

Honey Producer

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QUARTER
2022



Honey Bees And Their Honey Could Be A Big Help In Solving Police Cases

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Tackling Many Fronts: Newly Funded Research At Project Apis m.

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Not Your Typical Honey Trap: Australian Tomato Flowers Trick Bees With Fake Pollen



**American Honey
Producers Association**



Presidential News - Chris Hiatt



Salutations AHPA members! What a crazy start to 2022! We finally get over the hurdle that is the pandemic just to have record high gas prices and war in Ukraine waiting for us. Can we catch a break? As I'm writing this in mid March I saw \$7.29 diesel in Oakdale, CA yesterday. Yikes! It will be expensive getting the hives out of CA.

A Quick Anti-Dumping Suit Update

In our meeting with Customs last week, they told us that China was the country of origin for a significant portion of the imported honey they have recently tested. Customs is tight-lipped about their database for NMR and protocols (which is understandable). They have been having talks with FDA about honey and it's always a good sign when two federal entities are communicating. There was a 90% surge in honey from Vietnam from May 2021 to September 2021 compared to the previous five months. As a result, Commerce found critical circumstances exist and we are hoping the U.S. International Trade Commission will confirm that. Customs is already collecting antidumping duty deposits retroactively back to August. Leaders from Sue Bee and AHPA participating in briefing and hearing preparation before the April 12 final International Trade Commission Hearing. That hearing is open to the public and will be broadcast on webex if you want to watch. Our attorneys tell us they are optimistic for a win and a higher duty on Indian honey. The Commerce Department has put a 90-day pause on the Ukraine part of the suit due to the war there and will revisit it after July 6th.

In Other News

A huge issue is arising in California.....where else right? The SGMA (Sustainable Groundwater Management Act) is starting to take effect on farmland in the state. The almond industry has practically been the hero of the beekeeping industry the last decade. With low honey prices and high mortality losses, getting three times the price for almond pollination compared to 15 years ago has helped keep many beekeepers in business. Well, with SGMA, we may see the almond industry slowing a bit. It has been amazing watching 1 billion pound crops turn into 2 billion pound crops and Blue Diamond and others market and sell all those nuts.

Unfortunately, with SGMA, growers will be given an "allotment" monitored via satellite. Growers will then be charged \$600-\$650 per acre foot they use above their allotment, plus a replacement water fee of up to \$500 per acre. One can easily foresee where this will likely go: growers will be forced to fallow some of their ground in order to remain economically viable. For example, for my almonds, the allocation was about 70% of my usual irrigation. The cause of the disparagement between my actual use and their allotted amount is that the technology is being rolled out too fast; many this past year said the meters on their wells didn't match what the satellites said they used.

There are currently two lawsuits over this in just my county, one being brought by the irrigation district itself. To add to the unfairness, those that have their land within the irrigation district will be in much better shape than those of us relying solely on well water. Wendy Wang a water law attorney said, "A key SGMA principle is that there's a carrot and a stick," she said. "The local agencies will be given an opportunity to regulate a groundwater basin themselves, and if they don't, this is the stick – the state will come in. So you have the incentive to regulate the groundwater sustainably yourself and if not, the state will come in with their own plans. And if you're like me, you'd rather handle things yourself." I see the purpose of SGMA and there is no denying that water tables are dropping.....we are in a long-term continued drought. But has there been a new dam built in the last 42 years in California? NO!

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The Honey Producers Magazine is published quarterly (four times a year) in the months of Jan/Feb/March, April/May/June, July/Aug/Sept, Oct/Nov/Dec. The deadline for advertising and editorial copy for the magazine is the 15th of March, June, September, and December to Cassie@ahpanet.com. Articles and letters to the editor are invited. All materials are subject to review and editing, and become property of the AHPA. Photos are invited. They may be black and white or high contrast color prints. Mail to Mann Lake Ltd., 501 1st St. South, Hackensack, MN 56452-2589 or e-mail to Cassie Cox ; cassie@ahpanet.com

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Advertising Space in The Honey Producer Magazine is available to individuals and businesses who have products and services which are of potential use to the beekeeping industry. Contract display advertising rates, per insertion, are \$85 for 1/8 page (2" x 3.625"); \$136 for 1/4 page (3.625" x 4.75"); \$156 for 1/3 page (7.5" x 3" if landscape); \$220 for 1/2 page (7.5" x 4.75"); \$300 2/3 page (7.5" x 6.25" if landscape. 5.4" x 7" if portrait); and \$382 for full page (7.5" x 9.75"). Full page inside cover positions (when available) are \$440 for full color. These rates reflect a 20% discount for contracted continuous advertising, with minimum of 6 issues. Deadlines are the 15th of February, May, August, and November.

You will be invoiced for your advertisement in the magazine after it has been published each quarter, and will continue to be invoiced on a quarterly basis as long as your ad is published in the magazine. Your advertisement will continue to run in the quarterly magazine for as long as you originally requested, or until you notify us that you no longer want to have your advertisement published.

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Editor's Rantings

Mark Jensen, Editor

Good morning from sunny Montana where the wind blows all day, but the air is fresh! Or it usually is, depending on the whether you're downwind from the local sewer lagoon or in the vicinity of the pig barn at a Hutterite colony. Then you've made a mistake.

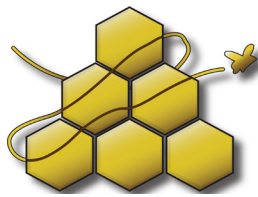
The word of the day, though, is not wind but drought. It's not a big stretch to say that most of the country west of the Mississippi (try typing that fast 3 times) is feeling some sort of moisture shortage. According to drought.gov, most of the country mentioned above is, at best, abnormally dry and at worst, experiencing exceptional drought, which is the worst category. The forecast is for things to stay the same and/or get worse as far as precipitation goes through the next couple months. I guess on the upside maybe there won't be as many folks suffering from SAD, or Seasonal Affective Disorder, a type of depression that comes and goes in a seasonal pattern, mainly due to lack of sunlight. Because it sounds like there will be plenty of sun. Earth-cracking, crop-drying sun. And at least we'll all be able to get our vitamin D on.

I suppose all that may not matter much if you can't find a truck to haul your bees, though. Availability of drivers, or lack of drivers, combined with higher fuel prices could make shipping bees a challenge this season, too. The almond bloom mostly ended early this year, but many beekeepers have found themselves unable to get their bees out because they can't find trucks. Difficulty finding trucks is not an altogether unusual thing, but reports would have us believe that the challenge is on a bigger scale this time than we're all used to.

The anti-dumping case brought by US honey producers against several countries continues apace. We at AHPA are feeling hopeful that the case will result in dumping orders against a lot of foreign honey. Alan Lubberda and his team have been working very hard to present the best case and prices have been moving up as a result. Preliminary dumping rates have been out for a few months, but we should know more later this Spring as the final ruling deadline nears. Chris Hiatt addresses the case in his article elsewhere in the magazine if you want to learn more.

We are also embarking on another Farm Bill, which comes to us in 2023. This year we will be laying the groundwork for a successful effort on behalf of the industry and Eric Silva has been hard at work for the past few months getting bookmarks in and gathering information. Some of the items we'll be looking at, in no particular order, are ELAP extension and expansion, Honey Bee Research coordination and funding, immigration reform and supply chain improvement. We've all been feeling supply chain pain whether it's shipping bees, missing that item at the store, or even trying to travel someplace. Some of it we'll just have to live with for a while but hopefully we will be able to find some solutions that will benefit honey producers in the short term but also into the future.

My final rant will be about being thankful. I realize that Thanksgiving is 8 months away but sometimes it's nice to take a step back and think. We, as a country, have had a couple tough years filled with things that are no fun to deal with, like the pandemic, inflation, foreign countries dumping honey, and on and on. Here in the United States, though, we are able to take many, many things for granted. Like being able to drive across the country or go to bed every night in a safe place or even just go see a movie. Some of those things are more expensive lately, yes, but at least we're still able to do them. There are many countries in the world where those things aren't an understood quantity on a daily basis. Ukraine comes to mind first and foremost, but across time places like Afghanistan or Honduras, among others, also fit the description. I guess all I'm saying is we need to be mindful of how good we have it here even when it sucks. Because there's always someone who has it worse than we do. I'm thankful for this industry and the folks who support us: consumers, suppliers of all sorts of things honey producers need to make things go, truckers, honey packers (yes, I know this one is fraught sometimes, but it's still true) our legal teams and all of you who belong to AHPA and support the industry with your dollars and also with your friendship and by just being good folk. Thanks and here's hoping for a great crop. Maybe it'll rain at just the right time. Until we meet again....



American Honey Producers Association

The Good Fight Isn't Over Yet We Still Need Your Support

On April 21, 2021, the American Honey Producers Association (AHPA) and Sioux Honey Association (SHA) filed petitions with the ITC and DOC for relief from dumped imports of raw honey from Argentina, Brazil, India, Ukraine, and Vietnam. The American Beekeeping Federation (ABF) also supports the trade cases.

On May 18, 2021, the DOC published a notice initiating the investigations in the Federal Register, with estimated dumping margins of 9.75 to 49.44 percent for Argentina, 83.72 percent for Brazil, 27.02 to 88.48 percent for India, 9.49 to 92.94 percent for Ukraine, and 47.56 to 138.23 percent for Vietnam.

DOC is scheduled to issue preliminary determinations of dumping in mid-November, at which point preliminary duties will go into effect, and importers will be obligated to begin paying cash deposits at the time of importation.

On June 4, 2021 the U.S. International Trade Commission (USITC) unanimously determined that there is a reasonable indication that unfairly traded imports of raw honey from Argentina, Brazil, India, Ukraine, and Vietnam are injuring the U.S. industry producing raw honey.

Today's unanimous decision means that the ITC will continue to investigate the injury inflicted on the U.S. raw honey producers by low-priced imports, and the U.S. Department of Commerce (DOC) will investigate the extent to which imports from the five countries are being sold below fair value in the U.S. market.

We truly appreciate all of the donations that we have received to cover legal fees.

The good fight isn't over yet, and we still need your support.

**To donate to the Antidumping Fund, please contact
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Apimondia Cancels Russia Congress

The Executive Board of Apimondia voted unanimously this week to cancel the Apimondia Congress planned for September 2022 in Ufa Russia. We condemn the invasion of Ukraine by Russia.

Please know that we heard all your voices during these trying days.

We are looking forward to organising a great Apimondia Congress in Santiago Chile in 2023, when beekeepers and researchers from every nation will once again be able to meet. We may organise some Symposia prior to the Congress: please follow our website for updates.

We appreciate your continued support of Apimondia.

Sincerely,

Jeff Pettis
Apimondia President
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AgCenter Research Examines How Viruses Affect Honey Bees' Vision

[Olivia McClure](#)



From left, LSU AgCenter entomologist Daniel Swale, USDA-ARS entomologist Michael Simone-Finstrom and AgCenter entomologist Nathan Lord examine bees at the USDA-ARS Honey Bee Breeding, Genetics and Physiology Research Unit in Baton Rouge on Jan. 24, 2022. Photo by Olivia McClure/LSU AgCenter

BATON ROUGE, La. — Viruses are one of many factors scientists believe are contributing to the collapse of honey bee colonies. Not only do the viruses kill bees; infections also can alter their eyesight and what foods they are attracted to, leaving their colonies with inadequate nutritional content.

Armed with a recently awarded U.S. Department of Agriculture National Institute of Food and Agriculture grant, LSU AgCenter researchers are working to learn more about how viruses affect bees' vision and whether there are ways to help them recover from infections and return to normal foraging behavior.

AgCenter entomologist [Daniel Swale](#) is working on the project with fellow entomologists Nathan Lord, of the AgCenter; Michael Simone-Finstrom, of the USDA Agricultural Research Service Honey Bee Breeding, Genetics and Physiology Research Unit in Baton Rouge; and Troy Anderson, of the University of Nebraska-Lincoln. The \$272,717 grant will fund their research through December 2023.

The scientists are focusing on the effects of two viruses: deformed wing virus, which causes bees to grow short, stubby wings unsuitable for flying, and Israeli acute paralysis virus, which causes neurological problems such as twitching and can kill bees within 24 to 48 hours of infection. The viruses are transmitted by mites.

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USDA has announced the five newly appointed or reappointed board members for the National Honey Board, who will each serve a three-year term beginning January 1, 2022, through December 31, 2024.

We Are Pleased To Welcome:

- Tom Sargeantson, Sunland Trading, Inc., New Canaan, CT (Importer Member, Reappointed)
- Mindy Ryan Tharp, Barkman Honey, Hillsboro, KS (First Handler Member, New Appointee)
- Jeff Caley, Dutch Gold Honey, Lancaster, PA (First Handler Alternate, New Appointee)
- Matt Halbgewachs, Sweet River Honey, Driftwood, TX (Producer Member, New Appointee)
- Darren Cox, Cox Honey of Utah, Mendon, UT (Producer Alternate, Reappointed)

The 10-member National Honey Board is composed of three first handler representatives, three importer representatives, three producer representatives, one marketing cooperative representative and their respective alternates.

We thank these new and returning members for working on behalf of the honey industry. Are you interested in serving on the National Honey Board or know someone who would be great? Please visit <https://honey.com/nomination-form> to apply. All board member nominations are made by qualified national organizations and selected by the USDA Secretary.

For a list of current board members please visit NHB website www.honey.com
Please email questions to honey@nhb.org

2021 WAS A PRODUCTIVE YEAR FOR THE NATIONAL HONEY BOARD.

You are invited to watch our 2021 Annual Report Video to learn about all we've accomplished on behalf of the industry. Simply place your phone's camera over this QR code and click on the **honey.com** link to watch our video.



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Project Apis m.

Tackling Many Fronts: Newly Funded Research at Project Apis m.

In the fall of 2021, Project Apis m. (PAm) received over thirty proposals in response our sixth annual request for proposals on behalf of the National Honey Board. Citing decreased honey production, high annual colony losses, and ongoing honey bee health issues, the call was for research that would “provide practical and tangible solutions to the beekeeping industry.” PAm’s Scientific Advisors reviewed these projects and the Board of Directors used their input to select projects that could produce information or tools that are useful for beekeepers and the bee industry.

We are excited to announce eight new projects!

Six projects are recipients of National Honey Board funding, and two additional projects will be funded with the support of Costco US, and beekeeper and bee club contributions to PAm.

The new projects funded by the National Honey Board are:

Dr. Benjamin Tracy, Virginia Tech, awarded \$3,632.00 for “Bee-Friendly Beef: Improvement of Forage Availability For Bees Through The Integration Of Native Wildflowers In Southeastern Grazing Systems.” This project, which is a collaboration across Virginia Tech, the University of Tennessee, and the Smithsonian’s Virginia Working Landscapes, will work over multiple years to integrate wildflowers into pasture systems across the Southeastern US. Increased floral abundance and forage diversity support pollinator health and productivity including honey production. This project may provide a model for increasing forage on existing pasturelands, managing land intentionally to offer dual benefits- to cattle and bees

Dr. Reed Johnson, Ohio State University, awarded \$36,250.00 for “Understanding Risks and Potential Benefits of Spray Adjuvants for Honey Bees.” Adjuvants are compounds added to pesticides which can improve the efficacy of pesticides by helping them stick to, or spread on, the substrate. Although they are often included with the product, or added to the mix, they are not regulated as pesticides, so there is not much known about their toxicity to bees. This project will increase what is known about common adjuvant toxicity to bees, and explore if a non-toxic adjuvant can boost efficacy of varroa control compounds.

Dr. Nathalie Steinhauer, the Bee Informed Partnership, awarded \$50,263.00 for “Enhancing Selection and Breeding for Hygienic Behavior and Mite Resistance in Commercial Queen Breeding Operations.” BIP’s unique model of bringing technical services to beekeeping operations has developed over many years, and helping queen producers is a way to



Dr. Kaira Wagoner of the University of North Carolina Greensboro, checks on colonies in her research apiary in 2021. Dr. Wagoner is working with Dr. Nathalie Steinhauer and the Bee Informed Partnership on making a new hygienic testing method more accessible to beekeepers.

levels, and selecting hygienic traits over time have been successful BIP programs. Alongside Dr. Kaira Wagoner (University of North Carolina Greensboro), this project will develop more accessible methods for hygienic testing that do not require liquid nitrogen, and more specific testing to target Varroa resistance behaviors. Helping queen producers develop and keep stocks of bees that are resistant to Varroa will bolster a long-term, sustainable effort to combat the mite.

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by Tory Moore

Posted: January 18, 2022



Bee Appearance And Behavior May Be Related, Genetic Study Reveals

Recently discovered genetic knowledge of two nuisance western honey bee subspecies will help commercial and hobby beekeepers.

A new UF/IFAS study identified genetic characteristics relevant to the production and behavioral attributes of these two key bee subspecies. For example, researchers found Cape bees to be significantly darker than Africanized bees. This dark coloring could be genetically correlated to their undesired behavior.

Both subspecies are undesired in the United States. The first, the "killer bee" or "Africanized honey bee," known scientifically as *A.m. scutellata*, is a light-colored bee known for its territorial and defensive nature. This subspecies was taken from its native habitat in South Africa to Brazil in the 1950's. There, it hybridized with the European bee subspecies kept by Brazilian beekeepers, and then moved into the U.S. *A.m. scutellata* are considered invasive bees and can take over colonies of managed honey bees, which can lower profits for beekeepers. They also are known for their heightened defensive behavior.

The second subspecies studied, the "cape honey bee," known scientifically as *A.m. capensis*, presents a slew of problems to beekeepers. These bees are more docile but are more likely than African honey bees to take over hives. Cape bees are considered social parasites. Unlike other honey bee subspecies, cape worker bees can clone themselves, producing female eggs without first mating. These clones can take over a hive. These workers cannot reproduce at the same rate as a traditional queen and the colony will eventually dwindle and collapse, a phenomenon coined "capensis calamity."

"More amazing than the cape bee worker's ability to clone itself is the rate at which it can take over other colonies," said Jamie Ellis, UF/IFAS professor.

"We are working to ensure these bees do not make their way to the United States because in most cases, when these bees take over a colony, the colony is doomed."

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Northcentral PA.com

Not Your Typical Honey Trap: Australian Tomato Flowers Trick Bees with Fake Pollen

[NCPA Staff](#) Jan 8, 2022



Lewisburg -- Nature has all kinds of tricks up its sleeve, and the Australian bush tomato has mastered the art of fooling bees. The plant has beautiful purple and yellow male and female flowers on unisex plants, and to produce fruit the flowers need to cross-pollinate.

Normally only male flowers produce pollen, but recent research from Bucknell University has found that both male and female bush tomatoes have pollen. Though they lack nectar, which would typically attract bees, the female flowers pull off a botanical bluff by producing "fake" pollen. The female flower pollen lacks the nutritional value of male flower pollen, but still manages to grab the attention of bees.

"That's the food source they're looking for," says Bucknell Professor Chris Martine, biology, the David Burpee Professor of Plant Genetics and Research, who coordinated the research through his lab. "So basically, the female plants are making flowers with male organs which produce 'fake' pollen as a way to still get bees to come visit."

Professor Martine continued: "The question we had is if they visit a male plant and get the 'real' pollen, and they visit a female plant and get the 'fake' stuff, are they still getting the same nutrition? And if they're not, then they're basically being fooled into visiting the female plant and not getting the same reward. It turns out that that's actually true. They're actually getting less nutrition from the female pollen, and that's pretty interesting."

Martine joined former Bucknell student Jackie Ndem-Galbert '16, M '18; former visiting biology professor Jessica Hall; and Martine's previous postdoctoral fellow Angela McDonnell to find answers to that question. They authored a paper on their findings, which was published in October by the American Journal of Botany.

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PennState

Entomologists To Study How Climate Change May Influence Pollinator Stressor

January 17, 2022



UNIVERSITY PARK, Pa. — A Penn State-led team of researchers will use a newly awarded \$682,000 grant from the U.S. Department of Agriculture's National Institute of Food and Agriculture to examine how climate change may influence and interact with various stressors that affect the health of pollinators.

The funding is part of USDA-NIFA's Agriculture and Food Research Initiative. The project will employ a novel, integrative approach to understand how temperature variation, pesticides and pathogens interact to influence the fitness and survival of crop pollinators, according to team leader Margarita López-Urbe, Lorenzo L. Langstrothm Early Career Professor and assistant professor of entomology in Penn

López-Urbe pointed out that global warming is impacting biological processes of organisms at both individual and population levels, with profound effects on species interactions and ecological function.

"Bees play a critical role as ecosystem service providers, facilitating the reproduction of wild plants and crops, but their populations are in decline," she said. "Multiple interacting stressors such as pathogens and pesticides, have been linked to bee declines, but we don't know how global warming modulates effects of these stressors to impact wild and managed pollinator health."

López-Urbe noted that the research will include rigorous laboratory and field experiments in physiology, toxicology and disease ecology to determine how temperature variation, pesticides and pathogens interact to mediate the health and survival of three critical and representative bee pollinators of agroecosystems in North America: squash bees (wild solitary), bumble bees (wild social) and honey bees (managed social).

The team will build species distribution models that incorporate data on pesticide exposure, disease pressure and microclimatic conditions, explained project co-director Rudolf Schilder, associate professor of entomology and biology, Penn State. "Our combined lab, field and modeling approach will allow us to identify key stressors in different habitats and to develop recommendations for mitigation measures to enhance pollinator health," he said.

López-Urbe added that the study's findings will address a current knowledge gap about how multiple stressors impact pollinator health in agroecosystems that are critical to the food supply.

The research team also includes co-project director Shalene Jha, associate professor of integrative biology, University of Texas at Austin.

<https://www.psu.edu/news/agricultural-sciences/story/entomologists-study-how-climate-change-may-influence-pollinator/>



Honey Bees And Their Honey Could Be A Big Help In Solving Police Cases

by John Hollis, [George Mason University](#)
January 20, 2022



An unlikely collaboration between George Mason University's Honey Bee Initiative and the new outdoor Forensic Science Research and Training Laboratory could yield critical advances in forensic science

Mason teams from a number of different fields are working in unison at the Science and Technology Campus in Manassas, Virginia, on an ambitious project to see if the honey produced by bees after feeding on flowers can help them better locate missing persons.

"The focus of forensics is to solve cases," said Mary Ellen O'Toole, the head of the Forensic Science Program within Mason's College of Science and a former FBI profiler. "Outdoor crime scenes have always posed a challenge to investigators, particularly identifying the location of human remains. The bee research will allow us to scientifically demonstrate that identifying bee activity in bee farms or in the wild and analyzing their proteins can help lead investigators to human remains. In this case, the bees are our new partners in crime fighting, and that's amazing science."

Proteins in bee honey contain biochemical information about what the bees have fed upon. That information has previously been used to detect the chemical signature of pesticides in honey, allowing observers to deduce what specific types of pesticides were being used within the five-mile radius from the hives that honey bees typically frequent.

Similarly, O'Toole and her team believe that volatile organic compounds (VOCs) of human decomposition might likewise be found in bee honey, allowing authorities to then triangulate where missing human remains might be located. That ability could ultimately help spare grieving families additional extended angst while also saving thousands of hours in the search for a missing person.

"If we can determine what the VOCs are for humans and differentiate that from other animals, we could then use the bees and their honey as sentinels, and, hopefully, find missing persons and solve cases," said Anthony Falsetti, an associate professor of forensic science. Their belief is based on the premise that flowering plants near dead bodies will uptake the VOCs before being fed upon by the bees and ultimately being deposited in their honey.



AgCenter Research Examines How Viruses Affect Honey Bees' Vision

Continued from page 8

In infected colonies, Swale and his colleagues have noticed bees returning with unusual food choices.

"They're bringing back different pollens and different fats when they are infected with these viruses," he said. "It turns out that these viruses migrate to their eyes, and when the bees are infected with deformed wing virus and IAPV, we get different attractions to different colors. It shifts the spectrum of attractiveness."

They've also found evidence of physiological changes in infected bees' eyes that interfere with vision. They can't see colors correctly and end up bringing back pollens and fats they wouldn't normally select.

"The eyes are one of the key components to successful foraging," Swale said.

In the grant project, he wants to find out how to enhance bees' immune response to viruses and whether it's possible to help infected bees maintain their vision, which also could help them continue to forage properly.

Swale has [previously studied](#) physiological channels that transport potassium ions through insects' bodies. He said they may represent an opportunity to help bees cope with the effects of viruses. For example, therapeutic products targeting the channels potentially could be developed after additional research.

"Potassium ion channels do seem to regulate the antiviral response system as well as reduce the amount of virus that reaches the eyes," Swale said. "It looks like if we're able to modulate the potassium channels in the correct way, we can restore visual acuity and visual performance in these bees."

<https://www.lsuagcenter.com/articles/page1643645654417>

Tackling Many Fronts: Newly Funded Research at Project Apis m.

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Dr. Arian Avalos, USDA-ARS Honey Bee Breeding, Genetics and Physiology Research Unit in Baton Rouge, LA, awarded \$48,215 for "Viral Diversity in Mite Resistant Honey Bees and It's Impact on Colony Health." Varroa confers harmful viruses from bee to bee and colony to colony. It is often said that 'its the viruses that kill bees, not the mites', and more recent studies show many variants of mite-vectoring viruses are a factor. This project will analyze samples from a year-long study in commercial beekeeping operations in 5 states, to see regional and seasonal patterns of viruses and variants. The samples are all associated with mite samples, and known VSH or nonresistant queens, which will indicate if using Varroa resistant bee stock is also an effective control method for viral disease. Results could lead to recommendations that more specifically target viral spread in addition to Varroa.

Dr. James Nieh, University of California, San Diego, awarded \$37,576.00 for "Honey bee colony-level testing of the benefits of a balanced omega-3 fatty acid diet for reducing the harms of thiamethoxam and its common adjuvants" Beekeepers often feed their bees, and there is much study to determine what components optimize these supplements for bee health. This project is identifying the potential protective effects that diet enriched with omega-3 fatty acids can have, by mitigating the effects of pesticide exposure. Results indicate that a nutritional supplement with omega-3 fatty acids increases bee survival and cognitive resistance (improving learning and memory) following pesticide exposure to this common neonicotinoid.

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Tackling Many Fronts: Newly Funded Research at Project Apis m.

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Dr. Nathalie Steinbauer, the Bee Informed Partnership, awarded \$50,263.00 for “Enhancing Selection and Breeding for Hygienic Behavior and Mite Resistance in Commercial Queen Breeding Operations.” BIP’s unique model of bringing technical services to beekeeping operations has developed over many years, and helping queen producers is a way to reach many operations with improvements. Testing virus levels, and selecting hygienic traits over time have been successful BIP programs. Alongside Dr. Kaira Wagoner (University of North Carolina Greensboro), this project will develop more accessible methods for hygienic testing that do not require liquid nitrogen, and more specific testing to target Varroa resistance behaviors. Helping queen producers develop and keep stocks of bees that are resistant to Varroa will bolster a long-term, sustainable effort to combat the mite.

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Dr. Jonathan Snow, Barnard College, awarded \$53, 214.00 for “Further Development of Pharmacologic Proteasome Inhibition as a Therapeutic Strategy for *N. ceranae* Infection in Honey Bees.” Beekeepers rely on the anti-microbial medication fumagillin to protect bees against Nosema disease, a fungal pathogen commonly found in colonies that can cause dysentery and population decline. Treatments for Nosema a few, not always available, and there is mixed information about if/when Nosema treatments are worthwhile for beekeepers. Dr. Snow is building on previously PAm-funded work that identified compounds that combat Nosema in a more targeted way, by harming energy production pathways specific to Nosema cells. Targeted treatments could reduce harms to the bees themselves, and would also provide beekeepers with an additional treatment option.

In addition to National Honey Board funding, Project Apis m. approved funding for two additional projects, using funds from Costco US, and beekeeper and bee club support.

Dr. Katie Lee, University of Minnesota, awarded \$57,631.00 from Costco US for “Economics of Queen Replacement in a Commercial Beekeeping Organization.” It is hard to pinch a productive queen, no matter how old she is—but, does it pay to requeen? Dr. Lee’s project, working in conjunction with commercial beekeeper and PAm Board chair, Zac Browning, follows new and old queens over time, to answer this question. The study will result in useful information for beekeepers to make the costly decisions about replacing queens in their apiary by following re-queened and non-re-queened colonies, measuring the outcomes of colony health and productivity, and assigning values to each strategy.

honey from China. The honey claimed to be from other countries to avoid U.S. tariffs on Chinese origin honey,” said Marks. “While most honey comes from high-quality, legal sources, adulterated honey and illegally sourced honey remains a global issue that undercuts fair market prices and damages honey’s reputation for quality and safety.”

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Tackling Many Fronts: Newly Funded Research at Project Apis m.

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Dr. Samuel Ramsey, Ramsey Research Foundation, awarded \$49,834.00 from Project Apis m. for "Evaluation of Novel Chemical and Non-chemical Remediation Methods for Varroa destructor and Tropilaelaps mercedesae Management." Tropilaelaps mites are an emerging honey bee pest that is not yet found in the U.S. but has the potential to cause damage on a scale similar to Varroa, if (or when) it does arrive. Since 2009, the United States has monitored apiaries across the country for Tropilaelaps via the National Honeybee disease survey, but few research projects are gathering pre-emptive information. As the mite's range expands, Dr. Ramsey's research takes a proactive approach by traveling to impacted areas in Asia, assessing control methods, and gaining first-hand insight into this pest. This research can help the U.S. prepare to rapidly respond, should another invasive parasite be detected.

We are excited to announce all of this new research and look forward to keeping beekeepers up to date with articles, resources, webinars and other events as projects progress. It is alongside an engaged and passionate beekeeping community that we can make the most of what we learn from this research. We thank our partners, and beekeepers for their ongoing support to help fund this work!

Bee Appearance And Behavior May Be Related, Genetic Study Reveals

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Genetic studies can be used to understand "why the way things are" for an organism. In this case, researchers sought to understand what genetic traits contribute to the appearance of these bees and their behavior. Using data collected from South African bees from a previous USDA Animal and Plant Health Inspection Service funded study in 2013 and 2014, scientists sought to understand what genes are responsible for the physical characteristics of these subspecies.

"We found really interesting variations in the genes of these bees that can help explain why they look and behave differently," said Laura Patterson Rosa, UF/IFAS graduate student and co-lead author of the study. "There are a lot of implications to what we found. We have not yet been able to verify these new discoveries in additional populations, but if our findings stand the test of time, it could partially explain why we see behavioral changes, why they do not acknowledge the existence of queens of other subspecies and why they can clone themselves when other bees cannot."

"Color phenotype is an important aspect to beekeeping management," said Ellis. "It can help beekeepers know what type of honey bee they have."

Not Your Typical Honey Trap: Australian Tomato Flowers Trick Bees with Fake Pollen

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The researchers found higher levels of proteins and amino acids in the pollen of male flowers, producing a greater nutritive reward for bees foraging on male plants than for those on the female plants.

"I've long wondered about this question on whether the pollen is equivalent in terms of what it gives the bees, but I never had anybody that I could collaborate with to help me figure it out before," Martine says. "Then Jessica Hall was hired as a visiting professor here with a background in proteins, and we ended up co-advising Jackie. They brought this expertise to a question I had for years but couldn't answer. And with the help of Angela McDonnell, we formed this little Bucknell super team that helped figure it out."

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Not Your Typical Honey Trap: Australian Tomato Flowers Trick Bees with Fake Pollen

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Hall is now on the biology faculty at Ohio Dominican University; Ndem-Galbert is pursuing her doctorate in health sciences and technology in Switzerland; and McDonnell is employed by the Negaunee Institute for Plant Conservation Science and Action at the Chicago Botanic Garden.

Martine points out that in these bush tomatoes where there are separate male and female plants, if bees don't move between both flowers, the plants won't populate.

"In this system, you have to go from a male plant with good pollen to a female plant that can receive pollen. If it doesn't go in that direction, you don't get seeds, and without them the species goes extinct," he says. "But why would a bee ever go visit those female plants if the pollen wasn't worth as much? This is the mystery we are left with at this point."

What they have learned is that the female pollen has less nutritional reward for the bee, and yet they somehow manage to lure bees in for pollination anyway. One working hypothesis is that because most of the pollen the adult female bees collect is given to their developing larvae, those moms will never know the difference — even if their babies might grow slightly differently depending on what they are provided.

All of the research was conducted using three Australian *Solanum* species cultivated in Bucknell's Rooke Science Building greenhouses. The researchers collected seeds from these species during six trips to Australia over the past 15 years.

Martine hopes to continue researching how the female flowers produce their "fake" pollen and whether this now-confirmed bit of nutritional trickery results in consequences for the bees that collect and consume it.

https://www.northcentralpa.com/education/not-your-typical-honey-trap-australian-tomato-flowers-trick-bees-with-fake-pollen/article_9ad06520-6e9e-11ec-976e-6be68030730c.html

Honey Bees And Their Honey Could Be A Big Help In Solving Police Cases

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Alessandra Luchini, an associate professor within Mason's Center for Applied Proteomics and Molecular Medicine (CAPMM), has perfected a method to extract proteins from the honey. She and Lance Liotta, a University Professor and CAPMM co-founder and co-director, have been involved with the project from the outset, following the idea's origins at one of the monthly research meetings with the Forensic Science Program.

Honey bees are very specific in the kinds of the flowers to which they're attracted. Doni Nolan, Mason's Greenhouse and Gardens sustainability program manager from the School of Integrative Studies within the College of Humanities and Social Sciences, applied her expertise to the project, choosing the right flowers to plant within the specific one-acre section of the newly opened Forensic Science Research and Training Laboratory that will house the remains of human donors in a heavily wooded area. The honey bee hive on the SciTech Campus is located several hundred yards away from the Forensic Science Research and Training Laboratory.

In November, students and researchers planted several different species of plants, which bear highly scented white and yellow blossoms, near the spots where the human remains will soon be displayed. Additional plants native to this area will be planted in the spring before the first honey samples are examined, Nolan said.

"You're trying to see if the honey and the bees can help us find a body and solve a homicide," said Nolan, who has a biology degree from Mason and is working on a Ph.D. in biosciences.

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Honey Bees And Their Honey Could Be A Big Help In Solving Police Cases

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The five-acre, Forensic Science Research and Training Laboratory opened in early 2021, making Mason just the eighth location in the world capable of performing transformative outdoor research in forensic science using human donors and the only one in the Mid-Atlantic region.

Donation of human remains to the research facility will come through the Virginia State Anatomical Program (VSAP), which is a part of the Virginia Department of Health. Go [here](#) to learn more about donating your body to science.

Mason also entered a partnership with FARO Technologies, Inc. that resulted in the world's first FARO-certified forensic laboratory.

In addition to those in the Forensic Science Program, the multidisciplinary project also includes the caretakers of the honey bees, as well as researchers and students from CAPMM, as well as from the Department of Environmental Science and Policy within the College of Science and Office of Sustainability, all of whom helped select the plants for the research design.

Presidential News - Chris Hiatt

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Has the Sierra Nevada forests been managed at 80-100 trees per acre to have more water flow down into reservoirs instead of tree uptake? NO! They're at 165-170 per acre according to a UC Davis/USDA study that says it might be a low estimate still. That is why the wildfires that last few years have been so devastating. Also, what little water that is in many reservoirs are being released to "restore" salmon, ie the San Joaquin River. This is a pipe dream that it is economically unfeasible, plus when are people and their livelihoods going to be put first?

My frustration might be showing, because I see how many jobs rely on the almond industry and how vital it is to our industry. The almonds help subsidize lower pollination rate in apples, blueberries, cherries, melons, pumpkins, stone fruit, seed crops like carrots, onions, etc. Without the huge amount of hives required for almonds I'm sure the national hive number would be less and all other commodities would be paying more. In many ways, it is a national food security issue. Do we want to import more of our food? Hasn't the covid supply chain crisis shown us the importance of having more our food and products made here? The war in Ukraine has shown us that with gas prices. Do you know of the top 25 fruits consumed in the US, 43% is imported? How green is that?

The almond industry has been amazing over the years overcoming hurdles, let's hope for our sakes they can manage to jump this hurdle. I just worry how bruised and battered all associated with the industry might look after clearing this hurdle.

Chris Hiatt
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American Honey Producers Association

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