifying your skills. Several of these have prerequisites such as years served, your current rank, or other qualifiers. I decided on preventive medicine school after being allowed some on-the-job training with the current prev med techs at the Naval hospital in Bethesda.

The broad scope of the job had you continually learning new skills and performing various tasks as required. One day you could be investigating a food-borne illness outbreak or next to be presenting a safety brief to a battalion of Marines. This versatility combined with the potential for deployments convinced me that it would be a perfect fit.

When did you first become interested in entomology?

While stationed with 2nd Medical Battalion onboard Marine Corps Base Camp Lejeune, I deployed to Afghanistan with a group of prev med techs. We were led by an Environmental Health Officer and accompanied by an entomologist who took some time to mentor me on what a Naval entomologist does.

After returning home from deployment, I began seeking on-the-job training in entomology from our resident entomologist on Lejeune. This training included a lot of surveillance programs for mosquitoes utilizing different traps available on the market. I learned a great deal, and when I reported to my next duty station, I began pursuing my undergraduate degree in earnest.

Was your undergraduate degree in entomology?

No, my undergrad was in environmental health science, since I had no way of knowing upon completion if the Navy would need more entomology officers. I wanted a degree that I could utilize in my current job field but enable me to apply for graduate school and officer programs later. Depending on the needs of the navy during a given year, it could have been years before a new entomology spot opened. Often the route you want to take in the military isn't available for a time. It is key to remain flexible or you could end up expending vast amounts of effort with minimal gain.

How did you eventually end up attending the University of Florida while remaining in the military?

Luckily, there are different programs offered by the Navy for enlisted members to pursue becoming an officer without a break in naval service. My program is known as the Hospital Services Collegiate Program, where you submit a package and compete with other individuals who are pursuing the same program.

After a selection board, they decide on the most deserving individual and they are selected. Several months later I was informed of my selection and was separated from active duty as a Hospital Corpsman and reenlisted as an officer candidate. I now report to the naval recruiting office while attending college full time to complete my master's degree. Upon graduation, I will be commissioned as a naval entomologist and will proceed forward in my career with my new job.

Continued

With prev med techs in Afghanistan

Randy Buckley, continued from Page 19

How did you come to study under Dr. Koehler in the Urban Entomology Lab?

Dr. Koehler is highly regarded, having trained numerous naval entomologists over the years as well as chairing several former Hospital Services Collegiate members over the years. He was referred to me by several of my mentors over the years, and I was thrilled that he accepted me as a graduate student. Initially, I spoke with Dr. Koehler nearly three years before acceptance into the program, which allowed me to attend the University of Florida. As mentioned earlier, sometimes getting accepted requires proper timing. Thankfully a good deal of flexibility, a lot of work, and a little luck paid off, resulting in this fantastic opportunity.

What is the current focus of your studies as a graduate student?

Primarily I am focusing on mosquitoes' attraction to different light sources, in the hopes that it can enhance current disease surveillance programs in the future. Luckily the traps we are utilizing are the same that I have worked with over the years as a technician, which made the transition a bit smoother.

Other than classes and your research, how do you spend your time?

Between classes and research, most of my time is spent with my family just trying to balance home life with graduate school. My wife of almost 13 years, Theresa, has been wonderful dealing with first the military and deployments and now me finishing up grad school. Without her support and that of my children, Zoey and Aiden, I would have settled for less a long time ago. PP

Does Your Website Have A **Warning Label On It?**

Hint: Google Might Think So

Alain Parcan

WHEN IT comes to online marketing, one of the biggest and most common mistakes we see businesses make is having an outdated website — a great way to deter visitors and a sure way to ruin your standing on Google.

We understand that all businesses, especially smaller ones, may not have the resources to consistently keep their website up to date. Therefore, our web experts at Market Hardware put together a short checklist to help you make sure your website isn't falling behind.

1. **Double check that your contact information is correct. Total "duh," right?**

   This one is easy. Go to your website and find all the email addresses and phone numbers on there. Are all of those still in use and actively checked?

   It's amazing how many businesses list an email address on their site that causes an error when someone tries to email it, or is never checked by anyone at the business. Having email forwards set up is a great way to make sure you aren't missing any communication coming from your website.

   As for phone numbers, many businesses set up separate phone lines to track marketing efforts. This is a useful tactic but can prove detrimental if one of those lines is deactivated and your website isn't updated to reflect it.

2. **Keep your certifications and accreditations up to date.**

   Picture this scenario: A potential customer visits your site and sees you're a Termidor Certified Professional. They call you to request help with termite control, only to find out you stopped offering Termidor treatments years ago. Any credibility you may have had thanks to your professional website is now out the window because it's obviously outdated.

   It's always wise to list accreditations and certifications on your site, but it's important to keep them up to date. If one no longer applies, remove it from your site. While it may seem worthwhile to continue to list them, it's simply not worth the risk of appearing dishonest.

3. **Does your website display "smartly" on a smartphone?**

   Looking for a way to turn customers away from your website? Make sure your site is difficult to read on a phone! Your customers will look elsewhere before you know it.

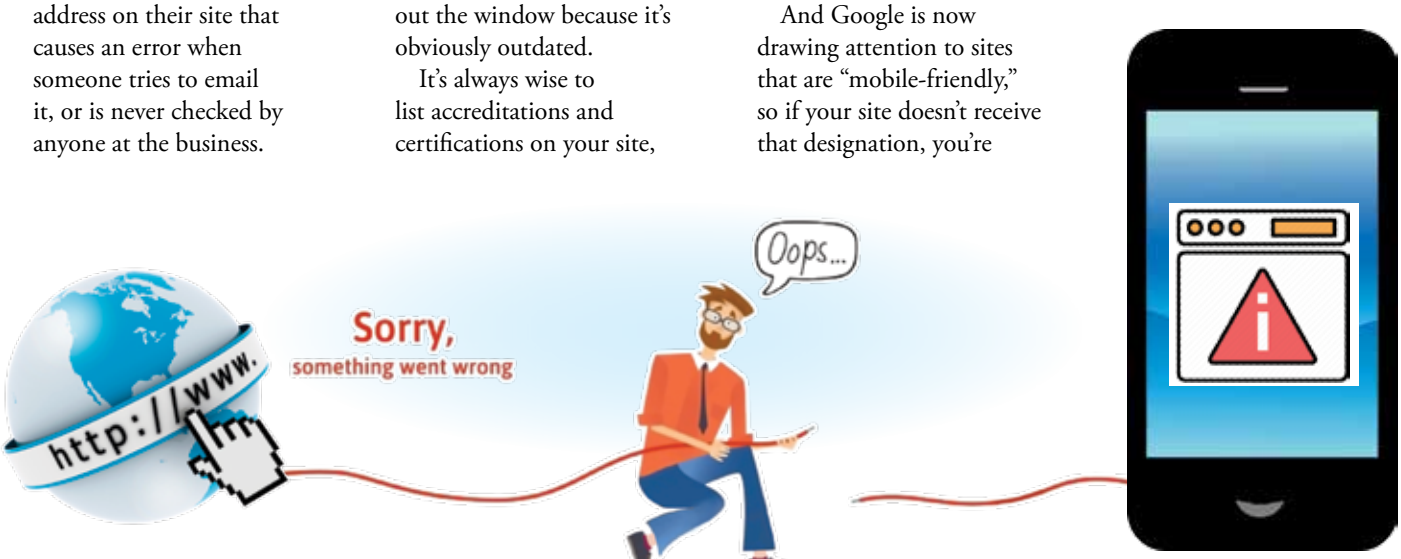
   This is a bit of a more complex update than the first two items on this list, but it's incredibly important. Current estimates show that over 50 percent of website traffic comes from smartphones as opposed to computers. In 2019, having a responsive website is a necessity.

   And Google is now drawing attention to sites that are "mobile-friendly," so if your site doesn't receive that designation, you're giving your competitors a leg up in search rankings.

Maintaining a consistent and current web presence may seem like a daunting task, but that doesn't have to be the case. Depending on how much time and resources are available to you, stick to the basics and work your way up from there.

Take some time after reading this to evaluate your website on each of these three items, and call your website provider ASAP if you need to fix any of them. Your success depends on it. PP

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



Common WEB SPIDERS IN THE LANDSCAPE

William H. Kern, Jr.

In the previous issue of PestPro, we discussed the spiders seen in and on houses in Florida. This issue we will discuss the most common web-producing spiders seen in the landscape, forests and yards.

1

2

3

4

5

Orbweavers: Family Araneidae

THE ORBWEAVERS get their name from the classic circular web that they construct. These are trapping spiders that net and devour flying insects. Some of the largest and most conspicuous of these are the **garden spiders in the genus *Argiope***. There are four *Argiope* species found in Florida. They are large, sit in the middle of their web during the day, and have striking markings (Figs. 1–4).

These spiders also weave a line or X of reflective silk into the center of their web, called a stabilium. Possible purposes of the stabilium are to make the web visible to birds so they will avoid it or to attract insects because the silk reflects UV light.

One of the most commonly encountered orbweavers is the colorful and harmless **crab orbweaver**. The scientific name, *Gasteracantha cancriformis*, means "crab-shaped, spiny abdomen." Crab orbweavers are usually conspicuous because their hard spines protect them from bird predation, so they can be right in the open. They also have the annoying behavior of making their webs across trails, sidewalks and walkways at face height. The main color of the abdomen is usually white or yellow with red spines (Fig. 5).

In South Florida, we often see a large orbweaver at night in the center of a huge web 6–8 feet across — often stretching from one tree to another — but in the morning, the web and spider are gone. This is the behavior of the **tropical orbweaver**, *Eriophora*

L. argyra *L. venusta* *L. venusta* *L. argyrobapta*

1 **Banded garden spider**, *Argiope trifasciata*. Photo by Judy Gallagher.

2 **Black and yellow garden spider**, *Argiope aurantia*. Photo by Judy Gallagher.

3 **Silver garden spider**, *Argiope argentata*. The white areas in the picture actually look like metallic silver. This species has two horizontal rows of three white/silver spots on the dorsal side of the abdomen.

4 **Florida garden spider**, *Argiope florida*. Like the silver garden spider, the white areas in the picture actually look like metallic silver. This species has three horizontal rows of two dark spots on the abdomen.

5 **Crab orbweaver**, *Gasteracantha cancriformis*

6 **Tropical orbweaver**, *Eriophora ravilla*. Photo by Lyle J. Buss, UF/IFAS.

7 **Tropical tentweb spider** or colonial tentweb orbweaver, *Cyrtophora citricola*. Photo by Ian McGuire, DPI-FDACS.

8 **Basilica orbweaver**, *Mecynogea lemniscata*. Photo by John R. Maxwell.

9 **Orchard orbweaver**, *Leucauge* spp. The species in Florida are *L. argyra* and *L. argyrobapta*. Recent studies have found that *L. venusta* likely does not occur in Florida. Previous reports of this spider in Florida were actually misidentified *L. argyrobapta*.

ravilla, Fig. 6. The adult females have a reddish-tan abdomen, a gray cephalothorax, and distinctively marked legs. The immatures often have abdominal markings like clusters of spots or a yellow diamond. Every evening they create a new web, and every morning before dawn they take it down. During the day, they hide inside a retreat made of folded leaves.

The **colonial tentweb orbweaver**, *Cyrtophora citricola*, is an interesting introduced spider (Fig. 7). It is in the orbweaver family, but it doesn't produce a traditional orbweaver web.

These spiders occur in groups. They are not social like ants, bees and termites, but they are tolerant of each other. They create a stacked lattice of horizontal webs, each spider having its own area of the web. In the center of each spider's area, they produce a vertical line of overlapping egg sacs with the female spider hiding in the line, matching the shape and color of the egg sacs.

These groups of spiders can completely engulf a shrub, hedge, or small tree. Their messy webs can also occur on parked vehicles and walls and soffits of buildings.

The back end of the spider has two projecting lobes. They have been accused of harming young citrus trees they colonize, but it is possible that they are using the dying branches as structural support for their webs. They may be symptoms of a sick tree and not the cause.

The **basilica orbweaver**, *Mecynogea lemniscata*, Family Araneidae, (Fig. 8) and the **orchard orbweavers**, *Leucauge* spp., Family Tetragnathidae (Fig. 9), are similar in appearance and behavior, making them easy to confuse with each other. Both make a horizontal web parallel to the ground in low vegetation like shrubs and flower beds. They both have colorful markings on their abdomens. They are both harmless.

These spiders are small, innocuous, and beneficial in the landscape, so control is not warranted. These spiders hang under their webs, usually in the center of the orb web.

Continued

Web Spiders, continued from Page 23

Longjawed orbweavers, *Tetragnatha* sp. This picture was taken under the eaves of a building and at first appeared to be *Phocidae* based on shape and location. The enlarged chelicerae of the male clearly identified these as *Tetragnatha*.

An adult female golden silk spider, *Nephila clavipes*, often called "banana spider." Photo by Ianare Sevi.

Longjawed Orbweavers: Family Tetragnathidae

THE COMMON NAME for this family of spiders comes from the genus the family is named after, *Tetragnatha*. The chelicerae are large and elongated, especially in the males. They make horizontal, circular orb webs.

The **orchard orbweavers**, *Leucauge* spp., are small, colorful spiders commonly seen in shrubs, bedding plants, and bushes and above ground-cover plantings. All three species in the eastern United States are very similar in pattern. They are all called orchard spiders or orchard orbweavers, pictured on page 23.

In 2018, Ballesteros and Hormiga found that the very similar species *L. venusta* and *L. argyrobapta* are distinctly different molecularly, and the *L. venusta* previously reported in Florida were actually *L. argyrobapta*. *Leucauge argyra* seems to be restricted to the southern half of the Florida peninsula.

The **longjawed orbweavers**, *Tetragnatha* spp., are abundant adjacent to rivers, streams, ponds, lakes and marshes. These are the spiders that drop into your canoe if you get too close to the vegetation along the banks of streams or come flying over the bow when airboating in the Everglades. Smaller species can be found in vegetation away from water bodies. The species picutred at upper left was on the main building of the UF/IFAS Mid-Florida REC in Apopka.

The name "Tetragnatha" means four jaws. It refers to the long chelicerae of the males, which are the same length as the pedipalps — hence, four mouthparts.

The **golden silk spider**, *Nephila clavipes*, is traditionally placed in the Family Tetragnathidae. However, some authors place it in the Araneidae, and others place it in its own family, the Nephilidae.

This is our largest spider, with the females having a leg span as large as a man's palm. They construct huge, vertical orb webs, often between trees or between power lines. The strong, yellow silk of this spider's web is known to catch small birds and bats as well as insects.

An interesting observation is that *Nephila* spiderlings look surprisingly like orchard spiders. These spiders are so large and create huge webs in large openings that they are the most recognized spider in Florida.

I have noticed that following hurricanes Wilma and Irma, our golden silk spider populations took a severe beating. It took six to eight years for their populations to return to prestorm numbers. Their large, soft abdomens and exposed habits makes them susceptible to injury from high winds.

Floridians often call them "banana spiders" due to the large, yellow-orange abdomen of adult females. The bite of this spider can be painful but not dangerous to people. Luckily, they are not aggressive toward people. Bites usually occur when people walk into a web, pinning the resident spider against the person's body. **PP**

For information on other Florida spiders check out the following sites.

The UF Entomology and Nematology Department's Featured Creatures website is an excellent source of information on spiders and insects. See http://entnemdept.ufl.edu/creatures/main/search_higher_arachnids.htm

Neoscona crucifera and *Neoscona domiciliorum*, http://entnemdept.ufl.edu/creatures/misc/spiders/neoscona.htm

Giant lichen orbweaver, *Araneus bicentenarius*, https://bugguide.net/node/view/2018

William H. Kern, Jr. is Associate Professor of Entomology at UF/IFAS Ft. Lauderdale Research and Education Center.

UF/IFAS Entomology Department Hosts 2019 4-H Insectathon

Erin Harlow, Emily Eubanks, and Rebecca Baldwin

IF YOU Think back to when you were a child, did your love of insects start at an early age? For many kids, this is a perfect time to introduce the world of entomology.

In January, the University of Florida's Department of Entomology and Nematology hosted the second state 4-H Insectathon. Dr. Rebecca Baldwin, volunteers, and UF students spent hours preparing to provide a positive experience for 4-H participants.

Youth ages five to 18 participated in several different insect-related contests. 4-H members are divided by age group, which determines how many insects and the level of difficulty required to enter their insect collection. For instance, youth ages five to eight can submit one to five insects, and they don't have to be pinned.

Seniors ages 17 to 18 submit a minimum of 100 insects, plus another 10 on a special topic, and give a presentation. Seniors must identify each insect to order and family.

Youth can also test their knowledge in the identification contest that has five stations, including insect and damage identification, a test, judging collections, and a quiz bowl.

For youth who may not be ready to collect and preserve specimens, the art contest is the perfect answer. The art category is open to interpretation by the students and always includes wonderful projects, including photography, jewelry and bugs created out of trash.

Students test their insect knowledge during the Linnaean Games at the 2019 4-H Insectathon at the main UF campus in Gainesville, Florida.

> "Presenting a scholarship to a deserving 4-H youth who has excelled at the Insectathon contest is my favorite part of the day."
>
> *— Dr. Rebecca Baldwin*

This year over 40 students participated, more than doubling the participants from 2017. 4-H members came from all corners of the state, including Pinellas, Escambia, Duval and Alachua counties. The high senior individual receives a renewable $500 scholarship they can redeem if they attend UF and major in the Entomology and Nematology Department. Dr. Baldwin has the honor of presenting the scholarship each year and says it is her favorite part of the contest.

This contest is important to not only introduce youth to the world of insects, but also introduce them to the university, students and researchers who have chosen entomology as their profession. It gives participants a chance to tour the facilities and speak with the researchers. This year students toured the new UF Honey Bee Lab with Dr. Jamie Ellis.

If you are interested in becoming a sponsor of the 4-H Insectathon, please contact Dr. Rebecca Baldwin. Sponsorships would help provide funding to students to purchase materials for the contest, Cornell drawers for participant collections, and also collecting supplies needed for the contest. PP

Erin Harlow is Commercial Horticulture Agent, UF/IFAS, Emily Eubanks is Communications Coordinator, UF Center for Landscape Conservation and Ecology, and Dr. Rebecca Baldwin is Associate Professor and Undergraduate Coordinator at UF/IFAS Entomology and Nematology Department.

UF Entomology Awards Scholarships to Two Recipients

Every year, the high individual at the Florida 4-H Insectathon contest receives a $500 four-year scholarship to study in the Entomology and Nematology Department. This year, two high individuals were awarded the scholarship — Taylor Dykes and Will Eubanks from Alachua County 4-H.

Taylor and Will have been 4-H members and teammates together for more than six years. Taylor is a 16-year-old homeschool student and is president of Town & Country 4-H and Alachua County 4-H Council. Will is a 16-year-old

Continued on Page 32

Koehler Named a National Academy of Inventors Fellow

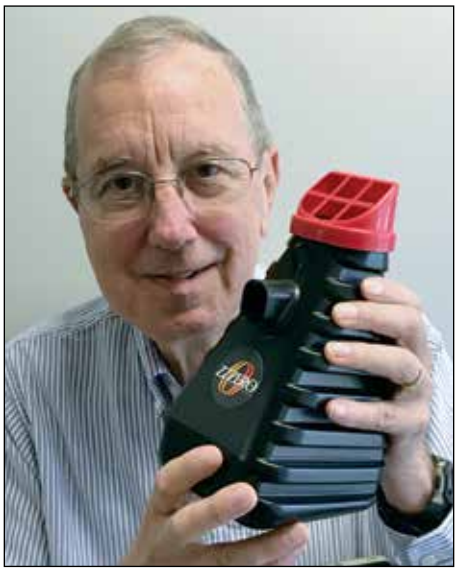
A Rare Scientist 'Making Science Accessible to All'

Two University of Florida researchers, Dr. Philip Koehler and Dr. Christine Schmidt, have been named 2018 Fellows in the National Academy of Inventors (NAI).

Dr. Koehler is an endowed professor in urban entomology, where he investigates new technologies for management of cockroaches, fleas, bed bugs, mosquitoes, and other pests.

"Dr. Koehler is one of those all-too-rare scientists who takes to heart the responsibility of making science accessible to all," said Dr. John Byatt, associate director of UF Innovate | Tech Licensing. Byatt has worked with Dr. Koehler for almost 10 years as a licensing officer who has seen Dr. Koehler's contributions to science and society firsthand.

"A distinguished entomologist, he's well known and respected not only by his academic peers but also by the pest control industry," Byatt continued. "Dr. Koehler has advised dozens of graduate students, and he has made hundreds of educational videos, training modules, and Extension communications that make his research and knowledge available to the general public."



Phil Koehler was recognized for his contributions to academia as well as efforts to educate and support the general public. Here Koehler holds a backyard mosquito trap invented in the UF Urban Entomology Lab.

Dr. Christine Schmidt is the J. Crayton Pruitt Family chair and department chair in the UF Department of Biomedical Engineering, where she focuses her research on biomaterials for neural tissue regeneration and neural interfacing.

Those elected to the rank of NAI Fellow are named inventors on US patents; are affiliated with a university, nonprofit research institute or other academic entity; and were nominated by their peers for outstanding contributions in areas such as patents and licensing, innovative discovery and technology, significant impact on society, and support and enhancement of innovation.

The NAI is a member organization comprising US and international universities and governmental and nonprofit research institutes, with more than 4,000 individual inventor members and Fellows spanning more than 250 institutions worldwide. PP

Published January 2019 in CPCO Advantage.

PREVENT & PROTECT Q&A

Q What is Prevent & Protect?

A Prevent & Protect is a comprehensive website for Florida's local officials, public information officers, and mosquito control technicians to effectively communicate about mosquito management to our state's citizens. The UF/IFAS Center for Public Issues Education in Agriculture and Natural Resources (PIE Center) worked with science experts to create the Prevent & Protect resource to help local officials communicate to Florida residents about the importance of mosquito control efforts and how residents can help reduce mosquito populations.

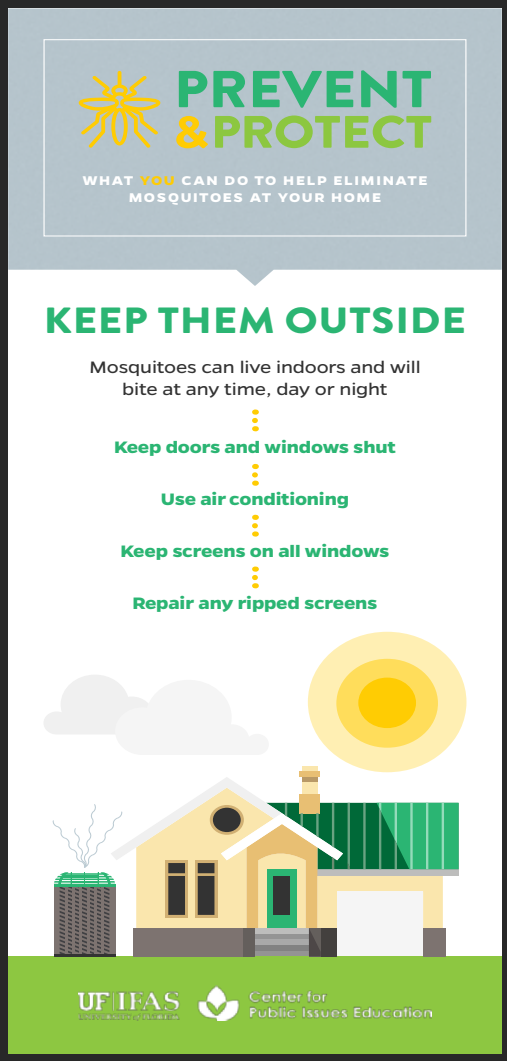
Q Why is it important to communicate about mosquito control?

A Mosquitoes can negatively impact a community's health, economy, and enjoyment of the outdoors. The public often has misconceptions about mosquitoes and necessary control methods. Prevent & Protect aims to communicate about these methods and help the public understand why they are important for the health and safety of communities.

Q What mosquito topics does Prevent & Protect address?

A Prevent & Protect materials raise awareness on a variety of mosquito-related topics, including personal responsibility, mosquito-borne illnesses, nuisance and economy, and application methods.

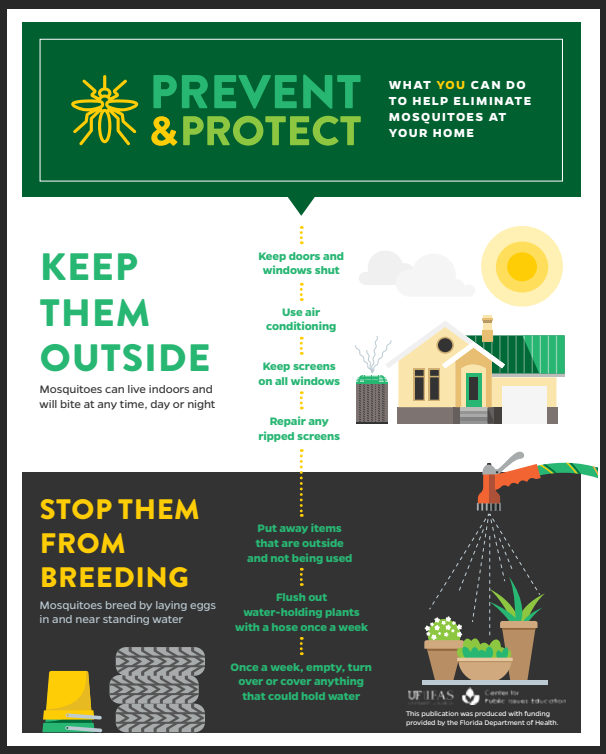
Example rack card.



UF IFAS UNIVERSITY of FLORIDA — Center for Public Issues Education

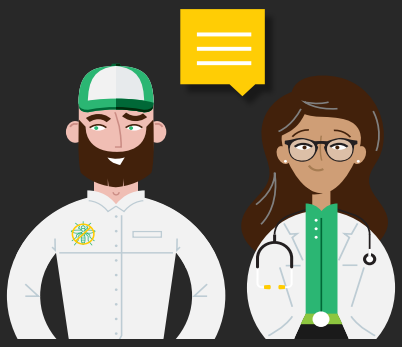
How can Prevent & Protect materials impact communities?

A Prevent & Protect materials can educate the public on mosquito issues and build trust between residents and local officials. By understanding the risks associated with mosquitoes, the public can take necessary steps to protect themselves by improving community health and wellness as a whole.



Example infosheet.

What resources are available?



A Two toolkits are available for local officials to use in their communities. The Mosquito Control Toolkit is intended to educate the public on mosquito control and the negative impact mosquitoes can have in communities. The Emergency Response Toolkit is designed to educate the public about mosquito control during an emergency, primarily after a hurricane or flood and during a disease outbreak. The toolkits include social media content, information cards, and customizable infographics and info-sheets. Resources are available in English, Spanish, and Haitian Creole.

Where can organizations access materials?

A Materials can be accessed on the brand new Prevent & Protect website, www.preventmosquitoes.com. On the website, you will find instructions on how to download educational materials, as well as suggested social media content. Keep an eye out for lesson plans, videos, and new content coming soon!

Example social media posts.

FOR MORE INFORMATION, VISIT:
PREVENTMOSQUITOES.COM

Risky Business

Allen Fugler

PEST CONTROL technicians share much in common with postal letter carriers: compact, often urban routes, multiple stops per day, many hours behind the wheel, and the constant threat of dog attacks.

The U.S. Postal Service reports that 5,581 postal employees were attacked by dogs in 2013. The threat of dog attacks is so prevalent that the U.S. Postal Service takes an active role in the annual National Dog Bite Prevention Week, which is held the second full week of April each year.

With an estimated population of 70 million dogs living in U.S. households, millions of people, mostly children, are bitten by dogs every year. The majority of these bites are preventable.

- The Insurance Information Institute estimates that in 2013, insurers across the country paid over $483 million in dog bite claims.
- The American Society for Reconstructive Microsurgery reports that according to the American Society of Plastic Surgeons, 26,935 reconstructive procedures were performed in 2013 to repair injuries caused by dog bites.
- Children, elderly, and postal carriers are the most frequent victims of dog bites.
- The American Humane Association reports that 66 percent of bites among children occur to the head and neck.

Dog bites are a major driver of Workers Compensation claims medical expenses, second only to motor vehicle accidents. Fortunately, most dog bite injuries do not create lost time and the associated wage-payment costs.

Here are U.S. Postal Service tips to prevent dog bites:

- Don't run past a dog. The dog's natural instinct is to chase and catch you.
- Never approach a strange dog, especially one that's tethered or confined.
- If a dog threatens you, don't scream. Avoid eye contact. Try to remain motionless until the dog leaves.

ASPCA

- If you believe a dog is about to attack you, try to place something between yourself and the dog, such as a backpack or a bicycle.
- If you are knocked down by a dog, curl into a ball and protect your face with your hands.

The USPS also provides the following guidance for pet owners to help prevent dog attacks against postal workers. I encourage pest control companies to share these tips adapted for pest control situations with their technicians and dog-owning customers:

- Ask your customer to keep their dog in a room behind a closed door before opening the front door for you. Remember, dogs are capable of jumping through glass and screen doors.
- Be careful when handing anything to a customer or even shaking hands in the presence of a dog, who may perceive any contact as a threat to their owner. Of course, children should not be present during any treatments.
- If you feel unsafe around a dog or if the dog is loose, ask the owner to secure the dog before service is performed.

Postal workers are empowered to use aerosol dog-repellent products in the event they are attacked. While this policy is a last resort only during an attack, the USPS holds worker safety as paramount and has provided guidelines (see the link above) for using these products in self-defense.

If you are considering equipping your technicians with repellent sprays, you should have a clear policy on their use, including first requesting securing pets and declining to provide service if potentially dangerous pets are loose. That way, self-defense use of repellents can be limited to attacks by feral or unleased dogs not owned by customers.

You should include training on policy and handling dog encounters as part of your new employee onboarding and in regular training sessions.

Please forward any questions to me, Allen Fugler, Director of Risk Management, by email or phone. My direct phone line is (407) 241-3037. PP

Allen Fugler is Director of Risk Management and HIIG Xterminator Pro at Houston International Insurance Group.

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Always read and follow label directions.

Q&A for Limited Commercial Landscape Maintenance Certificate Holders

THE LIMITED Commercial Landscape Maintenance Certification Program was designed to allow commercial landscape maintenance personnel to make pesticide applications, using materials with a signal word of "Caution," to ornamental plants and plant beds only. It does not allow landscape maintenance workers to make any kind of pesticide applications (including weed control) to any turf areas. There are also restrictions on application equipment.

Examples of pesticide applicators that are impacted by this regulation would include commercial (for hire) lawn maintenance or landscape maintenance individuals who apply pesticides to lawn and ornamental plants in plant beds associated with residential, governmental or commercial structures such as homes, schools, municipal/agency offices, banks, grocery stores, apartments, condominium common areas, hotels, and restaurants. The following information is from Chapter 482.156 and 482.2265(2).

Q. Can a piece of power equipment be used?
A. No, according to Chapter 482.156(1).

Q. Does this include battery-operated backpacks?
A. Yes, that would be considered power equipment.

Q. Can a larger than 5-gallon tank not application equipment (nurse tank) be used to store mixed sprays?
A. Yes, that would be allowed.

Q. Can LCLM certificate holders apply ant bait to plant bed areas?
A. Yes, according to 482.156(1) you may perform integrated pest management on ornamental plants using insecticides or fungicides having the signal word "Caution" only on the labels.

Q. Can anyone working with the LCLM-certified individual make pesticide (insecticide-herbicide) applications?
A. No, this is an individual certificate. Only the certified person may make pesticide applications.

Q. Can LCLM-certified applicators apply fertilizer?
A. Yes, if they have the Limited Urban Fertilizer Certificate, but they cannot apply fertilizer/pesticide blends to turf.

Q. Can a LCLM advertise ant control in flower beds?
A. No, an LCLM cannot advertise pest control because they are not a licensed pest control company.

Q. Do LCLMs have to mark their vehicles?
A. No, that is not required because they are not a licensed pest control company.

Q. Do LCLM applicators have to post pesticide application signs?
A. Yes. According to Chapter 482.2265(2), an LCLM must post a notice at the time of application.

Q. Can a person with an LCLM certificate operate a pest control business?
A. No, having an LCLM certificate does not allow him/her to operate a pest control business.

Q. Does an LCLM certificate holder have to keep pesticide treatment records?
A. Yes, he/she must maintain records documenting the pest and areas treated, plus the methods and materials used. PP

Report by Paul Mitola, Environmental Consultant.

Dr. Rebecca Baldwin with Will Eubanks and Taylor Dykes, proud future UF entomology students.

Scholarships, continued from Page 25

PK Yonge School student and is the Micanopy 4-H president and Alachua County 4-H Council treasurer. They are both officers with District V 4-H Council and serve as members of the Florida 4-H State Executive Board.

Will and Taylor got their start in the entomology project when they joined the 4-H forest ecology team and learned about forest insects. Will has been a member of the team for eight years and Taylor has been a member for six years. Besides forest insects, they also learn tree and plant identification, tree diseases, map and compass, tree measurement, and general forestry knowledge. In 2018, the team placed third at the National 4-H Forestry Invitational and won the quiz bowl. Since they've accomplished their goals as team members, they are now coaching the junior and intermediate teams for the 2019 state contest.

After attending and being inspired by the UF Bug Camp and Dr. Baldwin, Taylor and Will became heavily involved with the entomology project. They helped form the first 4-H entomology team in Florida and teach insect collecting, basic insect ID, and more around Florida. To encourage more 4-H members in the entomology project, Will and Taylor helped start and teach a weeklong bug day camp in Alachua County for elementary students. They are now planning the fifth day camp for summer 2019. For the 2019 Insectathon, Will was the high individual for the Insect ID Contest and Taylor was the high individual for the Insect Collection Contest.

Taylor graduates in 2020 and plans to attend Santa Fe College and then transfer to University of Florida to major in natural resource management and minor in biosecurity. Will graduates in 2021 and plans to major in environmental/outdoor education or forestry and entomology. He'd like to pursue a career as a camp director, camp naturalist, or park ranger. PP

UF/IFAS Mosquito Ecology and Control Workshop

Training Public Health Officials In Honduras

A DESIRE to see the immediate health impacts of her mosquito research led Casey Parker, an entomology and nematology Ph.D. student at the University of Florida, to become involved in leading mosquito-borne illness trainings for public health officials.

Parker's experience in public health community outreach led to her involvement in delivering a workshop at the Universidad Nacional Autónoma de Honduras (UNAH) in San Pedro Sula during Dec. 4–19. Parker planned and conducted the workshop with Barry Alto, an associate professor in the UF/IFAS Entomology and Nematology Department, who serves on Parker's advisory committee.

"While we think it's hot in Florida, Honduras is even hotter and has mosquitoes all year round due to the climate, and they don't have half the

One of the activities of the workshop involved biological control. Pictured here are four workshop participants watching a mosquito fish eat mosquito larvae.

Workshop, continued from page 33

resources we do," Parker said. "The outreach UF/IFAS does in this area is very important."

Due to the current high level of mosquito-borne illnesses — especially dengue — in Honduras, the workshop was timely. Alto was approached in September by Dunia Esmeralda Jeer Perdomo, a UNAH faculty member in the biology department, to develop the workshop content and presentations. Perdomo sought researchers who could train students, faculty, staff and the general public on how to identify risk factors for emerging diseases transmitted by mosquitoes and what they could do about it.

During the workshop, Parker and Alto included theory-based lectures in the morning and hands-on activities in the afternoon to complement the lectures. Nearly 50 chemists; public health officials; doctors; and undergraduate, engineering, nursing and medical students attended the workshop.

"When we go to classes or get into niche research, we forget all the ways our research can be applied in other professions," Parker said. "We had such diverse attendees who all feel a personal responsibility to apply mosquito knowledge to the work that they do and communicate it to relevant populations to eliminate mosquito problems in the area."

The workshop covered topics including mosquito biology, mosquito-borne viruses (including Zika, dengue and chikungunya), mosquito collection and trapping, rapid diagnostic testing for viruses, identification of mosquitoes, and biological and chemical control of mosquitoes, among others.

Alto mentioned the workshop allowed for both UF and UNAH faculty to begin collaborative multidisciplinary research that will identify risk factors for emerging diseases transmitted by mosquitoes.

"In recent years, I've been shifting my program to incorporate more international work," Alto said. "Honduras has a diverse mosquito community and is a country with few resources. If there is a place that could use help (with controlling mosquito populations) this is it, in my mind."

The team visited more than 100 homes in underserved populations to train the public on ways to reduce mosquito populations, such as eliminating larval habitats by disposing of containers that collect water. By working with nurses and doctors, the researchers plan to test human blood samples and collect information about human behavior in a future study. The research project will also investigate insecticide effectiveness and resistance in Honduran mosquitoes.

Perdomo will visit Parker and Alto in Florida during early spring to gain additional training on how to continue the research in Honduras, specifically regarding tests to measure insecticide resistance.

"Our goal is to evaluate and to be able to predict risk of mosquito-borne viruses in certain areas, which can be used to benefit public health and modeling projections," Alto said.

As a UF/IFAS College of Agricultural and Life Sciences student at the Florida Medical Entomology Lab in Vero Beach, Florida, Parker is also working on her master's in public health through the UF College of Public Health and Health Professions.

"When the opportunity to host a workshop in Honduras came about, selecting Casey to join me made perfect sense," Alto said. "I thought she could use the research and training to fulfill a requirement in her master's program, and she could combine both her degrees at the same time in a tangible way."

Alto mentioned that undergraduate students and prospective graduate students can become involved in his multiyear research collaborations with the Honduran university by contacting him at bwalto@ufl.edu. PP

— Dana Edwards
UF/IFAS

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