CENTRAL COAST BEEKEEPERS NEWSLETTER

February 2021

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NEXT MEETING FEBRUARY 24, 2021

Our first club meeting of the year will be on February 24th at 6:30pm via Zoom.
We will mail out a link to this one-hour zoom meeting about 3 days prior.

Topics for the meeting:

1) Beehive/apiary ideas using member's photos *(you can still send in photos!)*

2) Questions and answers derived from roundtable discussions at the Oct 2020 Oregon State Beekeepers annual meeting *(Max Kuhn was one of the panelists)*

3) A short video on how honeybees are protecting farmer's fields in Kenya *(if we have time).*

Hopefully, some of you attended the Lane County Beekeepers February Zoom meeting this past Tuesday. We all want to thank LCBA for sharing their meetings

with us!

PRESIDENT'S MESSAGE

By Stu Willason

2021 has started much like 2020 with a lot of rain along the coast, which, as we all know, is not unusual. However, temperatures so far this year have not dipped below freezing in some areas, so it seems a little warmer than usual. Thus, on the occasional sunny day or even sunny hours between rainstorms our bees are out foraging and bringing in pollen.

We are fortunate to have flowering borage and calendula in our garden area, both of which the bees love. We don't have nearly enough to support 4 beehives but it does seem to give our bees a bit of a winter treat. To help the bees get through winter we added sugar/pollen patties to our hives about 3 weeks ago and will add more if needed. You might want to check the relative weight of your hives because this is the time of the year when they might run out of stored honey and need a little extra boost of sugar. I think the relatively warm winter so far has resulted in more bee activity and more honey consumption in the hives than usual, at least for our hives.

If you don't have borage plants *(Borago officinalis)* you might want to think about setting aside a small patch of soil and planting some this year. Borage grows like crazy, self-seeds, produces copious amounts of nectar, and deer don't like it. Our summer borage patch reached a height of 3 feet and flowered into late fall. The patch reseeded itself and now we have freshly flowering plants in mid-February. We are going to increase the number of borage patches all over our property this year. All the pollinators love it!

As a reminder, be sure to check for mites on your sticky boards. We treated all our hives last month with oxalic acid vapor and now our mite counts are way down. And, more importantly, our bees are still alive.

Last month's Western Apicultural Society (WAS) Mini-Conference was very good. Julia Mahood *(a Master Beekeeper from Georgia)* gave an excellent presentation on Drone Congregation Areas (DCA) – *"The Game of Drones".* She used actual motorized drones to monitor honeybee DCAs. She is one of the few beekeepers that actually likes drone honeybees. Here is the link to her talk. It is well worth the watch: WAS January Mini Conference Part 1 - Julia Mahood DCA - YouTube . You can also visit her website: mapmydca.com

Unfortunately, the WAS February Mini-Conference is on the same day as our club's zoom meeting. However, we will post a link to the talks as soon as WAS publishes the information. The topic for their February conference will be the *Bee Gut Microbiome*. The WAS website is: Home | Western Apicultural (westernapiculturalsociety.org)

OSU is starting up their "Friday in the Apiary" sessions for 2021. They will be on Zoom for a while and hopefully will go back to in person events sometime later this year. You can sign up here for updates if you haven't already: Friday in the Apiary | OSU Extension Service (oregonstate.edu). OSU has also posted some of their very informative beekeeping videos. Here is the link: In the Bees with the OSU Honey Bee Lab

If you haven't already done so, you can renew or start a new yearly membership for only $15 per person or $25 per family. Membership supports our club efforts which include support for the Oregon State University Bee Lab. Your checks along with the included membership/renewal form should be sent to the address on the form. CCBA Membership Form .pdf If you are renewing, you can also use PayPal by sending it to the club's email: centralcoastbeekeepers@gmail.com.

See you on Zoom on the 24th!

Summer weather conditions influence winter survival of honey bees

Winter survival of honey bee colonies is strongly influenced by summer temperatures and precipitation in the prior year, according to Penn State researchers, who said their findings suggest that honey bees have a "goldilocks" preferred range of summer conditions outside of which their probability of surviving the winter falls.

The results of this study, which used several years of survey data provided by the Pennsylvania State Beekeeper's Association and its members, enabled the development of a tool for forecasting honey bee winter survival to support beekeepers' management decisions, the researchers said.

Honey bees contribute more than $20 billion in pollination services to agriculture in the United States and generate another $300 million annually in honey production for U.S. beekeepers, noted the study's lead author, Martina Calovi, postdoctoral researcher in the Earth and Environmental Systems Institute in the College of Earth and Mineral Sciences.

"However, winter colony mortality greatly reduces the economic and ecosystem contributions of honey bees, which suffered estimated overwintering mortality rates of more than 53% from 2016 to 2019 in the United States," Calovi said. "Although winter mortality is known to vary regionally, the landscape and weather factors underlying this variation are poorly understood."

Honey bee colonies are not dormant during the winter, Calovi pointed out. The bees remain active and maintain the hive temperature between 75 and 93 degrees Fahrenheit by forming a thermoregulating cluster, in which they organize into a tight ball and vibrate their flight muscles to generate heat, allowing the colony to survive when outside temperatures fall below 50 F. This enables them to survive long periods of cold temperatures.

"During the winter, the colony stops foraging for nectar and pollen and relies on its existing food stores, collected during the plant growing season," she said. "Rearing of new bees also ceases, and the colony depends on the survival of a long-lived cohort of bees that is produced in the autumn."

As a result, any factors that limit the colony's ability to store adequate amounts of food during the summer and fall, that undermine effective thermoregulation during the winter, or that reduce the life span of overwintering bees can contribute to colony mortality, said co-author Christina Grozinger, Publius Vergilius Maro Professor of Entomology in the College of Agricultural Sciences.

Among these factors, she said, are weather conditions that influence the availability of forage, the bees' ability to thermoregulate in the winter, and the amount of time before bees are able to initiate brood rearing in the spring. Other dynamics include beekeeper management practices that affect parasite and pathogen loads -- particularly control of Varroa mites that transmit viruses -- and forage quality and pesticide exposure due to the surrounding land use.

"We need to consider all of these factors when modeling and predicting honey bee winter survival," Grozinger said, "and that requires large data sets that span multiple types of habitats, microclimates and years."

To collect beekeeper management and winter survival data, the researchers collaborated with the Pennsylvania State Beekeepers Association, which conducts an annual winter-loss survey of beekeepers across the state. The association provided data from this survey covering three winters and containing information about 1,429 honey bee colonies within 257 apiaries.

For each reported apiary location, the researchers compiled data on weather and topographic variables that determine temperature and moisture conditions, as well as landscape variables that influence the availability of floral resources and insecticide exposure risk. The team included agronomic measures such as consecutive dry days and growing degree days, which is a measure of heat accumulation used to estimate growth and development of plants and insects during the growing season.

These diverse and complex datasets were integrated and analyzed using Random Forest, a machine learning algorithm that merges the output of multiple variables to reach a single result.

As the research team reported recently in Scientific Reports, a critical factor influencing winter survival was management of Varroa mites. Beekeepers that did manage Varroa mite levels, however, still experienced high losses (25-60% mortality).

For these beekeepers, the four most important variables in predicting winter colony survival were growing degree days, maximum temperature of the warmest quarter, precipitation during the warmest quarter and precipitation during the wettest quarter. Of these, the strongest predictor was growing degree days in the prior summer, which researchers said may relate to floral resource availability.

"The importance of weather conditions in predicting winter bee survival is quite clear from our analysis," said co-author Sarah Goslee, ecologist with the Pasture Systems and Watershed Management Research Unit of the U.S. Department of Agriculture's Agricultural Research Service.

"Our nuanced analysis of 36 weather and other environmental variables found adverse effects of both too-cool and too-hot summers," she said. "This model can be used to predict the probability of overwintering success, both for the current year and in projected future climate change scenarios."

The model was used to develop a real-time tool to predict honey bee survival probability as a function of growing degree days, said Grozinger, who is director of Penn State's Center for Pollinator Research. The tool, "BeeWinterWise," has been incorporated into Beescape, a decision support system spearheaded by the center that is used by beekeepers and technical advisors.

"We believe this is the first study on honey bee overwintering survival that combines weather, topography and land-use factors," said Calovi. "Our results demonstrate both the predictive power of weather variables on honey bee overwintering survival, and the value of addressing this type of question with machine learning methods."

Story Source:

Materials provided by **Penn State**. Original written by Chuck Gill. Note: Content may be edited for style and length.

The business of bees

The economic value of insect pollination services is much higher than previously thought in the US

The economic value of insect pollinators was $34 billion in the U.S. in 2012, much higher than previously thought, according to researchers at the University of Pittsburgh and Penn State University. The team also found that areas that are economically most reliant on insect pollinators are the same areas where pollinator habitat and forage quality are poor.

"Pollinators like bees play an extremely important role in agriculture," explained senior author Vikas Khanna, Wellington C. Carl Faculty Fellow and associate professor of civil and environmental engineering at Pitt's Swanson School of Engineering. "The insects that pollinate farmers' crops underpin our ecosystem biodiversity and function, human nutrition, and even economic welfare."

But some of those busy little bees are headed for crisis -- one-third of managed honey bee colonies die each winter in the U.S., and populations of many wild pollinator species are showing declines as well.

Using publicly available price and production data and existing pollination field studies, the team determined economic dependence of U.S. crops on insect pollination services at the county level, as well as areas where the habitat for wild pollinators has been reduced. One key finding is that the economic value that is dependent on insect pollination totaled $34 billion in 2012, much higher than previously thought. The team looked at 2012 because it was the most recent year for which data were available.

"The value of insects as part of our economy is apparent when you look at the well-established connection between farming and beekeeping. Farmers sometimes will buy or rent bee colonies to help pollinate their crops when there aren't enough wild bees in the area," said Khanna. "We've found that some of the areas that are economically most reliant on insect pollinators are the same areas where pollinator habitat and forage quality are poor."

The researchers found that 20 percent of U.S. counties produce 80 percent of total economic value that can be attributed to wild and managed pollinators. Their findings will inform conservation efforts and ensure sustainable production of key crops.

They also identified the key areas that produce economically and nutritionally valuable crops and are highly dependent on pollinators -- areas that are at risk if wild pollinator populations continue to decline. By overlaying maps of predicted wild bee abundance, the researchers could identify areas where there was high economic dependence on pollinators but low predicted abundance of pollinators.

The research suggests a need for farmers to mitigate the shrinking bee populations by providing a more suitable habitat for the insects to thrive.

"Our study showcases the increasing importance of pollinators to supporting U.S. agricultural systems, particularly for the foods that are vital for healthy diets, like fruits, vegetables and nuts," says Christina Grozinger, Publius Vergilius Maro Professor of Entomology and director of the Center for Pollinator Research at Penn State.

"This detailed map of pollination needs and pollinator deficits helps identify regions where resources could be provided to improve pollinator habitat, as well as other regions where local land use practices are supporting both agriculture and healthy pollinator populations. Those places could serve as models for sustainable agriculture and pollinator conservation practices."

The research was funded by the National Science Foundation.

How Honey Bees Stay Cool

I was reading a back issue of the American Bee Journal which I got from our club's library (another benefit of being a member) and came across an article about the manner in which bees keep the hive cool when temperatures soar. (We could use a little of that right now.)

Scientists at Tufts found that in a hive blasted with heat for 15 minutes, the worker bees press their bodies against surfaces near the brood to absorb heat with their bodies. After the heat was turned off, the worker bees moved to the cooler parts of the colony to spread out the heat. The control colony, without bees, was significantly warmer than the other colonies tested containing bees.

Bees are amazing!

OSU Honey Bee Lab Autopsy Clinic

Did your colony die over the winter? Do you need help figuring out what happened?

First, please read this: **Why did my honey bees die?** By Meghan Milbrath, Michigan State Univ.

Still have questions?

We can help. Every Friday afternoon in February and March, we will be available to inspect your frames or receive your samples for pest/disease diagnostics. Visits are by appointment only. Please complete *this form* and you will be contacted with a time slot.

Appointments required. Masks and social distancing required. The Autopsy Clinic will be held outdoors with strict adherence to Covid safety protocols.

BEEvent 2021 Online March 6

The 7th Annual BEEvent Pollinator Conference

$20 - Registration opens mid-January 2021

Contact for questions and requests for accessibility-related accommodations

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Presented live online by Linn County Master Gardener Association

Featured keynote speaker: Jim Cane

With:

- **Jim Cane -** Is your yard helping or harming bees?
- **Kathryn LeCroy** - Community scientists' research of native mason bee declines
- **August Jackson, The Bees of the Willamette Valley**
- Mini Sessions
    - Update on the Oregon Bee Project
    - Mason bee best practices

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