



The Buzzzz

The Monthly Newsletter of the Gilroy Beekeepers Association

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Honey bee on coyote brush (*Baccharis pilularis*)

News from the Bee World

The following are courtesy of Fran Bach

HOPGUARD II REGISTERED BY EPA

EPA has registered a new biochemical miticide, Potassium Salts of Hops Beta Acids (K-HBAs), or Hopguard II, which is intended to provide another option for beekeepers to combat the devastating effects of the Varroa mite on honey bee colonies and to avoid the development of resistance toward other products. Rotating products to combat Varroa mites is an important tactic to prevent resistance development and to maintain the usefulness of individual pesticides.

The registrant, a company called Beta Tech Hop Products, derived K-HBAs from the cones of female hop plants, *Humulus lupulus*. To control mites on honey bees, the product is applied inside commercial beehives via plastic strips.

Varroa mites are parasites that feed on developing bees, leading to brood mortality and reduced lifespan of worker bees. They also transmit numerous honeybee viruses. The health of a colony can be critically damaged by an infestation of Varroa mites. Once infested, if left untreated, the colony will likely die.

This biochemical, like all biopesticides, is a naturally-occurring substance with minimal toxicity and a non-toxic mode of action against the target pest(s). There are numerous advantages to using biopesticides, including reduced toxicity to other organisms (not intended to be affected), effectiveness in small quantities, and reduced environmental impact.

More information on this registration can be found at www.regulations.gov in Docket ID EPA-HQ-OPP-2014-0375.

Find out about other EPA efforts to address pollinator loss: <http://www2.epa.gov/pollinator-protection>.

Learn more about biopesticides: <http://www.epa.gov/pesticides/biopesticides/>.

'AFRICANIZED' BEES IN CALIFORNIA

It was recently reported that Africanized honey bees have been found near Lafayette, CA. An additional colony has been found near Dixon, CA. This is the first positive identification in the Bay Area. The newspaper report can be viewed at <http://m.sfgate.com/bayarea/article/Killer-bees-found-in-the-Bay-Area-for-the-6535892.php>.

The following perspective from Eric Mussen, Emeritus Extension Apiculturist, UC Davis

Hi, Folks,

I think that we should take another look at the Africanized honey bee situation.

I really doubt that they moved into the Bay Area from way down around mid-San Joaquin Valley by swarming north from there, repeatedly. It is much more likely that they were unintentionally introduced into some areas.

There was an incident at the sugar refinery in Carquinez decades ago when an attempt to kill a swarm inside a ship failed to kill all the bees and many flew out into the local environment. No queen was found on the ship. There have been stories about "hot" bees in the greater surrounding area ever since.

People who have purchased packages of bees produced in areas, that are known to have AHBs in the environment, could have introduced the bees into an area.

Vehicles that are driven from states with significant AHB populations (including southern California) could have brought a hitchhiking swarm cluster into the area. If you look at the GPS spots (use Google Earth) where AHBs were listed for detections in the scientific paper, you will note spot infestations in a

number of locations as far north as Oregon and beyond. We aren't totally infested with the bees, but there are likely to be colonies sprinkled around.

As for having problems with the cold weather, there are Africanized honeybees surviving well in Flagstaff, AZ, where they have real winter. Obviously, there had to be some interbreeding going on so that the AHBs could pick up genes for wintering, but you do not need climate change for Africanized honey bees to survive, easily, up to British Columbia, especially if some cross-mating has been going on.

We have enough beekeepers around, now, so that if and when they are asked to check out possible AHB colonies, the beekeepers will be able to handle the situation and eliminate truly rambunctious colonies.

ROYAL JELLY ISN'T WHAT MAKES A QUEEN BEE A QUEEN BEE

by Gwen Pearson

For decades, scientists thought an excess of something special, a substance called royal jelly, elevated a regular honey bee larva to a queen. New research suggests we had it backward: It's what future queens aren't fed that matters.

Royal jelly, which also is called "bee milk," looks like white snot. More than half of it is water, the rest is a combination of proteins and sugars. Special glands in the heads of worker bees secrete the stuff, which gets fed to babies.

A developing queen bee is fed royal jelly exclusively—not pollen and honey like her proletarian sisters. Some describe withholding royal jelly from worker bees as nutritional castration. These bees don't get the special Food of the Gods. Or, perhaps, food of genetic monarchies. And so, we thought, their ovaries shrivel, and they don't become a queen.

It turns out, it's the other way around. Not feeding an immature queen pollen and honey is what makes her royal, not her exclusive access to royal jelly.

Queens and Genes

Radically different looking animals can be created from identical genetic material; a worker bee and a queen bee differ only in which genes are activated. Genes make proteins, which build the rest of our bodies. By manipulating the environment of their offspring, honey bees genetically alter their bodies via nutrition.

We've known for a while that bees' diet is involved in building different kinds of bee bodies. Science is still figuring out just how that happens. Queen larvae are surrounded by royal jelly; they float on a sea of sugary bee gland snot in enlarged cells. Worker bees eat beebread (a type of fermented pollen) and honey. Nurse bees mash this into a "worker jelly" and add glandular secretions as a garnish. Workers don't get the special stuff in queen jelly, and their ovaries shrivel.

That's the conventional explanation. But Dr. May Berenbaum, a professor at University of Illinois and an author of the new research, says there isn't a simple answer to the question What do bee babies eat? "We had the hardest time figuring out what larvae eat," she says. "Among other things, worker jelly and royal jelly appear to have, and there is no consensus, a slightly different ratio of mandibular to hypopharyngeal gland secretion ... It all happens in the dark surrounded by 50,000 stingers. So it isn't the easiest insect in the world to work on."

Beebread and honey are derived from plant materials, and like many plant materials, they contain a variety of phenolic chemicals. We eat them all the time; flavonoids are the plant chemicals that give plants their unique flavors (and help plants discourage plant-eating insects, among other functions). Royal jelly, however, has no detectable phenolic acids. None. From previous research, the researchers knew that flavonoids increase immune responses of adult worker bees. That's a good thing; it has the side effect of helping bees detoxify pesticides faster. The scientists wondered how developing bees would react to phenolic compounds.

To find out, they fed two groups of bee larvae diets with and without p-coumaric acid, a common type of flavonoid. Then they looked closely at differences in gene activation between the groups. The results were startling, unexpected, and nifty.

It all happens in the dark surrounded by 50,000 stingers. So it isn't the easiest insect in the world to work on says Berenbaum. Bees reared on the p-coumaric acid diet had ovaries significantly smaller than those reared without that compound. That's the kicker, because what makes a queen bee a queen? She's the only bee in the hive laying eggs. Fourteen genes known to be involved in worker-queen differentiation were upregulated, or increased in expression. Queen bees also are bigger and live longer than worker bees. In one set of genes known to regulate organ size in animals, p-coumaric acid significantly changed the expression of over half of genes involved in that signaling pathway.

"We never set out to change perceptions on queens and caste determination," says Berenbaum. "I'm interested in detoxification; how insects cope with phytochemicals they consume. Much to our surprise and delight, a whole suite of other genes that were implicated in caste determination changed." "It was one of those impossible to miss sorts of phenomena. I think ... the idea of royal jelly is so appealing, people haven't really questioned it."

The Silencing of the Genes

With over four centuries of living with bees, why are humans still learning so much about them? To answer that question, I reached out to Dr. Ryszard Maleszka at Australian National University. Maleszka, who is not an author of the new research, works specifically on honey bee epigenetics. Epigenetics is the study of how environments affect gene expression. "With our current knowledge we only scratch the surface of biological systems, and honey bee biology is no exception," Maleszka says. "We are dealing with 500 million years of animal evolution so there is much to discover."

"[This research] is a wonderful example of an evolutionary invention whereby common plant chemicals have been recruited to be crucial elements of gene regulation ... By using environmental ingredients honey bees found a clever solution to a challenging problem: How to generate two contrasting organisms, long-lived reproductive queens and short-lived functionally sterile workers, using the same genetic hardware."

Lots of factors go into making a queen beyond the plant chemicals examined in the new research: A compound with the wonderful name of royalactin, for example, has been proposed as critical to queen development. Maleszka has delivered a stinging rebuke to the idea that a single compound in royal jelly is the "switch" that makes a queen, though. In 2008, his lab was able to create queen bees without any royal jelly consumption, by turning off (silencing) a set of genes. Other bee researchers have questioned the "one molecule to rule them all" idea of queen development. The reality is likely that, like everything else in biology, it's complex and many factors are involved.

The real power of this new research may be in explaining why worker bees don't become queens. Instead of chemical castration by denying workers royal jelly, this elaborate feeding process provides chemical protection for the queen's ovaries. She is sheltered from the potential toxic or metabolic effects of plant chemicals. As we continue to improve our techniques, hopefully we will come closer to a firm answer about just what honey bees eat in their hives, and why.

Postscript: Um, Why Are Humans Eating Royal Jelly?

When we thought royal jelly was magic queen stuff, stealing and eating phlegm produced in insect heads made a kind of warped sense. Royal jelly proponents claim the stuff cures all sorts of human problems, infertility in particular. By deduction, the stuff that makes queen bees baby machines, laying up to 2,000 eggs a day, should increase human fertility. I am compelled to say this is not how scientists deduce cause and effect.

Royal jelly also is sold as an aphrodisiac, and like most erotic insect products, it's applied with "vigorous rubbing." That makes it hard to say just how firm evidence for this erectile remedy really is.

Also, actual honey bee reproduction involves penis detachment and death, which doesn't sound like a good time to me, if we are sticking with that whole "what works for a bee will work for humans" analogy.

Royal jelly does have antibacterial and antifungal properties, since it's the gunk developing bees float in until they metamorphose. It's marketed in many cosmetics as an anti-aging ingredient; queen bees live 40 times longer than worker bees. So far, there isn't much evidence of royal jelly having medical significance in humans. It's probably a good moisturizer, though. Especially if you don't think about where it comes from.

My best guess is that about 600 tons of royal jelly is produced and sold yearly; East Asia is the main producer. Prices vary widely, but based on a trip to my local health food store, seems to run about \$1 per gram. The market value of royal jelly is based on what we thought we knew about its magical properties; that doesn't seem likely to change in the foreseeable future.

But now you can have a lot of fun telling people where their royal bee goobers came from.

President's Message

by Wayne Pitts

Tips for planting Pollinator Habit

Think local and native – Even though we are being promised a rainy winter, we should always think of the next drought that will come our way. The California Native Plant Society has information specific to our area at: <http://www.cnps-scv.org/index.php/gardening>

Nurseries are having fall clearance sales now! A great way to stock up on pollinator plants. Visit the nursery between 11 and 1 to find bee friendly plants. If pollinators are visiting, then choose that plant.

Think like a pollinator – Pollinators vary their diet by foraging on different plants; offer them diversity. Choose plants that bloom for 3 or more weeks and pick varieties that have overlapping bloom periods.

Design for your space – Consider how large the selected plants will get and if you want to have a hands off or lots of hands on time in your garden.

Do not disturb – Once established, avoid disturbing more than 1/3 of your pollinator habit each year. This is to protect the pollinators that may choose to nest or feed in the area.

Take the long view – some natives take a while to come into bloom or add growth. Add new plantings each year.

Enjoy your garden!

My November Beekeeping To-Do List

By Serge Labesque

Shed bees

[On sunny Labor Day morning, in Glen Ellen, CA]

"I wrapped a chain around the shed, hooked it to my pick-up truck, and I pulled the whole thing down to the ground. And man, did I get stung! It's over there in the backyard."

Without any more explanation than that, the man hurriedly drives away, leaving me to remove bees from the wreckage.

A cloud of bees fills the air above the flattened structure. Thousands more are collecting honey from the debris. It's robbing on a grand scale. I'll have to work fast to have a chance of saving the colony that lived here.

I find the nest after lifting disjointed wood planks, torn tar paper and old roll roofing. What had been a very large colony now lays in a mass of mashed comb and bees. I mount sections of brood combs in frames as quickly as I can, and soon two supers are filled. It's unlikely that much of this crushed brood

will survive though, but there are eggs, and along with them there may be an opportunity for the bees to produce a queen, if it is necessary. I add as many of the bees as I can collect and I close the hive. Soon, Lizanne joins me and together we pile chunks of honey combs in nuc boxes. This feral colony had a very decent amount of stores, but these are disappearing rapidly, taken away by thousands of robber bees.

Having salvaged as much of the hive as we could, we search the remaining combs that once extended from floor to ceiling for any sign of a live queen. No such luck. We load the hive in my pick-up truck. What else can we do other than to abandon the rubble to the robber bees?

Back at home, I place the hive in a dark tool shed and I give water to the bees with wet sponges that I press against the hive bottom screen. Judging by the sounds they produce, the bees calm down rapidly. So much so that, the next day, as I set the hive out on a stand, I am encouraged to peek inside for any sign of a queen. And... there she is! A beautiful queen surrounded by a respectable mass of bees. Elated, I immediately give her a nice frame with empty drawn comb.

During the following days, forager activity increases at the hive entrance, which I nonetheless keep rather small, because I also returned to the bees their fragrant chunks of honey.

Sunday brings a brutal and dramatic turn of events. Checking the hive as soon as I return from a mentoring session, I find it under massive attack by robber bees. These are not just any robber bees. They are unmistakably Cordovan bees, those yellow Italian bees that are bred by commercial bee producers for their pronounced yellow coloration. I close the hive entrance and make sure that there is no other entry. That's when I spot a swarm hanging in an oak tree, some twenty feet away, and I promptly hive it in a nuc box. Undoubtedly, the besieged colony has absconded, abandoning everything to the robbers.

At dawn, the next morning, the hive and swarm box were moved to another apiary, away from these predators. But unfortunately, the bees absconded again two days later, this time not to be seen again.

Witnessing such a beautiful feral colony ruined first by human ignorance and then by bees that do not belong here is a sobering experience. But what irks me most is that I was unable to save it. I regret not meeting that man again, as I wanted to tell him about the importance of the bees, and that calling a beekeeper beforehand could have safeguarded the colony, not to mention sparing him a few stings. Even though the conditions were not favorable, I should at least have tried to raise a few queens from this stock in order to preserve some of its desirable genes. I could have reduced the risk of robbing by only giving back to the colony what it could consume overnight. In hindsight, I think that I should also have discarded most of the mashed brood and placed the beat-up colony onto empty drawn combs.

At this point, I can only hope that the bees found a safe nest cavity and that the queen will survive winter

November in the apiaries

It's all done. This year, the colonies were ready for winter in mid-October. Their hives are sound, secured against mice and winter storms.

Now, the bees are huddling inside compact brood chambers with hopefully enough stores to cover their needs until spring. Winter bees are being born and the brood nests are shrinking, the queens having reduced or stopped laying eggs. On nice days, the last of the summer bees display a good level of forager activity for a few hours. Yet, this bustle probably brings little benefit to the colonies. Also, we know that these foragers will soon disappear. It's the young generation of bees that will have to carry the hives through the winter months. The longer nights and cooler temperatures keep the bees clustered and quiet. When finally, toward the end of the month, all the brood has emerged, store consumption will be minimal. Then, the varroa mites will have no opportunity to reproduce and hide. They will be exposed to the bees' grooming behavior.

Since open hive inspections at this time of year may harm the colonies, if only by breaking propolis seals and disturbing their clusters, I limit my hive checks to the inspection of the exteriors of the hives, of the flight paths when the weather permits, and of entrances. I also glance at the monitoring trays to gauge what the bees are doing inside the hives. During these walks through the apiaries, I verify that the colonies are safe, that no branch could possibly come in contact with their nests when it is windy, as this would keep the bees agitated.

It's time to take care of the equipment that was removed from the apiaries earlier in the fall, to clean it and, if necessary, to repair it. After scraping wax and propolis build-ups, I sanitize the wood and metal surfaces with the flame of a propane torch. Then, everything is placed in the storage racks, exposed to the wind and light for good protection against wax moths and mice. The old and misshapen combs that did not get melted in October will have to wait until sunnier and hotter days.

The year that is coming to a close was deeply marked by the persistent drought in my apiaries. Due to the lack of ground moisture, there was very little nectar available to the bees, and the nutritional value of the pollen they could collect is questionable. It's time to begin a review of the notes that were made during the year. There is always something to be learned from them in preparation for next beekeeping season.

In summary, this month:

- Complete the preparation of the colonies for winter by the end of the first week of the month.
- Raise hives off the ground, if they are not already on stands.
- Remove old and misshapen combs (follower boards greatly facilitate this).
- Ensure that the hives are adequately ventilated (upper ventilation slot open).
- Reduce the hive entrances.
- Install mouse guards.
- Secure the hive tops against high winds.
- Install clean monitoring trays. From them, we will obtain important information about what is happening inside the hives during the next months, without disturbing the bees.
- Inspect the exterior of the hives.
- Observe the flight paths.
- Clean and scorch tools and equipment.
- Store unused equipment to protect it from damage caused by wax moths, mice and the weather.
- Review notes from the year.
- Start building frames and other pieces of equipment for the next season.
- Look forward to next season.
- Enjoy some honey and be thankful for the bees.

Serge Labesque © 2015

Drippings from the Extractor

by Dave Stocks

The first week of October, Susan and Wayne Pitts, Kathleen and Mike Stang and Laura and I attended the annual conference of the Western Apicultural Society in Boulder, CO. If asked to describe the experience in one word, it would have to be "OUTSTANDING". Good things began to happen even before the speakers started. Let me predicate this by saying that I have been to conferences where any interest in bees has not extended beyond the confines of the venue hosting the event. Such was not the

case in Boulder. Laura and I arrived a day and a half early. On the first evening, we went to a downtown Boulder restaurant for dinner. The waitress greeted us and placed a glass of water on a coaster in front of us. Now I admit that I didn't initially pay much attention to the coaster. Apparently, I was happily anticipating the local beer which was soon to arrive! Laura encouraged me to take a closer look. Printed on one side was an announcement of the WAS conference. On the other side, an announcement for Pollinator Appreciation Month. We saw these in several other locations. When we didn't see them, and asked the wait staff why not, they always expressed a knowledge of Pollinator Appreciation Month and wondered why their management didn't have the coasters.



Now I don't know about you, but I can't imagine this happening in Gilroy! But that's a topic for another day.

Aside from seeing old friends and making new ones, the conference offered some great classes. There's not enough space or time to talk about them all. However, there were some highlights that I came away with.

Probably the most interesting topic for me was the increasing research and use of honey in the treatment of medical conditions ranging from diabetes to wound care. A couple of items of particular interest concerned the use of honey daily by the average person. First is the use of honey by allergy sufferers. For years, people have asked me for local honey to treat their allergies. It turns out, honey probably doesn't help that much. The reason? It is unlikely that bees collect pollen from the plants that are causing the reaction. The bottom line, if it works for you, keep using it. Second, is the use of honey as a sleep aid. Research has shown that honey, taken at bedtime, reduces the risk of metabolic conditions associated with sleep deprivation. Sleep deprivation is defined as less than six hours per night. Honey use at bedtime may also increase sleep quality.

For years we've talked about the decline of honey bees and what's causing it. Many, myself included, have tried to tag almost everything on to the list. It seems that the answer might be simpler. Different speakers identified three things they believe are negatively affecting honey bees. They are mites, pesticides and forage, or lack thereof.

No one questioned that mites are a big problem. As you might imagine, the participants were split on what to do with the varroa mite. Some advocated treatment, others no treatment. To help beekeepers make wise decisions on what to do, the Honey Bee Health Coalition has developed a guide titled *Tools For Varroa Management*. It is basically an Integrated Pest Management approach to controlling varroa. You can download it at http://honeybeehealthcoalition.org/wp-content/uploads/2015/08/HBHC%20Guide_Varroa_Interactive_23Sep.pdf.

Pesticides continue to be a major problem with no immediate solution in site. There continues to be research showing that pesticides are harmful. Many pesticides remain in the soil for many years. It has been shown that the nectar of beneficial plants, planted in contaminated soil, is harmful to bees.

The third cause of bee decline is the lack of suitable forage. The mono-cropping systems which have become so common have eliminated many nectar and pollen sources which the bees require for survival. It was very satisfying to hear so many people address this issue and show the work that is being done. Next year's WAS conference is being held in Oahu. Personally, I can't wait.

One final thought on Boulder. I'm sure we've all heard of recent new laws in Colorado. Now I'm sure we all behaved ourselves. However, shortly after returning home I received the following photo from Wayne who reported seeing giant bees.



I don't know, just sayin'!!

Speaking of bee forage plants, in this month's President Message, Wayne gives some excellent tips on planting for bees. I would like to take the liberty to add a few thoughts. While I agree that a great way to choose plants is by observing them at a botanic garden or in a nursery setting, it can't be a once a year field trip. It needs to be almost monthly. In our climate, bees require nectar and pollen sources twelve months of the year. A plant blooming in October or November won't be blooming in the spring. If regular trips are not possible, I offer the following sites as good sources of information about pollinator plants and their bloom periods.

- The Calflora website at <http://www.calflora.org/>. This is a great website describing where in the state the plant occurs and its bloom period. Remember that bloom times may differ from north to south and at different elevations. One drawback of the site is that it requires the correct spelling, both common name and genus and specie. Other references may be necessary to acquire the desired information.

- The Pollinator Partnership at <http://www.pollinator.org/guides.htm> provides guides on selecting plants for given geographical regions within the state. The two which are applicable to our area are the *California Coastal Range Open Woodland Shrub, Coniferous Forest and Meadow Province* and the *California Coastal Chaparral Forest and Shrub Province*. One drawback is that both leave out November and December. While I agree not a of lot plants are blooming at this time, coyote brush (*Baccharis pilularis* and manzanita (*Arctostaphylos sp.*) are. Both are important pollinator plants.

The UC Berkeley Urban Bee Lab at <http://www.helpabee.org/best-bee-plants-for-california.html> provides a great list of both native and introduced plants. Although they don't break bloom periods down by month, they do differentiate by season.

In the September issue of *The Buzz*, we talked about adding a pinch of salt to our water sources. Dr James Nieh at the University of California, San Diego has been a leader in researching this. Results of his research are currently being prepared for publishing and are not available. However he did offer the following : " You may be interested in trying it out yourself by providing bees with sodium chloride in the water at 1.5-3% (by weight) concentration. They seem to prefer this concentration. For example, in 1 lb of water, add 0.03 lbs of salt".

He did send two great papers on drinking water for bees. In addition to the newsletter, these two articles are attached.

Sometimes it seems Mother Nature has a really weird sense of humor. Every fall I observe hundreds of bees working the blossoms on the English ivy in my backyard. I would even go so far as to say it might be one of their favorite plants. It's certainly not one I would recommend planting. Anyway, I thought I'd take a picture. I set out with the camera only to find not a single bee. There were however many yellow jackets visiting each blossom. Well, I thought, I'll come back tomorrow and surely find the bees. I returned the next day. No bees, no yellow jackets, but there were a bunch of flies circling the blossoms. So here it is, a picture of flies on English ivy.



Wayne asked me to remind all of you that we have an extractor available for rent. Contact Wayne if you need one.

Finally, Christmas is just around the corner. The most important event of the Holiday Season, the Gilroy Beekeepers Association's annual Christmas dinner will be held on December 1, 2015. This year's dinner will be held at Old City Hall. Cost will be \$7.00 per person for members and one guest. Cost for non-members and one guest is \$12.00. Look for evite to arrive soon. Please rsvp as soon as possible.

Plant of the Month

Saint Catherine's Lace

by Beth McGuire

St. Catherine's Lace is the largest of the California native buckwheats, reaching up to five feet wide and five feet tall. If there is room in your garden, give this plant a try.

Eriogonum giganteum provides food for bees, butterflies and birds. My honey bees are feasting on the blooms right now. Many native bees and butterflies also enjoy the nectar from the large umbel shaped cream flowers. Bloom generally occurs May through July. The flowers then dry to a rust color. Both fresh and dried flowers work in floral arrangements. Or leave the flowers on the plants and watch the birds harvest the seeds

Like most natives, this plant requires no summer water once established. Count on giving it a drink every two weeks for the first two years. Give it a home in a spot with partial to full sun and room to spread. St. Catherine's Lace tolerates the clay and alkaline soils typical of the Santa Clara Valley. Cut off the dead flower stalks each year. Prune a tiny bit for size, but prune too much and you will reduce flowering. The plant seeds itself, but is not invasive. Use the seedlings to form a mass planting or to share the plants with friends.

Your friends and the local wildlife will thank you



St. Catherine's Lace (*Eriogonum giganteum*)

Calendar of Events

Meetings

November 2 , 2015

Santa Clara Valley Beekeepers Guild

6:15 pm

<http://beeguild.org/>

1292 Minnesota Ave

San Jose CA 95125

Speaker:

Dr. Elina Niño - UC Davis

November 3, 2015

Gilroy Beekeepers Association

7:00 pm

Old City Hall, 7400 Monterey Rd.

Gilroy, Ca

<http://www.uvasgold.com/gba/>

Speaker:

Dr. Elina Niño - UC Davis

November 4, 2015

Santa Cruz Beekeepers Guild

6:30 pm

El Rio Mobile Home Park, 2120 N. Pacific Ave.

Santa Cruz, CA

<http://santacruzbees.com>

November 5, 2015

Beekeepers Guild of San Mateo

7:00 pm

1106 Alameda de Pulgas

Belmont, CA

<http://www.sanmateobeeguild.org/>

Topic:

"Guild Maker Fair"

November 7, 2015

Monterey Bay Beekeepers

8:00 am

<http://www.montereybaybeekeepers.org/>

Conferences

November 17-19, 2015

California State Beekeepers Assoc.

Sacramento, Ca

<http://www.californiastatebeekeepers.com/events.html>