CENTRAL COAST BEEKEEPERS NEWSLETTER

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Outgoing PRESIDENT'S MESSAGE

By Stu Willason

Looking back at the past year it was definitely a strange one. We were masked, zoomed, vaccinated, unmasked, masked again, and now boosted and masked. I don't view it as a bad year, just different for both individuals and organizations like our bee club. Fortunately, we were able to adapt to the changing conditions because we have great club members. Our CCBA team pitched in and gave presentations, demonstrations, shared beekeeping tips, told bee stories and opened their homes for delightful meetings. We all taught each other about queen rearing, hive designs, bear deterrents, beeswax soap/candle making, pollination seeds, honey tasting, and of course, how to be good guardians to our bees, all during an on-again/off-again pandemic.

The only truly normal thing that happened during 2021 was that our bees didn't care what we were all going through or what was happening in the world. I think we would all probably agree that sometimes it would be nice to have a bee brain.

Some of you may be getting weary of my “hot links” to articles and videos, but I have one more link to pass on and I think that it is a good one. My Garden of a Thousand Bees *(Season 40 Episode 1 of Nature on PBS 2021)* features mostly native bees in an English backyard filmed with the best macro cinematography that I have ever seen. Watch it on a rainy December day and it will make you smile. https://www.pbs.org/video/my-garden-of-a-thousand-bees-trjhzt/ Or, if you get PBS, you can watch it on a big screen by going to the PBS channel.

I want to give a shout out to Judi who has done an absolutely wonderful job as both Secretary and Treasurer, and Newsletter Writer/Editor over the last couple of years. She works mostly behind the scenes to help make the club run smoothly and efficiently. Thank you Judi from all of us for your continued dedication!

Finally, I want to congratulate Pat Wackford who will be President of our club in 2022. Pat has been a valuable member of the board of CCBA for a number of years, is an excellent beekeeper, and will undoubtedly do an outstanding job as club President going forward. Go Pat!

Merry Christmas and have a Wonderful 2022!

Incoming PRESIDENT’S MESSAGE

By Pat Wackford

I would like to thank Stu Willason for taking our Bee Club through a very difficult time. Covid-19 certainly changed all clubs and businesses as they attempted to remain in touch. I would also like to thank Judi Irving for being our Club Secretary/Treasurer and for her continuing in these positions in the coming year. Also, a big thank you to her for providing her barn for in-person meetings as we became burned out on Zoom.

As your President for 2022 my goal is to get the club back to a bit of normalcy. I’m not sure if the country will be able to return to what we considered normal pre-Covid. We’ll give it our best shot.

At our last meeting we discussed having meetings every other month. The first meeting will be January 26, 2022. I was able to schedule meetings on the 4th Wednesday at the Newport Library which used to be our meeting day. Due to limited Library hours the meeting will be from 2pm to 4pm. Now that we can meet there, more club members will hopefully be able to attend. The library requires that masks be worn inside the building.

This year your Club will try to grow our membership while participating in a few community events. We have planned a beginning bee class at OCCC in March. We are also hoping to have a table at the Master Gardner's plant sale and the Lincoln County Fair. We will need volunteers for these events.

Club dues can now be paid. For 2022, dues remain $15 per individual, or $25 for a family. You can pay dues at the meeting, pay via PayPal to the club's email address, or mail them to Central Coast Beekeepers Assoc., P.O. Box 1916, Newport, OR. 97365.

Wishing you all a very Happy New Year!

Board Members for 2022

At our last meeting we approved the following Board Members for 2022.

PRESIDENT:	Pat Wackford
VICE PRESIDENT:	Jim Parrish
SECRETARY/TREASURER:	Judi Irving
PAST PRESIDENT:	Stu Willason
BOARD MEMBERS:	Becca Fain
	Max Kuhn
	Gaelyn Matthews
	Steve Niles

OCCC Bee-ginning Beekeepers Course

As Pat mentioned above, the club will be teaching a 3-hour beginners beekeeping course in March. OCCC was so thrilled with the idea that they put the class on the front cover of their winter course catalogue.

An early registration email was sent out to previous students and the first registration came in within 10 minutes and it was for our course! Club members are welcome to attend and to share their knowledge. Details to follow.

How honey bees alert their hive to attacks by giant Asian hornets

For the first time, the unique sounds honey bees (*Apis cerana*) use to alert members of their hive when giant "murder" hornets attack have been documented. These signals -- including a newly described "antipredator pipe" -- are the focus of new research from Wellesley College associate professor of biological sciences Heather Mattila and her colleagues, whose findings were published in *Royal Society Open Science*.

Mattila and an international team of researchers observed that honey bees sound the alarm to their fellow bees to defend themselves against attacks by giant hornets (*Vespa soror*), which can wipe out whole colonies. Bees make sounds, and antipredator pipes in particular, at a frenetic pace when giant hornets are directly outside their hive. It's a distress signal so distinctive that it gave Mattila the chills when she heard it. "The pipes share traits in common with a lot of mammalian alarm signals, so as a mammal hearing them, there's something that is instantly recognizable as communicating danger," she said. "It feels like a universal experience."

Antipredator pipes are different from the sounds that have previously been observed in colonies, including "hisses" and "stop signals." These newly discovered signals are harsh and irregular, and their frequencies shift abruptly, similar to the attention-grabbing alarm shrieks, fear screams, and panic calls primates, birds, and meerkats make in response to predators. In addition to warning the hive about the arrival of giant hornets, the signals result in an increase in bees at their hive's entrance and the start of their defense actions, which include spreading animal dung around colony entrances to repel giant hornets (the first documented use of tools by bees) and forming bee balls to kill attacking hornets collectively.

Mattila and her fellow researchers have studied interactions between giant hornets and Asian honey bees in Vietnam for over seven years, collecting audio and video recordings of hornet attacks in apiaries of local beekeepers. Microphones in hives captured almost 30,000 signals made by bees over 1,300 minutes of monitoring.

Their recordings of colonies experiencing active attacks by giant hornets were noisy and frenetic, whereas recordings of control colonies were comparatively quiet and calm. Attacks by giant hornets caused bees to increase hive chatter to levels eight times higher than when there were no hornet threats. "[Bees] are constantly communicating with each other, in both good times and in bad, but antipredator signal exchange is particularly important during dire moments when rallying workers for colony defense is imperative," the researchers wrote in their paper.

"This research shows how amazingly complex signals produced by Asian hive bees can be," said Gard Otis, one of Mattila's colleagues and a professor emeritus in the School of Environmental Sciences within the University of Guelph's Ontario Agricultural College. "We feel like we have only grazed the surface of understanding their communication. There's a lot more to be learned."

The team noticed that when bees make antipredator pipes, they raise their abdomens, buzz their wings, and run frantically, all while revealing their pheromone-producing Nasonov gland. The bees' behavior suggests that they produce multiple types of information to get their nestmates' attention. Mattila plans to further investigate this behavior as well.

Meat-eating 'vulture bees' sport acidic guts

November 23, 2021

A little-known species of tropical bee has evolved an extra tooth for biting flesh and a gut that more closely resembles that of vultures rather than other bees.

Typically, bees don't eat meat. However, a species of stingless bee in the tropics has evolved the ability to do so, presumably due to intense competition for nectar.

"These are the only bees in the world that have evolved to use food sources not produced by plants, which is a pretty remarkable change in dietary habits," said UC Riverside entomologist Doug Yanega.

Honeybees, bumblebees, and stingless bees have guts that are colonized by the same five core microbes. "Unlike humans, whose guts change with every meal, most bee species have retained these same bacteria over roughly 80 million years of evolution," said Jessica Maccaro, a UCR entomology doctoral student.

Given their radical change in food choice, a team of UCR scientists wondered whether the vulture bees' gut bacteria differed from those of a typical vegetarian bee. They differed quite dramatically, according to a study the team published today in the American Society of Microbiologists' journal mBio.

To track these changes, the researchers went to Costa Rica, where these bees are known to reside. They set up baits -- fresh pieces of raw chicken suspended from branches and smeared with petroleum jelly to deter ants.

The baits successfully attracted vulture bees and related species that opportunistically feed on meat for their protein. Normally, stingless bees have baskets on their hind legs for collecting pollen. However, the team observed carrion-feeding bees using those same structures to collect the bait. "They had little chicken baskets," said Quinn McFrederick, a UCR entomologist.

For comparison, the team also collected stingless bees that feed both on meat and flowers, and some that feed only on pollen. On analyzing the microbiomes of all three bee types, they found the most extreme changes among exclusive meat-feeders.

"The vulture bee microbiome is enriched in acid-loving bacteria, which are novel bacteria that their relatives don't have," McFrederick said. "These bacteria are similar to ones found in actual vultures, as well as hyenas and other carrion-feeders, presumably to help protect them from pathogens that show up on carrion."

One of the bacteria present in vulture bees is Lactobacillus, which is in a lot of humans' fermented food, like sourdough. They were also found to harbor Carnobacterium, which is associated with flesh digestion.

"It's crazy to me that a bee can eat dead bodies. We could get sick from that because of all the microbes on meat competing with each other and releasing toxins that are very bad for us," Maccaro said.

The researchers noted that these bees are unusual in a number of ways. "Even though they can't sting, they're not all defenseless, and many species are thoroughly unpleasant," Yanega said. "They range from species that are genuinely innocuous to many that bite, to a few that produce blister-causing secretions in their jaws, causing the skin to erupt in painful sores."

In addition, though they feed on meat, their honey is reportedly still sweet and edible. "They store the meat in special chambers that are sealed off for two weeks before they access it, and these chambers are separate from where the honey is stored," Maccaro said.

The research team is planning to delve further into vulture bee microbiomes, hoping to learn about the genomes of all bacteria as well as fungi and viruses in their bodies.

Ultimately, they hope to learn more about the larger role that microbes play in overall bee health.

"The weird things in the world are where a lot of interesting discoveries can be found," McFrederick said. "There's a lot of insight there into the outcomes of natural selection."

Story Source:

Materials provided by **University of California - Riverside**. Original written by Jules Bernstein. Note: Content may be edited for style and length.

The Origin Story

For decades, scientists have hotly debated the origin of the western (European) honey bee. Now, new research led by York University has discovered these popular honey-producing bees most likely originated in Asia.

From Asia, the western honey bee (Apis mellifera) expanded independently into Africa and Europe creating seven separate geographically and genetically distinct evolutionary lineages traceable back to Western Asia.

The western honey bee is used for crop pollination and honey production throughout most of the world, and has a remarkable capacity for surviving in vastly different environments -- from tropical rainforest, to arid environments, to temperate regions with cold winters. It is native to Africa, Europe and Asia, and was recently believed to have originated in Africa.

The research team sequenced 251 genomes from 18 subspecies from the honey bee's native range and used this data to reconstruct the origin and pattern of dispersal of honey bees. The team found that an Asian origin -- likely Western Asia -- was strongly supported by the genetic data.

"As one of the world's most important pollinators, it's essential to know the origin of the western honey bee to understand its evolution, genetics and how it adapted as it spread," says corresponding author Professor Amro Zayed of York University's Faculty of Science.

The study also highlights that the bee genome has several "hot spots" that allowed honey bees to adapt to new geographic areas. While the bee genome has more than 12,000 genes, only 145 of them had repeated signatures of adaptation associated with the formation of all major honey bee lineages found today.

"Our research suggests that a core-set of genes allowed the honey bee to adapt to a diverse set of environmental conditions across its native range by regulating worker and colony behavior," says York University PhD student Kathleen Dogantzis of the Faculty of Science, who led the research.

This adaptation also allowed for the development of some 27 different subspecies of honey bees.

"It's important to understand how locally adapted subspecies and colony-level selection on worker bees, contributes to the fitness and diversity of managed colonies," says Dogantzis.

The sequencing of these bees also led to the discovery of two distinct lineages, one in Egypt and another in Madagascar.

The researchers hope their study finally lays to the rest the question of where the western honey bee came from so future research can further explore how they adapted to different climates and geographic areas.

The paper, Thrice out of Asia and the adaptive radiation of the western honey bee, was published today in the journal Science Advances.

Materials provided by **York University**. Note: Content may be edited for style and length.

Beeswax Nativity Scene as seen in Santa Fe shop window

Teaching Opportunity at PCC Landscape Technology

The Landscape Technology Program at PCC Rock Creek is seeking an experienced beekeeper to instruct their Beekeeping class in Spring and Summer 2022. This is a 3 credit, term-based class that serves as an introduction to bee biology and the basics of beekeeping for degree-seeking students and interested community members. See LAT 103 - Course Content and Outcome Guide for more details. Spring term begins Monday April 4, 2022. The class meets 3 hours 1X per week for 11 weeks and is currently scheduled for Thursday 8-11am. The department currently has 7 working hives in its apiary. A supporting technician can assist in preparation of equipment and supplies. Minimum instructor qualifications are three years beekeeping experience. Preferred experience includes Master Beekeeper certification or similar and demonstration of teaching experience or working with the public in a mentoring capacity. Salary for the 11-week term is approximately $2500-$3000. If you are interested in this teaching opportunity, please contact Jennifer Peters at Jennifer.peters@pcc.edu for more information. Applications can be submitted under the 'Part Time Faculty Interest Pool Landscape Technology' under 'Faculty Jobs' at https://www.pcc.edu/hr/jobs/. Please apply before January 8, 2022 for best consideration.

Looking for industry professionals to join our team in the Landscape Technology program at Portland Community College to teach hands-on classes at Rock Creek campus. These are credit classes that run 3-5 hours/week for 8-10 weeks. Compensation varies with class – rates range from ~$50 - $65/hr. Multiple positions open for Spring, Summer and fall terms of 2022. For more information, contact LAT Department Chair Jennifer Peters at jennifer.peters@pcc.edu or apply to the Part time Faculty Interest pool at https://www.pcc.edu/hr/jobs/. Please submit applications before Jan. 8, 2022 for best consideration.

Club Info

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