THE MARIN BEEK NEWS

Volume 7, Issue 2 February 2015

What You Missed

Our last meeting featured a presentation by Tom Seeley, PhD, Professor and Chairman in the Department of Neurobiology and Behavior at Cornell University, Ithaca, NY.

Dr. Seeley's talk was entitled "The Bee Hive as a Honey Factory". He started by stating that he considered owning bee hives is the ultimate in capitalism. We own the bees and the hive but the bees do all the work.

Honey is winter heating fuel for bees. They start out with a raw material, nectar, and process it into the finished product, honey. There is a division of labor within the hive in order to make this process more efficient. The nectar is collected by foragers. They return to the hive with nectar to the nectar unloading area. The nectar is passed from the foragers to the food storer bees. The food storer bees will either pass the nectar on to other bees for storage in the comb or place it into the comb themselves.

The general age distribution of worker bees in a hive is:

- Nurse Bees – young (usually 1 to 10 days old)
- Food Storer Bees – middle age (10 to 19 days old)
- Forager Bees – elderly (16 to 28 days old)

However, the "Honey Factory" has to operate with an ever changing supply of its raw material, nectar. There are always booms and busts in nectar availability. How do the bees capitalize on a nectar flow? The hive will need to mobilize more foragers and activate more food storers.

1. Mobilize more foragers.

   Foragers communicate the location of a nectar source using the waggle dance. How well does the waggle dance boost the number of bees collecting nectar? Dr. Seeley conducted experiments on an isolated island where there was no natural forage. He brought along a patch of flowers, moving them to various locations on the

See What You Missed on Page 2

What's the Buzz?

Our next meeting will be on Thursday February 5, 2015 at the American Legion Log Cabin, 20 Veterans Place, San Anselmo, CA starting at 7:30 pm. The meeting will feature Jay Evans, researcher at the USDA lab in Beltsville, Maryland.

His work has spanned a wide range of topics including genome characterization of varroa mites and managing diseases and pests of honey bees.

Jays talk is titled "Honey bees: Up with the Good!"

Most of the dialogue and research related to honey bee health has focused on the bad actors: pathogens, parasites, and chemicals. While these factors do hurt colonies, there is also a strong undercurrent of research focused on ways bees and beekeepers resist, tolerate, and ignore the insults sent their way. Jay will cover recent work on improving honey bee nutrition, identifying disease resistance traits, and managing bees to be stronger in the face of disease and other threats. He will also discuss recent work on the microbes residing in the honey bee digestive tract, and the beneficial roles these microbes play in bee health.

See What's the Buzz on Page 3

What you missed continued from Page 1

island to see how the bees would react.

How effective is the waggle dance in boosting the number of bees collecting nectar? Dr. Seeley found that it was very effective. The number of bees collecting nectar increased dramatically once the bees discovered the nectar source.

What else is used by the bees to boost the number of foragers? Dr. Seeley found that the foragers use what he calls the "Shaking Signal" to wake up other foragers. Foragers actually go to sleep at night and on days of poor weather in order to save energy. The sleeping forager bees become immobile, hanging limply inside the hive. Their breathing slows, there internal temperature drops and their resistance to disturbance increases. An active forager will circulate around the hive finding other foragers that are asleep grab the sleeping bee and shake her until she awakes. Shaking signals are produced strongly when foragers need to wake up, either in the morning or after rainy weather.

2. Activate more food storers.

When foragers return to the hive but experience a long search time to find food storers they start to perform the "Tremble Dance". The tremble dance puts out the signal that more food storers are needed to unload the nectar from the forager bees. House bees will sense the message and convert from other jobs in the hive to food storer bees. The dance is only performed by successful foragers. The forager will shake her body but does not grab another bee. It is not cyclic like the waggle dance. Karl von Fitch first observed this dance but didn't know its significance.

In 1990 an experiment by Dr. Seeley solved the mystery of the tremble dance. The experiment was set up in an isolated area with no natural forage. An observation hive was set up with a feeder nearby. The bees were trained to the feeder and were labeled as they visited the feeder. At the hive the food storer bees were also being labeled. In the evening the food storer bees were removed from the hive to make it more difficult for foragers to get unloaded. He wanted to find out if the foragers would be discouraged from performing the waggle dance.

The foragers stopped waggle dancing and started to perform the tremble dance to encourage more house bees to convert to food storers. The effect of the dance is to activate additional bees to serve as food storers. This helps to bring the collecting and processing of nectar back into balance.

Dr. Seeley added to the experiment by manipulating the number of foragers that were allowed at the feeder.

Period 1: No restrictions at the feeder - most bees waggle dance.
Period 2: Increase the number of bees allowed at the feeder – most bees do the tremble dance (they are having trouble getting unloaded).
Period 3: Shut off the feeder completely – bees are back to the waggle dance (no trouble getting unloaded).

He observed that the foragers cycle between waggle and tremble dancing to regulate the processing of nectar. The type of dance the foragers performed is dependent on the length of time it takes to get unloaded.

A few other signals that the bees use to communicate with the hive:

Beep signal – This is used to stop the waggle dance when it is not appropriate. A forager will head-butt the waggle dancer while making a beep sound, repeating the motion until the waggle dancer stops.

Bleating signal – Some bees will be heard to bleat, like sheep. Dr. Seeley doesn't know what this signal is used for but is confident that the mystery will someday be solved.

Dues are Due

Annual dues for 2015 are now due. Dues remain at $20.00 for the calendar year 2015. New members who joined in October or later are considered paid through 2015. The payment of dues will be delinquent if not received at the February meeting.

The best way to renew is do it on the Website: **www.marinbeekeepers.org** and pay using PayPal or a Credit Card. You do not need to "Sign In". Just click on **"Become a Member"**, scroll down to: **"To join, complete the following form:"** Then check the circle by **"Renewing Member"** and fill out the form with your current information. There is a small service charge to PayPal for the processing of the payment.

Or you can mail your renewal check for $20.00 payable to Marin Beekeepers to our Treasurer:

Mary Nordquist
2072 Hatch Road
Novato, CA 94947

You can also renew at the meetings as you come in the door, by cash, check or Credit Card.

Beekeeping Classes

Bonnie Bee & Co. Fall and Winter Classes

Class room sessions at the San Rafael Community Center, 618 B St., San Rafael, 6:30pm - 8:30pm Additional information and registration in the 'Youth and Adult' classes through San Rafael Community Center

Intermediate Beekeeping class series (9 hours, $99, course code 22402)

You've got your colony through winter (or not) - now what? Class sessions will include how to clean up your equipment, expanding hive size for spring, swarm prevention- and if that fails, swarm capture, setting up bait hives for swarms, identification of common pest and diseases and management options for them. Topics will also include dealing with special situations: aggressive hives, queen failures, and laying workers. Field day will include information on how to split a colony, pest and disease ID, and swarm prevention.

Classroom sessions: Wed., Feb 11th – Wed., Feb 25th (3 sessions)

Field Day: Sat., Mar. 14th, 1:30pm – 3:30pm

From the Librarian's Desk

A new exhibit has just opened at the Oakland Museum of California:
Bees: Tiny Insect, Big Impact
January 31–September 20, 2015

This new exhibition in the Gallery of California Natural Sciences takes a look at the wildly diverse and intricate world of one of the most important creatures to human agriculture and the natural environment. Through family-friendly experiences, hands-on activities, and media, *Bees: Tiny Insect, Big Impact* touches on topics of honeybees and Bay Area beekeeping, the diversity of California native bee species, citizen science projects, and the similarities between bees and humans. Discover real bee specimens under a microscope, crawl through a human-sized beehive, and try on a beekeeper suit. The exhibition continues outside of the Gallery: get involved with citizen science organizations, check out bee hotels installed in the OMCA gardens, and take home guides on planting a bee-friendly garden and building bee hotels for your own garden. In an immersive gallery environment, explore the causes of bee population decline, learn about the significance of bees to California's economy and ecosystems, and discover how simple but powerful actions by Californians can help bees to survive in a changing world.
http://www.museumca.org/exhibit/bees

and back to the library …

Our newest acquisition is a DVD entitled Swarm Plus, which looks at different examples of honey bee swarms and what to do after the catch. Thanks to Richard Hyde for this donation!
Calling all borrowers … Please remember to return your library item at this week's meeting and be eligible for a fabulous prize in our Lucky Library draw. One benefit of your Club membership is access to the library and we appreciate items being returned in order to circulate to the Club.

What's the Buzz continued from Page 1

Upcoming Meetings:

March 5, 2015

Christina Grozinger, PhD, Professor of Entomology and Director, Center for Pollinator Research, Penn State University. Her areas of expertise are: pollinators, genomics, immunity, behavior and physiology.

Her topic is: "Bee health: from genes to landscapes"

April 2, 2015

Elina Nino, PhD, Extension Apiculturist, University of California, Davis.

May 7, 2015

Marla Spivak, PhD, Distinguished Knight University Professor at the University of Minnesota.

June 4, 2015

Mark Winston, PhD, Academic Director and Fellow of the Centre for Dialogue, Simon Fraser University, Vancouver, BC.

July

No meeting (Marin County Fair)

Hive Tips

Please note: What is status quo in one area might not apply at all to the bees just a few miles away. Pay careful attention to what you are seeing with your own hives before applying recommendations found here (or from any other beekeeping resource).

- With the temperature climbing above 60 degrees on many recent days, you can check your hive if needed. If you do so, have a plan for why you are going in and what you are looking for. Plan to inspect during the warmest part of the day and keep your inspection as brief as possible. Inspecting at this time of year for curiosity sake could potentially do more harm than good, though a well planned and executed inspection could save a colony from starvation, mites or congestion that made lead to swarming.

- When will swarming start this year? Hard to say, but looking back at last year's notes, it seems that despite our sunny days and warm nights of late, overall the drone build up has been a little slower this season. Last year, the first reported swarm was on February 22nd. No telling when it will be this season! Nonetheless, it's never too early to start thinking about swarm prevention! And to do that, you need to make sure there is adequate space in the brood chamber.

- Strong hives may be building quickly. If your bees are starting to get crowded, add more space. Most importantly – be sure there is contiguous space in the brood chamber. If you add additional space, but there is only honey between it and brood area, you will not prevent brood area congestion – which is the cause of swarming. If you have frames with comb built out, it might be best to add those at this time of year as temperatures are not ideal for comb building.

- Bees not quite ready for more space above? But you are concerned about swarm prevention? Add space BELOW. A super below your other hive bodies will give queen potential space to expand into and also give space to returning foragers.

- Adding extra space to a weaker colony will just make it that much harder for them to keep the brood cluster at the right temperature. How can you tell? One indication will be if the foragers are leaving the hive early in the morning. If the foragers can leave during colder times of the day, then it may be an indication that they have enough workers to maintain the brood cluster temperature and still have workers to spare for foraging.

Do your bees need food?

- Colonies (particularly smaller ones) that overwintered successfully may be building up quickly with our warm weather and available forage. But, some may be doing so hand to mouth and putting all their food resources into brood production. This could even lead to starvation if we get successive days of rain and bees are kept inside – and capped brood starts to emerge. Overall, there appears to be sufficient nectar and pollen resources, but be mindful of brood / food ratio so you can intervene if needed if weather conditions change suddenly.

  Considering splitting? Seems a little early right now.

- Keep in mind that research shows that well mated queens do better in the long term. That means plenty of drones out flying during queen mating flights. It takes 24 days for drones to go from an egg to cell emergence. It takes an additional 14 days to reach full maturity.

- Very few drones seem to be flying now, but most colonies seem to have some drone brood. It may be a few cells worth, or may be a frame, but either way, it seems we have a little time until queen mating will be optimal.

Time to start thinking about bait hives!

- First swarm last season (2014) was reported on February 22nd. No telling when it will start this season, but it's not too early to set out your bait hives! If you plan to set out bait hives this year, now is a good time to do so.

- Review Tom Seeley's book, Honeybee Democracy, for complete details on what his research has shown that swarms prefer in a nesting cavity.

- No time to read? Local beekeepers report success with the following set up:

  1. Deep hive box.

  2. A couple of frames with empty built out combs (if you have them) in the center surrounded by empty frames with starter strips (or just empty space – but you'll need to add frames soon

See Hive Tips on Page 5

Hive Tips continued from Page 4

after they move in or else they will start building from the top of the box).

3. Entrance reducer set to medium
4. Box above the ground 2-3' (higher if you are able)
5. Optional: Spray lemon grass tea (boil lemon grass until you make a dark tea) or other substances mimicking queen pheromones on the top of the frames and entrance of the hive.
6. Wait to observe scouts!

Have a bait hive tip? Post it to the Buzz!

Check for Strong Hives That May Need More Space!

Marin Bee Census

The results of the census are here! To view go to: http://bonniebeecompany.com/wp/projects/2009-present-marin-county-bee-census-survey/