School & Home Integrated Pest Management (IPM)

Newsletter – May 2023

THE UNIVERSITY OF ARIZONA
Agriculture, Life & Veterinary Sciences & Cooperative Extension

Please consider distributing this newsletter to others.

Watch Out for Swarming Bees

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We dedicate this newsletter to the memory of a wonderful colleague, the fearless "King of Sting", Dr. Justin Schmidt.

Justin O. Schmidt with a tarantula hawk wasp. He ranked its sting a 4 on the pain scale (the most severe): "Blinding, fierce, shockingly electric." Credit: Robert Clark.

Justin O. Schmidt
(From the Obituary in The New York Times, by Richard Sandomir)

Justin Orvel Schmidt was born on March 23, 1947, in Rhinelander, Wisconsin. He received a bachelor's degree in chemistry from Penn State in 1969 and a master's from the University of British Columbia three years later. But he turned to entomology for his Ph.D. at the University of Georgia because, he wrote, chemistry lacked "living, moving" nature — "insects to be exact."

One day, he recalled, he and several other boys threw rocks at a hornet's nest in an old apple tree, hoping to topple it. After their attempts failed, Justin moved closer to the tree and delivered a direct hit. Half the nest fell to the ground. As he ran away, he was stung multiple times on his back.

"It felt like someone had repeatedly struck the back of my neck with a hot branding iron," he wrote in his memoir. "That was my first experience with what would decades later become a 2 on the insect-sting pain scale."

"Wham, an ant stung me," he wrote, as he started his travels around Georgia. "Serendipity had struck. This was no ordinary sting. This sting really hurt. The pain, delayed at first, became piercing and excruciating."

A life's work had begun. After postgraduate work at the University of Georgia and the University of New Brunswick, in Canada, he was hired in 1980 as a research entomologist at the Carl Hayden Bee Research Center in Tucson, part of the United States Department of Agriculture, which works to improve the health of honey bee colonies.

He retired in 2005, but by then had also established his own nonprofit laboratory, where he conducted his research until recently. One project was recording the mating habits of vinegaroons, an arachnid that sprays a combination of acids that smells like vinegar, on property that he owned in a wildlife area in southeastern Arizona.

"He was one of the most insatiably curious people I've ever met," Stephen Bachmann, a colleague at the Hayden center and a close friend, said in a telephone interview. "He questioned everything and didn't suffer fools, especially administrators."

He was widely sought as an educational and entertaining speaker and, in fact, provided a webinar, "Stinging Insects are Beautiful," a week prior to his death.

Justin Schmidt died of complications from Parkinson's disease on February 18, 2023 in Tucson, Arizona. He was 75.

Read the full obituary here: **https://www.nytimes.com/2023/03/03/science/justin-o-schmidt-dead.html**.

What is honey bee swarming?

As spring days lengthen, and temperatures increase, plants generating new sources of pollen and nectar stimulate the rearing of brood and honey bee colonies eventually become overcrowded. This necessitates swarming. Swarming is common during spring and continues throughout the year while pollen and nectar sources support growing colonies. This is greatly influenced by environmental conditions.

Figure 1. Honey bee swarm on a tree branch.
Photo: Mark Osgatharp.

How does swarming occur?

In an active honey bee colony, there is a single queen. Honey bee queens produce a pheromone that inhibits the production of new queen bees. The queen is rarely seen outside and hardly ever needs to fly. She stays deep inside the comb, cared for by the worker bees, and lays eggs continually. But as the colony becomes increasingly crowded the pheromone fails to make it to all the bees, or older queens begin to produce lower levels of the pheromone. Uninhibited worker bees create larger elongated rearing cells called queen cups. Once eggs in the queen cups hatch, the larvae are given special care and are fed with a food called royal jelly. Worker bees tending the existing queen give her less food, and egg production slows as the queen

loses bodyweight, which will ultimately help her to fly. When new queens are almost ready to emerge from the queen cups, the old queen takes most of the workers and departs. **The traveling mass of bees is called a "swarm".**

Before leaving, the workers fill their stomachs with honey, and this is the only food the swarm has to sustain activity until they find a new home site in which to establish their new colony. The old queen, being a weak flyer will often land suddenly, and often not far from the original location. Resting swarms can be found clustered on the ground, on a fence post, a tree limb (Fig. 1), the side of a building (Fig. 2), or other locations (Fig. 3), and workers will quickly surround the queen to regulate her temperature. Since swarming bees are focused on finding a new home, they are not generally defensive and rarely pose any danger to humans or other animals.

Figure 2. Honey bee swarm on external wall of a building. Photo: Ward Upham, Kansas State University, Bugwood.org.

While the old queen rests, several hundred scout bees will leave the swarm and explore the surroundings in search of a new colony site. When a scout discovers an appealing location, she communicates about it with the rest of the swarm, and this is followed by multiple site visits. After a consensus is reached and the site is finalized, the scouts then guide the swarm to the chosen site, which can be several miles from the original colony. A swarm needs to build a new nest before the honey reserves in the workers' stomachs is depleted. If the weather is not favorable and/or food sources are unavailable, the swarm can starve and suffer significant mortality. Once settled, workers will start building a new comb. The queen will start laying eggs, and workers will carry out all other duties for the colony including foraging, cleaning, nest building, guard duty, comb ventilator, and nanny for the brood.

Figure 3. Swarming honey bees can aggregate in almost any spot, even in the wheel well of a truck. Photo: Alex Hu.

Back in the original colony, the first new queen to emerge will sting and kill other emerging queens. The old colony usually has enough food reserved to last for a while, but it is important to start building up the number of worker bees once more. The new virgin queen will mature after several days and fly out to seek drones in areas called “drone aggregations”. She will mate multiple times with several drones and will store sperm for the remainder of her lifetime. After mating, she will return to the nest and start laying eggs, slowly building up the colony. Sometimes newly emerged virgin queens will leave the nest with a group of workers in another swarm, called an “after swarm”, and this can occur repeatedly until the old nest is depleted and dies off.

How to differentiate between a swarm and a colony?

Swarming bees will not have yellow or orange pollen evident in pollen baskets on their hind legs, and swarms will not be seen moving in and out of cavities (Fig. 4). If you see many bees flying in and out of a cavity, this indicates the presence of a colony within. Once a swarm finds a suitable home site, they start to build comb and rear brood and the workers become more protective. Problems arise when they establish a colony in a place where they pose a risk to people (Fig. 5, 6). In this situation, wild honey bees can become pests because of sting incidents, defensive bee attacks, and the structural damage and annoyance that their foraging and nest-building activities can cause. The chances of people getting stung in such situations are much higher once brood are being reared.

Figure 4. Honey bees flying in and out of a tree cavity which may contain their colony. Note the yellow pollen balls on a worker's legs. Photo: Jarrah Treet.

Figure 5. Honey bees established inside the siding of a home, after entering through a crack in the wall. Photo: Timothy Haley, USDA Forest Service.

Figure 6. Honey bees starting to establish a colony inside an irrigation box, after entering through the hole in the lid. Photo: Dawn H. Gouge.

What to do when you see a resting swarm?

It is best to **leave swarms alone** if they are in a spot that does not have much human traffic passing close by. It is often prudent to designate the area off-limits using caution tape until the queen is ready to fly again. Swarms usually move within 24-72 hours. However, if a resting swarm is found on public property or around a residence in the way of people it may be necessary to have the swarm removed by professional beekeepers or a pest management professional. Local beekeepers or beekeeping associations may help.

Most states have their own beekeepers' association, and many are active on social media. Some beekeepers will collect swarms and use them to start new hives. Information for the Arizona Beekeepers Association can be found at https://www.azbeekeepers.org/. The website provides a list of beekeepers that might be able to assist with bee removal.

If swarms are disturbed, they will disperse within a local area and this can cause people to panic. Workers in a swarm are generally docile but can sting if disturbed. When this happens the best course of action is to have an experienced beekeeper remove and relocate the bees or have a pest management professional take an integrated pest management approach.

Bee smart!

Do not try to remove honey bee colonies yourself!

NEVER shoot at, throw water, rocks, gasoline or other chemicals, burn or otherwise threaten honey bee colonies.

Honey bees are best removed by experienced professionals.

For more information on honey bee swarms, and managing wild honey bees in your environment, refer to our publication. Wild Honey Bees in Community Environments – Identification, Biology, and Reducing Risks (arizona.edu)

We Want Your Ticks

The Border Tick and *Rickettsia* Surveillance (BiTeRS) program of the Pacific Southwest Center of Excellence in Vector-Borne Diseases offers services to enhance surveillance for ticks and tick-borne pathogens of human health concern in California and Arizona. This is made possible through our project leaders at the University of California, Davis, and the University of Arizona, and collaborating local and state agencies, including the California Department of Public Health and the Arizona Department of Health Services.

We help every step of the way, and identification and pathogen testing are FREE. Collection supplies and protocols are provided, and partners receive all results on ticks they have submitted.

We work with partner organizations to:

- Perform surveillance for ticks and tick-borne diseases in their area
- Learn about risks of tick-borne diseases in their area by testing ticks for pathogens/diseases
- Collect and submit ticks for identification and testing
- Rapidly report results of tick identification and pathogen testing to submitting partners
- Provide training on ticks and tick-borne disease

Partner organizations may be:

- Government entities (local, tribal, county, or other)
- Workplaces with tick exposure
- Animal control, humane, or veterinary organizations
- Pest control services
- Other businesses or groups near the southern border with potential tick exposure

Download the BiTeRS Flyer for distribution: https://pacvec.us/biters/

What the Heck Was This?

Answer: Desert blister beetle, *Lytta magister*.

Congratulations to Master Pest Detectives:

Violet Wielgus, Groundskeeping Specialist, Arizona State University
Tim Barrett, Facilities Pest Control and Inspection Specialist, Grand Canyon University

What the Heck is This?

If you know the answer, email Dawn at dhgouge@arizona.edu. You will not win anything if you are correct, but you will be listed as a “Master Pest Detective” in the next newsletter issue.

We honor the memory of an IPM Champion in this newsletter, Daniel Vezie. Dan served as the Environmental Manager at Maricopa Unified School District, Maricopa AZ.

Dan Vezie, with MUSD's IPM STAR Award in 2017.

Dan Vezie started his IPM journey by working with the University of Arizona's School IPM Program in 2011. He worked tirelessly to educate himself and others in the district about the benefits of IPM. Gradually, they were able to transition from routine scheduled pesticide sprays in the school environment, to establishing an inspection and monitoring protocol, using low-risk pest management methods such as installing door sweeps, good sanitation and other non-chemical methods to keep pests under control. Under his leadership, the district went on to win the IPM STAR Certification, after undergoing a thorough 37-point evaluation of their integrated pest management (IPM) program. The IPM STAR certification is presented by the IPM Institute of North America, in partnership with the US Environmental Protection Agency Pesticide Environmental Stewardship Program. Dan retired in 2019, but his IPM legacy lives on at MUSD, which continues to be one of our champion school districts in the state.

Dan passed away on March 25th, 2023 in Camp Verde, AZ. He was a great supporter of our IPM programs and a wonderful human being. Rest in Peace, Dan. You will be missed.

Upcoming Events

Ongoing now! 6th Arizona School IPM Conference

Online April 24th – May 31st, 2023.

A great opportunity for continuing education not only for schools and childcare, but also for community colleges, city parks and rec, turf and landscape managers, golf course supervisors, and other institutional staff engaged in operations, maintenance, turf and landscape, food service, health services and many other areas. The **online format makes it accessible to persons anywhere in Arizona and other states**. Registration information and schedule coming soon. **Have a question?** Call 602-827-8214 or email nairs@arizona.edu. **Registration is open through May 31st, 2023.**

Registration information and schedule are available at:
https://acis.cals.arizona.edu/community-ipm/events/arizona-school-ipm-conference

6 and 12 PMD/PUG/PUC CEUs will be available for license renewal.

Please share the announcement with interested contacts.

What's Bugging You? First Friday Events *New York State IPM Program*
Fridays | 12:00 pm. – 12:30 p.m. EDT | Zoom | Free; registration required
The first Friday of each month, spend half an hour over lunch learning about practical solutions for pest problems with the New York State IPM Program. Each presentation will end with an IPM Minute.
https://nysipm.cornell.edu/whats-bugging-you/first-friday-events/

Urban and Community IPM Webinars *University of California*
UC Statewide IPM Program Urban and Community webinar series is held the third Thursday of every month to teach about pest identification, prevention and management around the home and garden. This series is free but advanced registration is required. Dates and topics below, all begin at noon Pacific. https://ucanr.edu/sites/ucipm-community-webinars/
Upcoming webinars:

StopPests Webinars on IPM in Construction and Eliminating Cockroaches from Affordable Housing

Eliminate Cockroaches from Affordable Housing with Assessment-Based Pest Management

Join *StopPests in Housing* on **June 6th, 2023, 1:00-2:15pm Eastern** to hear from Virginia Tech's pest management expert, Dr. Dini Miller, on how assessment-based pest management works and how housing professionals can use this information to improve pest control in their buildings and developments. Dr. Miller has dedicated the greater part of her career in studying and promoting effective pest management

practices. She'll share what her years of research, and field studies in public housing have revealed and why she's certain with effort and the right tools we can eliminate most cockroach infestations even chronic infestations in homes with sanitation issues. Join us for this informative talk for housing and pest management professionals and stick around for the last 15 minutes to listen to Dr. Miller answer your questions.

Register for the webinar here.

Questions? Email stoppests@cornell.edu

EPA Webinars about Integrated Pest Management

The EPA Center of Integrated Pest Management hosts a webinar series featuring national experts from across the country relaying educational and practical strategies for establishing and improving integrated pest management programs in buildings. We invite you to review the information on the past topics. Register for new or review archived IPM webinars Upcoming Integrated Pest Management Webinars | US EPA.

Upcoming webinar:

Newer Tools in Mosquito Management – UAVs and ATVs: Unmanned Aerial Vehicles in Mosquito Management Programs. **May 23, 2023 | 11 am – 12:45 pm Arizona (2:00 – 3:45 PM Eastern).**

Mosquito control districts are increasingly using unmanned aerial vehicles (UAVs) and all-terrain vehicles (ATVs) as both monitoring tools and for applying pesticides. This webinar will explore how these technologies are evolving and becoming integrated into mosquito management programs. Federal and local experts will also discuss potential limitations and regulatory challenges with UAVs and ATVs. Registration link: https://register.gotowebinar.com/register/5002434187626515546

View recordings of previous EPA Integrated Pest Management Webinars at https://www.epa.gov/managing-pests-schools/upcoming-integrated-pest-management-webinars.

For more information about the EPA Schools program: http://www.epa.gov/schools/.

To view all our previous newsletters, visit: https://acis.cals.arizona.edu/community-ipm/home-and-school-ipm-newsletters.

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We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.