CENTRAL COAST BEEKEEPERS NEWSLETTER

MARCH 2024

NEXT MEETING March 27, 2024

Important Notice: **In the second half of the year, WE WILL BE MEETING ON SATURDAYS, in the hope that more of our members with Monday to Friday obligations will be able to attend. Please see p. 3 for the schedule.**

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PRESIDENT'S MESSAGE

By Jeremy Egolf

Our colonies have their fairly predictable annual cycle tracking the contours of the microclimate as do the flora they depend on, but our beekeeper's cycle is slightly out of phase, and consists in large measure of anticipating and readying for the next season while addressing current issues.

As the Northern Hemisphere turns toward the sun, an Oregonian's fancy anticipates drier days. You may recall the US Postal Service motto, "**Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds."** Not so much for the bees. As the saying goes on the coast, "If you don't like the weather, just wait five minutes, it will change." Last summer's coastal drought has long since been meliorated under the influence of atmospheric rivers. A harbinger of spring is the bloom of catkins on the alders (and, for a few adventurous tree planters, on the filberts that survived the elk). The bees have noticed, and we have reports they're bringing in the creamy (pale yellow) and occasional orange-pink (filbert?) pollen with alacrity on the days they see fit to explore the

neighborhood. On the other hand, late February and early March's mix of rain, sleet, hail and snow had them sheltering indoors, but they again sprang forth with mid-March's unseasonably warm and drier conditions (as I write, they and we face more days of drizzle). The bees which survived last year's drought may well wonder if their keepers will provide a water source this summer (hint).

Speaking of survivors, please respond to Dewey Caron's annual survey of hive losses **(see page 4)** – we are the ones who stand to benefit from the result, and the questions themselves are a spur to improve our efforts to assist Apis Mellifera in our (for them) seemingly unnatural environment.

I hope our members have taken advantage of the odd February days when temperatures hit 55F and then March's recent unseasonably warm days to explore the hives and audit food supplies and general health. Any visible eggs or (especially for us "mature" types with cataracts) larva? Max Kuhn reported he saw brood as early as February. Is there still a supply of honey or do they need some supplemental sugar while awaiting the summer bloom? Would they like a pollen supplement? Is it time to refurbish a hive? Chip off the burr comb? Retire those ten-year-old frames with ultra-dark wax? Clean out the mouse nest that somehow overwintered?

And speaking of pollen, the Honeybee Health Coalition's new booklet summarizes some surprising findings about pollen supplements – featured on **page 5**. This should generate much head-scratching this year. We look forward to discussing the implications of all this when Dr. Ramesh Sagili addresses our club this May regarding the OSU bee lab's current research on the dual subjects of "Varroa Control and Pollen Supplements."

At our February meeting Rick Olson presented on installing nucs and packages, which is timely since many of our members report deadouts and plan to replace their colonies (rather than attempting to reproduce the details, I refer you to Rick's presentation on our website). **We're counting down the weeks until the April 24th deadline for members to purchase bees through our bulk order.** Also at the meeting, Max Kuhn pitched the club's queen sequestering cages, which are a useful means to maintain the queen in the hive (keeping the colony content) while producing a "brood break," isolating all the reproductive phase varroa mites to a single frame of brood, which can then be frozen (after removing the queen, of course) – a handy complement to chemical treatments. Max's presentations on queen confinement cages can be found on our website here: https://www.ccbaor.org/reference/.

At our March meeting, Max Kuhn will speak on swarm control, an important issue for those fortunate beekeepers whose colonies not only survived but have thrived.

In the world of outreach, Patti Johnson (a club member from Yachats) gave presentations regarding Honey Bees in February at the Siuslaw Middle School Science Class on two different days. Our Vice President, Jim Dawson, spoke on the radio about beekeeping, and, on March 19, we had a couple of tables at the Lincoln City Community Center Spring Celebration (thanks to Stan and Brenda Scotton for your support). We've booked a booth for the Lincoln County Fair over the July 4th weekend. Watch this space as our plans solidify.

The Year's Program

All meetings 1:30 p.m., at the Newport Public Library, except for the June meeting, which is at the OSU Extension office in Newport.

Wed., March 27: Max Kuhn: "Swarm Control"

Wed., April 24: Deadout workshop (please bring a frame or two, including any oddities you'd like to share); Lessons Learned and Spring Preparations

Wed., May 22: Dr. Ramesh Sagili (Director of OSU Bee Lab): "Varroa Control and Pollen Supplements"

Wed., June 26: Dr. Andony Melathopoulos (OSU Extension Service Master Melittologist): "Take a walk on the wild side: the weird and wonderful world of native bees (for beekeepers)." Note: meeting at the OSU Extension Office, 1211 SE Bay Blvd., Newport.

Saturday, July 27: Annie Marion (USDA Natural Resources Conservation Service, Waldport Field Office): "Coastal Pollinator Habitat."

August: Summer party hosted by Pat Wackford (to whom we are grateful!) (date TBD)

Saturday, September 21: TBD

Saturday, October 19: Dr. Dewey Caron (Emeritus Professor of Entomology and Wildlife Ecology, University of Delaware, and Affiliate Professor, Department of Horticulture, OSU): "Winter Hive Preparations"

Saturday, November 16: Annual Meeting (Election of Officers, Plans for Next Year)

Reminder: 2024 Bulk Package and Nuc Order

For our paid-up members purchasing Henry Storch's bees through CCBA, they are available at $155 for a three pound package, $180 per five frame deep nuc. The nucs include five frames of bees, at least two frames of capped brood, one frame of open brood, and 2 frames of honey/pollen. Henry will mark queens for an additional $10 (each) for those who want this service. The target date to deliver our nucs and packages is May 19th.

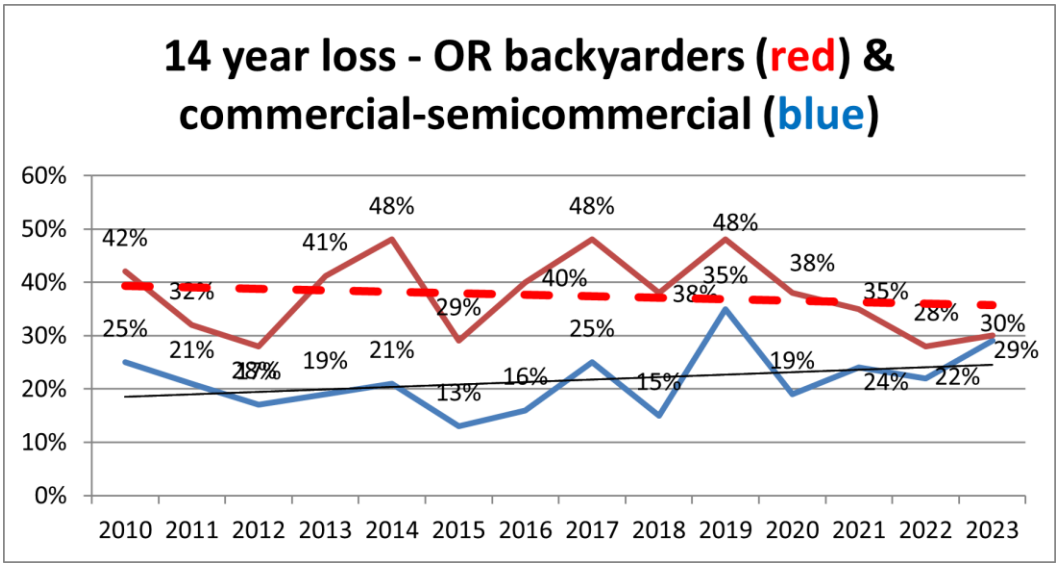
Steve Niles (available through our email address: centralcoastbeekeepers@gmail.com) is coordinating the club purchase. Please provide him your orders as soon as possible to ensure your bees are reserved and Henry can plan his work. The April 24th meeting is the hard final date for orders. Purchasers will be informed of delivery logistics as the date approaches.

The PNW Honey Bee Survey is OPEN

Please Take the Survey! Click on https://pnwhoneybeesurvey.com - it is electronic and should take 5 minutes or less. The survey is for any and all beekeepers who have overwintered colonies (or who had colonies they had hoped to overwinter). The survey covers questions on survivorship (loss) and managements for varroa mite control. Dewey Caron usually receives fewer than 6 Central Coast member responses. This is the 15th year of the survey and he is hoping for a good response from all OR beekeepers including those in the Central Coast. The Survey is NOW OPEN (through end of April).

The survey is rather interesting in itself (it piques the conscience), and includes questions on types and longevity of colonies, supplemental feeding, mite testing and treatments used, requeening and suspected causes of hive losses.

Dewey has provided us the graph below from his ongoing survey of backyarders (less than 50 colonies) and commercial keepers (more than 50 colonies) up through last year. Although we note the trend line for backyarders is encouraging, if the anecdotal information we've received from Central Coast beekeepers is at all typical, we may see a bounce back up after the current survey. PLEASE TAKE THE SURVEY ASAP!



So, What *Do* They Do With Those Pollen Patties???

We're digesting the Honeybee Health Coalition's fine new publication, "Honey Bee Nutrition: A Review and Guide to Supplemental Feeding", with principal author Dr. Pirayadarshini Chakrabarti Basu (formerly of OSU) and co-authored by many of the leading researchers and educators in the field, including OSU's Dr. Ramesh Sagili:

https://honeybeehealthcoalition.org/wp-content/uploads/2024/01/HBHC-Honey-Bee-Nutrition-Guide-Supplementary-Feeding-Guide-2024.pdf

There is helpful discussion of what form of sugar to feed in what season, as well as gut bacteria and feeding probiotics (benefits of which, if any, are not well understood), but most fascinating was the useful and sometimes provocative material on pollen supplements and substitutes. It is important to note that the recommendations are at a national level, and need to be considered in light of the maritime northwest's climate and nectar cycles. A few highlights:

Maximum protein consumption is by young nurse bees to meet the physiological demands of brood food production. With age, workers in a colony transition from high essential-amino acid diets to predominantly relying on carbohydrate diets to meet the demands of foraging. (p. 2)

Some research has shown that, unlike foraged pollen, commercial diet patties are not stored in the colonies. In addition, commercial diets are eaten by a portion of the adult honey bees in a hive and these patties are not stored in the colonies as bee bread. (pp. 3, 15) Surprisingly, a major finding was that most of the commercial diets studied (pollen supplements/substitutes) except Feedbee do not produce changes in adult bee population, honey production or brood production (table, p. 16) while many homemade pollen substitutes made with components such as black gram, sucrose, skim milk powder, yeast, soy meal or flour, albumin, etc., do result in such increases (table, p. 17).

There are advantages of providing winter patties lacking pollen (such as giving the queen rest from egg laying; fewer bees and more compact winter cluster may improve survivability and a varroa-managing break in the brood cycle). Feeding pollen supplements in fall and winter may boost queen egg-laying and is recommended only in the warmer winter regions such as the southwestern or the southeastern United States. (P. 3) [We ask, what about the relatively mild though erratic and sometimes episodically harsh maritime Pacific Northwest winters?]

A small quantity of pollen substitute patty fed to a rapidly growing colony, especially when natural forage is limited, will hinter colony growth. In a colony that reared a lot of brood and then encounters a food shortage, the workers may cannibalize the young larvae and cap older larvae early. (p 4)

A table on pp. 5 and 6 summarizes the supplement and substitute manufacturers' stated crude protein and lipid (fats) % compositions.

Another table (p. 10) summarizes suggested protein supplementation recommendations according to the hive condition or season. Colony stimulation is only desirable when natural forage is

available. A diverse and staggered bloom is important to provide honey bee colonies with adequate and diverse macro and micronutrients. [Gardeners and beekeepers with large properties take note.]

The utilization and conversion of the supplemental diet to colony health parameters are not clearly understood. (p. 14) Given all the forgoing, a major research question is, “Do these artificial [supplemental protein] diets only provide short-term benefits to the adults in the colony?” (p. 15)

With our usual coastal dominant cycle of natural pollen sources (alders in February and into March, the main blackberry nectar flow centered on June and July), and the limited other blooms that capture our bees’ interest (among them the odd dandelion or aster, scotch broom for some, borage and mustard in late summer), what conclusions are to be drawn regarding quantity and timing of feeding pollen supplements during the annual cycle on the Oregon coast?

We strongly recommend that you read through this valuable document before Dr. Sagili’s presentatione regarding varroa treatments and pollen patties at our May meeting.

And That’s Not all: Native Bee Identifying Keys (also Free!)

This time of year, we may expect to start seeing native bees. We suggest you look into these identifying keys. before Dr. Andony Melathopoulos’s presentation June. Better still, print them out and have them available when the bees come bumbling! Learn to distinguish the boys from the girls!

https://ir.library.oregonstate.edu/concern/technical_reports/xg94hz59f

Bottlenecks and beehives: How an invasive bee colony defied genetic expectations

(Edited from articles in Phys.org and Popular Science)

Swarm of invasive Apis cerana in Cairns, North Queensland. *Credit: Ros Gloag, 2016*

For more than a decade, invasive Asian honeybees have defied evolutionary expectations and established a thriving population in North Queensland, much to the annoyance of the honey industry and biosecurity officials. The arrival of the initial colony was of concern to Australian biosecurity because of the parasites the bees can carry. Ultimately these bees were found not to be carrying the most feared of its parasites, the varroa mite, which has since arrived in Australia by an unknown route, threatening the domestic honey industry.

Research published February 29 in *Current Biology* has shown the species, Apis cerana, has overcome what is known as a genetic bottleneck to grow from a single swarm into a population of more than 10,000 colonies over a 10,000 square kilometer area—which is about the size of Greater Sydney. The study was done in collaboration with scientists at York University (Canada), IPB University (Indonesia), Bandung Institute of Technology (Indonesia) and the CSIRO (Australia).

They found that the tens of thousands of hives now buzzing across northeastern Australia likely originated from a single bee colony (one breeding queen and her workers), introduced to a Queensland port around 2007. Asian honey bees are native to a wide swath of Asia, from Afghanistan to Japan. In their home range they're critical pollinators and an important part of the ecological web. But in Australia, where the honey bees aren't native, they may compete with native insects, birds, and mammals for flower resources, and nest in tree cavities that would otherwise offer important habitat for native species.

The closest native population to Australia is in Indonesia, but people brought the insects to New Guinea in the 1970s for their honey and farming purposes. And this is where the colony that made it to

Queensland shores came from, according to the new study. The researchers compared genome sequences from the native Indonesian population, the introduced New Guinean colonies, and the invasive Australian hives and found that the Australian and New Guinean bees were mostly closely related.

Despite that extreme initial genetic bottleneck (a single queen and her workers), over the course of just 10 years, the insects started re-diversifying and adapting to their foreign habitat via natural selection, according to the research. One queen bee held enough genetic diversity to kickstart an entire, viable population. “Our data support the view that genetic bottlenecks may have little impact on adaptive potential,” write the study authors.

The researchers looked at how the Australian bees’ whole genomes were changing each year from 2008 to 2018, as the insects’ numbers exploded to an estimated 10,000-50,000 colonies. Through a multi-step analysis, they pinpointed 481 tiny genetic variants (known as single nucleotide polymorphisms or SNPs) that could be having an outsized impact on bee survival, and appear to be undergoing positive selection. They found that several of the genes are related to reproduction, honey bee caste development, and foraging behavior–all traits likely to be important for survival and managing a new environment.

In other words, these 481 gene alterations spread through the population in a non-random pattern that suggests they’re beneficial to the bees. 471 of these variants could be traced back to the Indonesian or New Guinean bee population–indicating that almost all of these adaptations were carried by that first colony in Australia, while just a few could be the product of new mutations. “A species can adapt very rapidly, even when most genetic diversity is lost,” says co-senior study author Ros Gloag, an evolutionary biologist at the University of Sydney School of Life and Environmental Sciences. “It’s because natural selection finds *something* to work with, even when diversity is low,” she adds.

Access to this comprehensive sample set allowed the scientists to re-sequence entire genomes of 118 individual bees collected over 10 years. "We could essentially observe natural selection acting over time in a population that started with low genetic diversity… relative to their native-range populations," Dr. Gloag said. "From this unique vantage point, we could see that selection was acting on the variation in genomes that had arrived with the handful of original bees. It wasn't variation that arose later by mutations…. While this might be bad news for environments coping with newly arrived invasive species, it's potentially good news for populations that have temporary crashes in the face of climate change or other natural or human-induced disasters, such as bushfires."

“We weren’t expecting to find selection,” says lead researcher Kathleen Dogantzis, a biologist at York University in Toronto. Usually, patterns of natural selection take a long time to emerge. “The assumption is that it takes populations a lot longer to get acclimatized and adapted to a new environment. But we were able to show that, in a very short period of time–within this 10-year period–certain regions of the genome are contributing,” to the bees’ population growth, she explains.

The research team highlights the importance of this case study for understanding population resilience in general. "This is even more important as we observe many species dealing with anthropogenic climate change," Dr. Gloag said.

There are some limitations to how widely these findings, alone, can or should be extrapolated. For one, “we can only observe invasions if they’re successful,” says a co-researcher – which means there’s an inherent data bias. Nobody knows how many Asian honey bee colonies reached Australia before the one that led to a successful invasion. So, though it’s possible for one colony to multiply and diversify, it certainly shouldn’t be an expectation in conservation efforts, he adds. Plus, honey bees and other social

insects have certain advantages when it comes to populating new habitats. Queens can mate with multiple males and store their sperm, continually laying eggs that reflect the diversity of more than one paternal line.

Then, there are inherent limits to the researchers' genetic analyses, says Natalie Hofmeister, an assistant professor of evolutionary biology at the University of Michigan who wasn't involved in the new study. The approach can detect patterns and suggest likely correlations, but not prove causes of genetic change, she explains. Hofmeister further notes that the methods the researchers used weren't developed to pick up on rapid evolutionary changes and it's possible (though unlikely) that the 481 SNPs weren't the result of selection.

Nevertheless, "it's an elegant study," she says, that adds to a growing body of research on the evolution of biological introductions and sets up lots of future hypotheses worth testing. To better protect against future species invasions and understand what allows some animals to succeed over others, we need more research like this across taxa, Hofmeister says.

An American researcher not involved with the study, Dr. Suarez, agrees. The strategy of looking at whole genomes at multiple time points is "really exciting," he says. Though species invasions carry many environmental downsides, the silver lining is that they present unique opportunities to study evolution in action. In his view, the research sheds light on how one particular insect invasion has unfolded, but also boosts our broader understanding of what's biologically possible and how to gauge the risk of future species introductions–just a single colony can spur a whole population. The knowledge, Suarez says, could potentially help both those trying to control the spread of harmful animals and conservationists seeking to save endangered animals with dwindling populations. "There's so many lessons that we can learn across biology from this sort of approach," he says.

Controversial Bill to ban pesticides toxic to bees takes a key step forward in the Vermont House

Edited From an article by Abagael Giles, Vermont Public, Published February 28, 2024

A bill that would ban most uses of neonicotinoid pesticides in Vermont took a key step forward Wednesday, February 28, when it was passed by a vote of 8-2 out of the House Committee on Agriculture, Food Resiliency and Forestry.

The insecticides are used widely on corn and soybean seeds nationwide and in Vermont. They're also sprayed on apple trees and fruits and vegetables and have been linked to pollinator decline. Although widely hailed by the industry as a necessity, a 2020 study from Cornell University found the seeds were more costly and yielded no substantial benefit in terms of crop yields for corn and soybeans.

And since the pesticides are notoriously toxic for bees and other pollinators, lawmakers and some environmental groups in the state, as well as beekeepers and many farmers, say it's time to do away with them. Beekeepers came to the Statehouse on Tuesday to urge members of the House agriculture committee to vote in favor of advancing the bill. Bianca Braman, a commercial beekeeper from Swanton who is vice president of the Vermont Beekeepers Association, said that at 35% to 85%, Vermont's rates of colony loss for honey bees are untenable. Andrew Munkres, a commercial beekeeper from Cornwall, said he's tired of seeing catastrophic hive loss every year, and that pesticides are a part of the problem. "This isn't just a nice thing," Munkres said. "This bill is really critical for the survival of the beekeeping industry in Vermont."

Ontario, Quebec and the European Union have already adopted bans on coated seeds, and New York state is in the process of phasing them out by 2029.

The House bill sets Vermont on a similar timeline, something the Champlain Valley Farmers Coalition and NOFA-VT say they support. Under the bill, the prophylactic treatment of corn and soybean seeds with neonicotinoids would be banned in Vermont, starting in 2029. Vermont's bill goes further than New York state's law, proposing a ban on outdoor spraying for most leafy vegetables and ornamental plants in 2025. It also bans spraying neonicotinoids on turf fields, like golf courses.

The House committee carved out an exemption for fruit growers, who testified they usually apply the pesticides once or twice a year and need them to combat apple maggot. The bill would restrict orchards from spraying with neonicotinoids when fruit trees are flowering and pollinators are more likely to be impacted directly. Orchardists said this provision worked for them.

Williamstown Republican Rodney Graham pushed for a last minute amendment that would change the bill to be an outright ban on spraying neonicotinoids. He said that would do the most to protect pollinators in the state. Graham, who is a dairy farmer, said this special provision for fruit growers was unfair to conventional dairy farmers, who use the vast majority of treated seeds. He expressed concern that lawmakers assumed orchards were following integrated pest management practices more closely than dairy farms are. "I learned a long time ago that bad policy is worse than no policy. And we are targeting one sector," Graham said.

Rep. Mike Rice, a Democrat from Dorset, said the carve-out represents a good and fair step toward restricting all neonicotinoids in the future. "This is not targeting any one group of farmers, or one approach," Rice said. "This is targeting pesticides, a group of pesticides." Rep. Henry Pearl, a Democrat

from Danville, said that farmers who grow corn in the state are feeling targeted by the current bill. Pearl, who is also a dairy farmer, said he would be more comfortable with the bill if it proposed an across-the-board ban on neonics.

“With things like water quality, we saw that there was a lot of regulation put on [dairy] farms,” he said. “And I’m not saying we didn’t need to do that. But it’s fallen on a particular subset of the population to do that work, and it’s been a real burden.”

Vice Chair Heather Suprenant, also a dairy farmer and a Democrat from Barnard, said she feels the bill gives farmers time to plan ahead.

“Of course we owe it to the farmers who were using treated seeds to provide a just transition away from dependency on harmful chemicals,” she said, speaking at the press conference earlier Tuesday. “This bill has sound safeguards in place to ensure that our agricultural community will not experience financial hardship.”

Pearl and Graham both voted against advancing H.706 on Wednesday, with every other committee member supporting the bill.

Off-ramps

Under the proposed legislation, the Agency of Agriculture, Food and Markets could issue an exemption order in the event a farmer or sector encounters a major economic threat like a pest outbreak, and the pesticides are deemed necessary to prevent devastating crop loss. Additionally, the bill calls for the agency to develop best management practices for neonicotinoids in Vermont.

Gov. Phil Scott opposes the bill, saying lawmakers should stick with the Agricultural Innovation Board’s recommendation from January that the state continue to do more research into neonicotinoids and try to get farmers to use less of them through outreach, rather than implementing a ban. “I learned a long time ago that bad policy is worse than no policy. And we are targeting one sector.”

The board was established in 2021 to reduce pesticide use in the state, and Scott said their report — which lawmakers called for — is independent and sound. Jason Maulucci, Scott’s chief of staff, said the proposed bill “needs work” and reiterated the administration’s support for the board’s recommendations of more studies and work to increase pollinator habitat.

But the largest summary of the literature on neonicotinoids is pretty conclusive, according to Cornell entomologist Scott McArt, whose lab looked at more than 5,000 studies comparing fields planted with treated and untreated soybean and corn seeds and found that in most cases, treated seeds didn’t appear to increase crop yields. His study did, however, find that the pesticides are very harmful to bees. For fruit, McArt found substantial evidence that there was a benefit to treating with neonicotinoids, usually by spraying. And while many of those trials were conducted in New York or eastern Canada, the administration says it wants to see more Vermont-specific trials like one that is underway at University of Vermont Extension.

The bill goes next to the House floor. [Note – there has been no additional news on the bill since Feb. 28.]

Club Info

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