



# CENTRAL COAST BEEKEEPERS NEWSLETTER

May 2019

ISSUE NUMBER 39

NEXT MEETING MAY 22ND, 2019

**For those of you who got package bees :** Please bring the box your bees came in to the May meeting as one of the reasons that we get such a great price is that we supply our own boxes and we want to gather them together for storage and use again next year.



# PRESIDENT'S MESSAGE

By Jon Sumpter

The sunshine is here, and the rain isn't. Our bees are flying, filling the comb with sweet liquid gold. If you haven't been out to inspect your hives, now is the time to do it or you may be surprised when you go out and find that the boxes are empty and your bees have swarmed. With the profusion of flowers we are getting, a hive can quickly get honey bound and start looking for new "digs" as they feel they have run out of space. Also, watch your honey supers as they can also fill quickly and you may have the opportunity to get several filled before the dirth in late July/early August.

This month guest speaker is Mike France of GloryBee Co. in Eugene. Mike is bringing an unusual perspective of beekeeping. He deals with the industry trends of beekeeping and their effects on the hobby and part time beekeeper as well as commercial operations.

Here are Mike's comments:

"I thought I would put together some thoughts as an industry insider. I have outlined some topics to talk about, but the main topic could be called "Trends in the Beekeeping World, insights on the industry, equipment and techniques."

I have an opportunity to talk with beekeepers of every type all day long and hear about the industry happenings firsthand. I thought it might be different to share some of the industry happenings but also bring it back to how it impacts the backyard beekeeper."

Folks, we need a newsletter editor for our club newsletter. Becca Fain has done a brilliant job but after 4 years, needs a break. I'm sure there is one of our membership that is up to the task. Please volunteer. Becca will be more than happy to show you the ropes and what she does currently as well as assist you if you want to take the newsletter in a different direction.

We're having a booth at the Lincoln County Master Gardeners Plant sale. Thank you to the members who manned the table.

Speaking of booths, the Lincoln County Fair is coming up and we have had a great booth in previous years and have had a wonderful time greeting and educating the public about our hobby/passion of beekeeping. Please volunteer for a 2-hour shift and setup and/or take down.

May board meeting starts about 5:30 on the 22<sup>nd</sup> at the Library meeting room. Everyone is welcome.

**Our May meeting is Wednesday, May 22nd at 6 pm at the Newport Library.** Mike France from GloryBee and a backyard beekeeper himself, will be our guest speaker. As an industry insider he will cover "Trends in the Beekeeping World, insights on the industry, equipment and techniques." He talks with beekeepers of every type every day and hears about the industry happenings firsthand. He offers a unique view of the business side but also brings it back to how it impacts the backyard beekeeper.

## Oregon Dept. of Agriculture Apiary Registration

Every person who owns, or is in charge of, five or more colonies of bees located within the state or Oregon, must register their hives with the Oregon Department of Agriculture. If you currently own fewer than five hives, you are not required to register your bees at this time.

The current cost of apiary registration is \$10 with an additional charge of \$0.50 per colony for five or more hives. After July 1, the registration fee will increase to \$20. The fee per hive remains at \$0.50 per colony for five or more hives.

Click below to view Oregon's apiary registration rules and regulations and registration form.  
<https://www.oregon.gov/ODA/programs/IPPM/InsectsSpiders/Pages/BeesApiaries.aspx>

## THE "BUZZ" ABOUT BEES -In the news about bees from [www.the-scientist.com](http://www.the-scientist.com)

A high school student designs a new beehive and gets help from machine learning to monitor for varroa mite infestation.

*May 1, 2019*

ANNA AZVOLINSKY

When high school student [Jade Greenberg](#) heard about what was happening to America's bee populations, she decided to take action. Last year, Greenberg, then a junior at Pascack Hills High School in New Jersey, learned from a local beekeeper about a tiny reddish-brown mite that is posing a serious threat to the honeybees (*Apis mellifera*) used across the US for pollinating various crops. But what began as a school project to build a hive that might help boost bee health soon turned into a collaboration with two tech companies to use artificial intelligence (AI) and tracking systems to tackle the problem.

The varroa mite (*Varroa destructor*) was brought over to North America from Southeast Asia decades ago and has been decimating not only colonies tended by beekeepers, but also feral colonies—those that were started in the wild by bees originally from hives kept by humans. The pest reproduces within honeybee colonies, latching onto the insects and feeding off their fat body, a tissue similar in function to the mammalian liver. Over time, the parasite weakens bees' immune systems, making them more susceptible to viruses and pesticides.

“Even if we solve the other problems contributing to honey bee loss, like pesticides and poor nutrition, colonies will still be lost if varroa is not under control,” says honey bee researcher [Gloria DeGrandi-Hoffman](#) of the US Department of Agriculture's Agricultural Research Service (USDA-ARS) Carl Hayden Bee Research Center in Tucson, Arizona.

There are hints that the practice of beekeeping itself may be contributing to the problem. DeGrandi-Hoffman and her colleagues, for example, recently found that the current commercial beekeeping practice of preventing swarming—when a queen bee and a group of worker bees leave their original colony to form a new one—may have exerted selection pressure on the mites to find new ways to disperse among bee colonies (*Environ Entomol*, 46:737–46, 2017).

### **What began as a school project soon turned into a collaboration with two tech companies to use artificial intelligence to tackle the problem.**

Greenberg was interested in the role of another aspect of beekeeping: hive design. Feral bees typically nest in tree cavities or other structures, forming layers of wax comb to fill the available area. By contrast, the most widely used manmade beehive in North America, the Langstroth hive, is essentially a stacked, wooden file cabinet with removable frames on which bees build their combs, making it easy for beekeepers to collect honey and monitor the colony's health.

Greenberg wondered if the hive design could be affecting the bees' susceptibility to mite infestations. “There is research on environmental factors, such as where the bees forage and



how they are affected by pesticides,” she says. “But there is very little information on whether or not the shape of the commercial hive has an effect on [mite infestation rates].”

Taking advantage of a school science fair as an occasion for the project, Greenberg set about designing her own beehive, based on the so-called Sun Hive. Invented in the 1980s by Günther Mancke, a German sculptor who studied natural beehives, Sun Hives “are handmade hives and not commercially viable,” Greenberg says. “I decided to riff off of Mancke’s design and make something that could be both commercially viable and also healthier for bees.”

Greenberg incorporated sensors to monitor hive weight, temperature, and humidity, along with video monitoring technology, while still retaining the necessary features for commercial beekeeping, such as removable frames. After a few months of honing the design on the computer, Greenberg was considering building a prototype of the 42-liter structure using a 3-D printer when her father, a solutions engineer at artificial intelligence company [Kinetica](#), made a suggestion.

Kinetica uses AI and other technologies to analyze extremely large data sets on everything from financial markets to the movements of fleets of trucks as they drive around the US. Jonathan Greenberg had told colleagues about his daughter’s project and, to his surprise, found they were keen to get involved. One of those colleagues was [Jacci Cenci](#), a solutions architect at NVIDIA, a tech company focused on AI and graphics. Cenci offered to mentor Greenberg on machine learning technologies and provide her with real-world data to analyze bee health.

Working with a beekeeper in California, the team placed sensors on a single Langstroth hive containing a healthy bee colony to monitor its temperature, humidity, and weight, and installed a camera to capture images. The researchers then created an analytical tool using Kinetica technology to detect bees in the images and to analyze environmental factors such as temperature, humidity, and weather conditions that might be contributing to varroa mites’ ability to infect the colony. The effort was an initial proof of concept, says Jonathan Greenberg. “This was about figuring out how the technology can work to more effectively monitor parasites for Jade’s hive experiments in the field.”

The group also came up with a better way to monitor mite infection in honeybee colonies. Usually, “the way beekeepers assess whether there is a mite infestation is invasive,” says [Samuel Ramsey](#), a research entomologist at the USDA Bee Research Laboratory in Beltsville, Maryland, who was not involved in the project. “We take 300 bees, put them in a jar, sprinkle powdered sugar on them, shake the jar, and count how many mites fall off of the bees.”

Instead, Greenberg’s team captured images in the California hive every 10 seconds and then used NVIDIA’s machine learning to detect the presence of varroa mites on bees. To do this,

the team used individual frames from videos of the healthy beehive, and from a different beehive where the varroa mite had taken up residence, to train a computer algorithm.

The data collection and analysis tools that Cenci, Greenberg, and their colleagues built are all still in the prototype stage. But Ramsey says that it has been a step toward figuring out whether Langstroth hives contribute to the mite infestation problem—and if Greenberg's hive design could aid the bees in staving off the mites with their natural defenses. "Designing a better honeybee hive would be wonderful because we are putting these bees in an unnatural situation, the Langstroth hive," he says. "It's an old technology that wasn't designed to address current issues like mite infestation."

The project won the engineering category at the Nokia Bell Labs North Jersey Regional Science Fair, and Greenberg was a finalist at the Intel International Science and Engineering Fair. She says she now hopes to measure physical properties such as ventilation and heat distribution in her prototype hive, in the Langstroth hive, and in wild beehives to understand how hive design might help or hinder mite infestations.

"I'm always excited when younger students bring passion and a youthful, new way to look into established systems," says Ramsey. "That is certainly a way to make sure there is progress." DeGrandi-Hoffman agrees. "It's great to see young students with enthusiasm and confidence to tackle complicated problems with creative solutions."

For Greenberg, the biggest surprise was how few researchers are studying biological problems such as honeybee health from an engineering perspective. Her solution? To major in bioengineering when she starts university this fall.

## 2019 WAS Conference in Ashland, OR

Mark your calendar for July 12-14 for the 2019 Western Apicultural Society Conference in Ashland, Oregon. The theme is "Hive Mind for the Greater Good" and will be built on the values of persistence and authenticity, celebrating community, women in leadership and, of course, bees and their keepers. There will be a mix of dynamic keynote talks, workshops built on the themes of art, beekeeping, social media and marketing, bee habitat conservation, education, native bees, and global research.

Keynote Speakers & Workshop Leaders include:

Dr. Judy Wu-Smart, University of Nebraska-Lincoln

Katrina Klett, Elevated Honey Co.

Hilary Kearney, Girl Next Door Honey  
Dr. Meghan Milbrath, Michigan State University  
Anna Gieselman, Bee Amour Jewelry  
Sarah Red-Laird, Bee Girl  
Molly Romero, ACTIVE Acupuncture of Ashland  
the native bee team from the Logan, Utah,  
USDA-ARS Pollinating Insects Research Unit  
a streamed opening welcome by Dr. Marla Spivak  
and much more.

Swarm in for Networking Opportunities and Activities. Not only will you learn from the best and brightest, you'll have a whole host of opportunities to personally connect with other beekeepers, as well as the speakers and workshop leaders, to share your stories, projects, ideas, products, and interests. Plan to arrive July 11th for some pre-conference fun: Raft the Rouge River and take in a show at the Oregon Shakespeare Festival with your fellow beekeepers.

Registration & Information at [www.westernapiculturalsociety.org](http://www.westernapiculturalsociety.org)

**WHY SHOULD YOU CONSIDER GOING?** Well, number one, it's close and will provide you the opportunity to connect and learn from beekeepers (primarily backyard) from Washington, Idaho, Wyoming, Utah, California, Nevada as well as Oregon. Number two – Some really influential researchers will be there sharing information and research to help improve survivability and honey production. Last, but not least, it's a great chance to take a wild ride on the Rogue river in a raft and see a great play at the Ashland Festival at a discounted group rate!

## ANNOUNCEMENTS

June 17-23<sup>rd</sup> – Pollinator Week

July 12-14<sup>th</sup> – The Western Apicultural Society Annual Conference, Ashland, OR,  
<https://westernapiculturalsociety.org>

July 17-20<sup>th</sup> – 2019 International Conference on Pollinator Biology, Health and Policy,  
UC Davis, Davis, California – [honey.ucdavis.edu/pollinatorconference2019](http://honey.ucdavis.edu/pollinatorconference2019)

## October 25-27<sup>th</sup> – Oregon State Beekeepers Association Fall Conference, Florence Events Center, Florence, OR

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