The Bee Line

Newsletter of the Oregon State Beekeepers' Association

Volume 34, Number 5 **June 2009**

Dewey Caron

IN THIS ISSUE...

Image above: Colonies of honey bees await their move this past spring to pollinate pear in the Hood River Valley, the largest pear-growing region in the United States.

Front story: This essay on the bee dance, written by a young woman from Yamhill county, placed first in Oregon and third in the national essay contest sponsored by the American Beekeeping Foundation. Helen Pease, Program Coordinator, 4-H Youth Development, Corvallis, notes that the competition appeared to be pretty stiff this year.

Congratulations, Traci!

THE DANCE LANGUAGE OF BEES

2009 4-H Essay Contest

Traci Sirotiak

Scientists have always found animal communication to be a fascinating topic. The dance language of honey bees was one of the very first to be studied and interpreted. The fact that honey bees are able to accurately annotate the distance and location of a food source to their hive mates through intricate dances was a thrilling discovery.

Despite popular belief, the honey bees' dance language was not just recently discovered. It was first observed and noted by Aristotle as early as 330 B.C.[i] However, it was not studied in depth until Karl von Frisch, a German professor of zoology, played detective in the mid-1900s.[ii] He spent many years studying and interpreting honey bee communication. Along with his students, he dutifully carried out decades of experiments in an attempt to correctly interpret the exact body language bees use to talk to each other. He utilized glass-walled observation hives combined with paint-marked bee foragers to observe their dances. Frisch and his students trained these forager bees to find food sources he strategically chose for his experiment. After the foragers had collected food from these sources, he documented the way in which they communicated the locations to other hive mates.[iii] His book, *The Dance Language and Orientation of Bees*, published in 1967, presents his findings from his fifty years of devout research. In 1973, Frisch received the Nobel Prize for his discoveries.[iii] His exploration of the dance language of honey bees allowed future generations to grasp the concept and expand on his hypothesis.

Frisch concluded that different dances suggested different distances from food sources. Bees engage in several variations of dance. Bees will perform a round dance, sickle dance, the wag-tail dance, and several transitions between the round dance and the wag-tail dance.[iv] The two which Frisch studied and described in depth were the round dance and wag-tail dance.

If less than fifty meters from the hive, the forager performs a round dance. The bee flies once or twice in a small, tight circle, and then suddenly switches directions. It continues this motion several times over the honey comb to alert other bees and get them interested. The other hive members are symbolically invited to search the immediate vicinity

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The Bee Line

The Bee Line is the official publication of the Oregon State Beekeepers' Association. The newsletter is published ten times a year, and subscriptions are included with membership in OSBA.

Please send news about your bees and your experiences in keeping them, as well as corrections, letters, comments, photographs and stories (old and new), interviews, and requests for advertising to: Editor, *The Bee Line*, 4803 SE Woodstock Blvd Ste 157, Portland OR 97206; e-mail: osba.newsletter@gmail.com.

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Please submit copy by the 10th of the month prior to publication. The next issue will be the July 2009 issue. Contact the Editor with any questions or concerns.

Many thanks!

MESSAGE FROM THE PRESIDENT

The bee year started for many in January, getting ready for the migration to California. For those with only a few hives, and not so foolish, the start always seems to be the time when the maple trees bloom. It is now well past the start for all of us.

If you have a few hives or many, the apple trees are blooming and honey supers should be on your hives. Before long the blackberries will bloom, and the main honey flow of the Willamette Valley will be on. A little late this year, but by the time you read this you will be well on the way to your best honey crop ever.

Dr. Ramesh Sagili, the research/extension scientist for apiculture at Oregon State University, is off and running. I do mean running. He gave an outstanding presentation at the Bill Ruhl Memorial Bee Day in Colton during April. He was the speaker at the Portland-Metro beekeepers meeting and has other engagements scheduled.

Twenty-four colonies of bees were donated by state beekeepers for Dr. Sagili's first statistical studies at Oregon State. The study will be the effect of different pollen sources on bee nutrition. More bee equipment is needed.

Do you have a few good western supers or the frames for the same not being used? Maybe the next time you go to the bee supply store you might purchase a few extra frames and donate them to the future of beekeeping in Oregon.

Do you know how you will extract your honey crop? Attend your local beekeeping club's meeting and check if they have a club extractor for rent, or if several members get together and extract their honey together. If you wait until August or September to start your planning, the plan will most likely fail.

Speaking of planning, have you made plans to be in Seaside for the Northwest Corner Beekeeping Conference this November? Let's get together for the latest information to help those bees survive and prosper. See you there.

—Chuck

ARE MICROCYSTIN TOXINS A POSSIBLE CONTRIBUTING FACTOR TO COLONY COLLAPSE DISORDER?

Michael J. Healy, Ph.D.

Not too long ago coal miners routinely brought canaries below ground as an early warning system to detect the presence of toxic gas. If the canaries stopped singing and/or fell to the bottom of their cages, the miners knew that they had to quickly exit the mine. Is it possible that honey bees, specifically their massive die-offs due to Colony Collapse Disorder (CCD), are an inadvertent early warning system for the increasing incidence and concentration of microcystin toxins being produced in freshwater ponds and lakes throughout the US and beyond? Should microcystin toxins (Mcts) be added to the ever lengthening list of possible causes of CCD? This article has been written with the purpose of exploring the possible connection between CCD and Mcts along with offering up a theory (or two) and summarizing a beginning laboratory study to test hive surfaces for Mcts. My goal is that qualified researchers dealing with this specific toxin will begin a communication process with entomologists studying CCD.

By profession I am a turfgrass disease scientist in private practice in southern Alabama close to the Gulf of Mexico. Diseased, and suspected diseased, samples of mostly golf course putting green turf are sent to my diagnostics lab from five southeastern states.

In May 2007, I made, for me, what was a startling correlation between a toxin being naturally produced in a golf course irrigation pond and the presence of a hard-to-explain disease or disease-like problem on putting green turf. Since that first positive correlation, I've gone on to survey golf course irrigation ponds throughout the Southeast, with fully 50% of the ponds tested testing positive for microcystin toxins.

In the late summer of 2008 I attended a presentation by Roger Simmons, the past president of the Baldwin County (Alabama) Beekeepers Association. In his presentation he spoke at length about CCD and how it was seriously impacting honey production in our county. I ended up speaking briefly with Roger after his presentation and then several times more by phone. It was Roger who corrected my misconception about nectar being the only liquid being brought into a hive. Once I realized that bees do transport water back to the hive, it occurred to me that my finding of a number of irrigation ponds in our county testing positive for Mcts could be significant. I was invited to attend a meeting of the Baldwin Beekeepers, at which time a theory about bees skimming water and possibly picking up either free toxin and/or bacterial cells containing the toxin evolved into an actual theory.

The next step in this evolving theory was to work out a method by which hive surfaces could be sampled in a way that would allow the collected samples to later be analyzed for Mcts. For this step I contacted Envirologix, Inc. of Portland, Maine, one of the several companies in the US having developed very sensitive laboratory and field-based tests for the detection of Mcts. Based on Envirologix advice, a simple test kit allowing beekeepers to sample selected hive surface areas was created. Consultation with Baldwin's Beekeepers indicated that the most likely areas where water (possibly containing the toxin) might accumulate and evaporate were the inside surface of the top cover along with the top wood surface of the upper-most frame.

A call to Paul Kruger, an entomologist friend living in New Jersey, led me to his beekeeper cousin, Reno Plenge, living and maintaining hives in the Florida Panhandle area. Reno (recently elected as president of the Florida State Beekeepers Association) thought my theory interesting enough to offer to provide hive surface testing in his area. Reno's sampling was to take place in Bay County, Florida, where I had also previously found irrigation ponds testing positive of Mcts.

So what are Mcts? How and where are they produced? What are their known toxicity properties? If you Google® *microcystin toxins* you will come up with literally millions of references, with the top listed relating to their potent liver toxicity. That toxicity is so potent that in many parts of the world there are regulations in place attempting to keep sources of drinking water at 1 part per billion (ppb) or less Mcts. Significantly, down the list of Google® hits you

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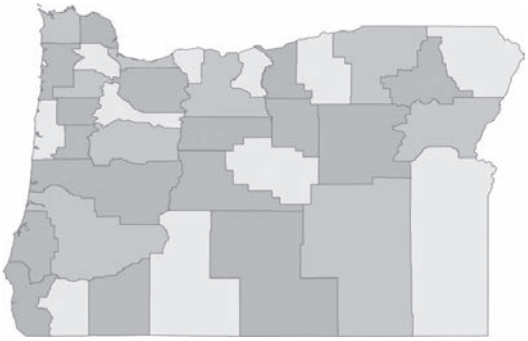
OREGON STATE BEEKEEPERS' ASSOCIATION RESOURCES



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OSBA REGIONAL ASSOCIATIONS

Central Oregon Beekeepers
Meets 6:30 PM, third Tuesday, Bend
Deschutes Public Library, Hutch Rm
President: Dennis Gallagher
(541) 389-4776
Secretary/Treasurer: Glenda Galaba
(541) 383-1775

Coos County Beekeepers
Meets 6:30 PM, third Saturday (except December)
Olsen Baxter Bldg, 631 Alder St, Myrtle Pt
President: Shigeo Oku; (541) 396–4016
Vice President: John Gardner; (541) 572–3847
Secretary: Bobbi Gardner; (541) 572–3847
Treasurer: Jane Oku; (541) 396–4016
jane_oku@hotmail.com

Lane County Beekeepers
Meets 7:30 PM, third Tuesday, Eugene
EWEB Meeting Rooms, 500 E 4th Ave
President: Katharine Hunt; (541) 607–0106
cwhunt@uoregon.edu
Vice President: Judy Scher; (541) 344–2114
judy_scher@catdreams.com
Secretary: Chuck and Katharine Hunt
(541) 607–0106; cwhunt@uoregon.edu
Treasurer: Nancy Ograin; (541) 935-7065
woodrt@pacinfo.com
Web site: www.lcbaor.org

Portland-Metro Beekeepers
Meets 7 PM, second Thursday, Oregon City
Clackamas Comm College, Clairmont Hall, Room 118
President: Kerry Haskins
(503) 632–8448; kh251@aol.com
Vice President: Jim Mellis; (503) 631–4622
Secretary: Paul Hardzinski; (503) 631–3927
Treasurer: Barbara Derkacht; (503) 631–3063
bderkacht@yahoo.com

Southern Oregon Beekeepers
Meets 7:30 PM, first Monday, Central Pt
So Or Res & Ext Ctr, 569 Hanley Rd
President: John Jacob; (541) 582–BEES
john@oldsolenterprises.com
Vice President: Floyd Pawlowski
415 Pompadour Dr, Ashland; (541) 482-4797
Secretary/Treasurer: Julian Lewis
(541) 535–5817; lewis_adams_00@yahoo.com
Web site: www.southernoregonbeekeepers.org

Tillamook County Beekeepers
For meeting and other information about the group, please contact:
President: Bob Allen; (503) 322–3819

Tualatin Valley Beekeepers
Meets 7:30 PM, last Friday, Beaverton
OSU Ext, #1400, 18640 SW Walker Rd
President: Herb Brasington; (503) 701–4180
herb@hwbsystems.com
Vice President: Paul Anderson
paulanderson@triteksolutions.com
Secretary: Jerry Maasdam; jmaasdam@mac.com
Co-Treasurers: Brigette and Michael Hendrickson
mdhendri@gmail.com

Willamette Valley Beekeepers
Meets 7 PM, fourth Monday, Salem
Chemeketa Comm College, Bldg 34, Rm A
President: Richard Farrier; (541) 327–2673
Vice President: Harry Vanderpool; (503) 399–3675
shallotman@yahoo.com
Secretary: Mike Rodia; (503) 364–3275
drodia@yahoo.com
Treasurer: Gordon Kroemer; (503) 538–2307
kroemer2@verizon.net

REGIONAL ASSOCIATIONS

Central Oregon Beekeepers

I presented a six-hour bee school in Bend on May 2nd. There were 80 people in attendance that are now members of the Central Oregon Beekeeping Association. The Bend membership is a strong group of open-minded bee enthusiasts, and we can expect great things to come out of this group in the future. Congratulations are in order to the Bend association for their efforts in securing an excellent location for the class and for their skills in promoting this two-day event. The event was covered by the local newspaper and by KOHD-TV News.

—*Thom Trusewicz*

Lane County Beekeepers

June will be very busy for Lane County Beekeepers Association members. The club will have their annual Field Day on Saturday, June 20th. Lynn Royce has very kindly agreed to host this event at her apiary located west of Corvallis. Saturday, June 27th, will see our newsletter editor Jonathan Loftin take part in a panel discussion during the Sustainable Lifestyles Festival to be held near Pleasant Hill. On Sunday, June 28th, members will host an information booth during the annual KLCC Garden Tour in Eugene. About 2,000 people attend this garden tour, which raises funds in support of the radio station. Also, in July members will care for an observation hive and host an information booth during the 40th Oregon Country Fair!

—*Katharine Hunt*

Tualatin Valley Beekeepers

Dewey Caron spoke on Swarm Controls at the April meeting. He also conducted a survey in which he asked for information on winter losses and Varroa mite controls. Nine individuals (about half of those present) responded. Their median number of years of beekeeping experience was 4 years (range, 1–40+ years), and the median number of colonies managed was four colonies (maximum, 35 colonies). Of 97 colonies going into the winter, 17 were lost. Seven of the respondents indicated they used screen bottom boards, four reported that they used powdered sugar, and four used a miticide chemical. As heavy as these losses were, TVBA beekeepers had considerably lower losses than other Oregon beekeepers surveyed during the same week (see *Around the State*, this page). Paul Anderson will speak on *Why Your Honey Is Better and Worth More* at the May meeting.

—**Adapted from**: May 2009 *TVBA Newsletter*

AROUND THE STATE

Dewey Caron

Last month I wrote about successful spring bee schools in Southern Oregon. Bee schools in the Valley and elsewhere also were well attended. On Saturday, March 7th, over 70 *sold out* the basic bee school in Eugene, and 40+ attended the February Willamette Valley bee school in Salem. Thom Trusewicz had over 25 in Astoria. The Tualatin Valley offering had 32 registrants, and the Bill Ruhl Memorial Bee Day at George Hansen's had 160 in attendance. Both Ruhl and GloryBee had record sales of packages the week before Easter. In Bend, 84 attended the bee school the first weekend of May, and most came to an open hive in the cold and rain the next day. Great articles on beekeeping in the *Oregonian* and local newspapers helped spur attendance at the events.

The challenge to follow up successful instruction of *newbees* will fall to the associations. Association meetings include a mix of experienced and new beekeepers. Most groups try to include timely tips and Q&A sessions in addition to a featured speaker. Mentors are important to new beekeepers, and Oregon bee groups seem to be doing an excellent job of hooking new beekeepers with a more-experienced beekeeper in their area. We need to continue to facilitate this mentoring.

I've recently completed an informal survey of overwintering losses in Oregon. Of 96 total part-time/backyard Oregon beekeepers, the loss of 142 colonies of a total of 550 colonies entering the winter represents a 28.5% loss. Comparing *newbee* losses (1–3 years experience, loss rate = 28%) with those of more-experienced beekeepers (4 or more years experience, loss rate = 29%) or looking at those who

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***Stateside**—Continued from page 5*
used screen bottom boards (59%), powdered sugar (47%), or miticide, which includes acid or Apistan (42%), neither experience nor management aids seems to make a difference.

Perhaps this indicates that Increase Management and Requeening are skills we need to concentrate on, in addition to successful overwintering of newly established colonies. Toward a goal of reducing annual losses and to complement the very successful and excellent beginner bee school offered this spring, I am helping organize three intermediate-level workshops this fall: August 15 in Medford, early September in Corvallis (OSU), and September-October at Ruhl Bee Supply in the Portland area. Although we may have to expect continuing heavy losses, additional management skills will be of use in improving the science and art of beekeeping.

A COMMUNITY PROJECT

Rose Sabel-Dodge, who owns a small craft store specializing in fiber arts (*Gossamer*, on Burnside in Portland), reports that she and artist Susan Lake decided to try a fiber art community project that would bring awareness and honor the honey bee. Rose writes, "I believe by creating beauty, we create awareness and a connection to what's around us." Their first meeting brought ten interested crafters. Following that meeting, over 35 (and counting…) people have taken part in the project, creating bees using needle felting, crocheting, knitting, and sewing, for a window display. There is also a hive created out of wool by Susan Lake and a meadow floor quilt created by "lots of people!"

The creators are all ages, both male and female. *Gossamer*'s after-school *Raindrop Knitting Club* has contributed as well as has a small group of middle-school boys. There are mother/child teams, talented artists like Stacy Polson, Barbara Cutts, and Marie Barton, and many more whose names are to be listed in the window. The project will be in the window starting on May 23rd. A raffle is part of the opening celebration, and all the money contributed will be donated to: The Northwest Apiculture Fund for Honey Bee Research, Extension and Education.

Thanks to all involved!

SOME PRIMARY & SECONDARY NECTAR-PRODUCING PLANTS IN OREGON'S JUNE

Common Name	Pollen	Sugar Content (%) Floral	Stipule
Grape	yes	60–75	
Locus	yes	60–75	
Vetch, common	yes	22	56
Vetch, hairy	yes	44	
Vetch, Hungarian	yes	44	25
Bachelor Button	yes	53	
Dandelion	good	51	
Mustard, common	good	50–70	
Jim Hill Mustard	yes	44	
Flax	yes	49	
White Clover	yes	40–44	
Strawberry Clover	yes	33	
Sunflower, Wyethia	yes	46	
Annual Sunflower	yes	32	
Alfalfa	yes	40	
Salal	no	30–60	
Star Thistle, Yellow	yes	38	
Milkweed	no	37	
Evergreen Blackberry	yes	35	
Himalaya Blackberry	yes	27	
Fireweed	yes	35–50	
Basswood	yes	34	
Snowberry, early	no	29	
Yellow Cleome	yes	11	
Figwart	no	20	
European Borage	yes	?	
Carrot	yes	?	

From: Information compiled from handouts presented to the Portland-Metro association by Anita and Lucien Alexander. Among additional resources of potential interest: *Pollination and Bee Plants* (gears.tucson.ars.ag.gov/beeclass/Pollination.pdf) and *Selecting Plants for Pollinators* (www.pollinator.org/pdfs/PacificLowlandrx8.pdf).

KEEPING BEES IN JUNE

Todd Balsiger

Blackberries are in full bloom this month; nectar flow will be at its zenith. Considerations are as follows:

- Super ahead of the need for space—it increases honey production and reduces swarming. You may want to walk through your apiary and reshuffle the supers away from hives that are lagging behind and give them to strong hives that are packing in the honey.
- If you have foundation to draw, get it on now. Summer's nectar dearth is around the corner. Continue to replace old, poor-quality brood frames with foundation. It is recommended to replace brood frames every five years.
- Remove and extract supers containing well-ripened honey—the moisture content should be around 17.8% or less. Honey harvested early in the season (June) has more moisture than late-season honey (late July/August). Avoid harvesting frames of uncapped honey early in the season or you risk having too much moisture. You can check the ripeness of uncapped honey in a given frame by giving it a hard downward shake. If there is a shower of nectar, then clearly it is too wet to extract.
- If you have hives around agriculture crops, then become familiar with the pesticides that are commonly used on them. Make inquiries—find out what's going to be sprayed, when, and its dangers to your bees. It may be very prudent to move your bees out. See OSU Extension Publication 591 for more information on how to reduce bee poisoning. [**Note:** The publication can be viewed at: extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf.]
- If you find hives with the beginnings of swarm tendency, remove the forming queen cells and rotate the brood boxes. Pull a couple of frames of sealed brood and fortify weaker hives. Put foundation in their place. Note that swarm cups are a natural condition in the hive; as a result, their presence does not necessarily mean the hive will swarm.
- Swarms issue one or two days after the first queen cells are capped! If you find capped queen cells, then there is a good chance the hive has already swarmed. If you think the hive has not swarmed, then one way to try to prevent it from swarming is to split it hard and make divisions from it. You may plan to make nucs from the swarm cells and allow the bees to raise their own queens. Some have the opinion that this is bad practice because it selects for swarminess. With the introduction of the Varroa mite and the benefit of breaking the brood cycle in reducing Varroa numbers, swarming may not be as bad today as in the past.
- Provide a steady supply of water.
- Continue to look out for American foulbrood.

CLASSIFIED ADS

Drum Picker for sale: This time tested and proven design allows a fork truck operator to easily secure, move, and release drums without leaving the seat of the fork truck. For use with open and closed head plastic, steel, and fiber drums with a top lip strong enough to support the weight of the drum. Includes safety to secure unit to the fork truck. Welded steel construction. Powder coat finish. Accommodates 30 and 55 gallon drums. Fork pockets measure 6-1/2 inches wide x 2-1/2 inches high usable. $279 OBO. Contact GloryBee Foods, Inc. in Eugene at (800) 456–7923, extension 110.

Extracting Equipment for sale: Cowen big uncapper with motorized outfeed and drip tray, 60 frame Dadant extractor with electronic speed control, Dadant Electromelt with water jacket. All in good working condition. Call (509) 493–3632 for more details.

Extraction Equipment for approximately 100 hives: Dadant extractor (24 western frames) with stand; automatic uncapper (electric) with stand to hold 24 western frames; Kelly double-walled honey sump (heated); honey pump and motor; 300-pound double-walled/heated bottler; Kelly filter stack-on bottler; 300-pound settling tank heated with Kelly filter stack; Kelly wax melter with bucket. All equipment is 110 volt, balanced and works together. $4000. e-mail: cwhunt@uoregon.edu.

Toxins and CCD—*Continued from page 3*

will find some references dealing with plant growing problems—many of these the result of Mcts-caused root dysfunction. And yes, at this lower end of the search totem pole, one does find information relating to Mcts insecticidal activity. One interesting research article by Delaney and Wilkins (*Toxicon*, Vol. 33, No. 6, pp. 771–778, 1995) provides data on the insecticidal activity of microcystin LR against a number of insect species, stating that, "Microcystin LR is a potent insecticide, comparable in activity to the insecticides rotenone, malathion, and carbofuan." While the authors tested a number of insect species, they did not include honey bees. And what happens if you conduct the ultimate Google® search by combining the words *microcystin toxins* and *honey bees*? That search seems to lead eventually to a single article authored by R. J. Barker in the 1977 volume of The Journal of the *Arizona-Nevada Academy of Science* entitled: "Are Algae Toxic to Honey Bees?" The result of his research indicated that the algal toxin he used was not toxic to honey bees. But, the algal toxin he worked with was not even closely related to Mcts. Mcts are produced by aquatic forms of cyanobacteria, most commonly referred to as blue-green algae or *pond scum*.

A cyanobacterium containing the gene for toxin production does not always produce toxin, for reasons not clearly understood. If a cyanobacterium bloom is producing a toxin, then its immediate death by a purposeful control chemical or other will result in an immediate release of free toxin.

For my initial study, hive surface samples were collected from Baldwin county and Bay county beekeepers and sent off to Envirologix in mid-November 2008. Samples from 13 hives were submitted for testing: six of those samples were taken from suspected CCD hives with the balance from apparently healthy hives. At the end of December, Envirologix submitted its report. Four of the 13 hive surface samples had tested positive of Mcts. The fact that positives were considered low-level positives combined with the fact that three of the four hive samples testing positive were from apparently healthy hives make this first test routine somewhat inconclusive. But yet, finding of unconfirmed positives does portend that the movement of free or intracellular (to the bacterium producing it) toxin from water source to hive does seem possible.

Recall from the above that my first theory was that water skimming bees bring back the toxin to the hive and it is distributed within the hive environment. It may be equally likely that bees acquiring the toxin are never able to make it back to the hive. And, of course, it could be that both outcomes happen: a certain percentage of bees return with the toxin while the balance of bees acquiring the toxin succumb to its toxicity and do not return. And then there is the fact that hives having been abandoned through CCD apparently are not immediately occupied by other hive invaders. What part could Mcts possibly play in this phenomenon? And finally, although Australia has a major problem with Mcts in its drinking water reservoirs, CCD there has not yet been identified as a problem. My CCD theory is what it is. Yes, I suggest you approach my theory with a healthy dose of skepticism. Do not embrace it, but do not automatically reject it until you submit it to additional research.

Note: Michael J. Healy can be reached at: (251) 986–6240, e-mail: mjhealy@gulftel.com.

Colony Collapse Disorder (continued...)

A report in the February issue of *Bee Culture* details the symptoms of CCD with respect to where it hits and when it hits. This information is critical in making a diagnosis as symptoms do change as seasons progress, and knowing what to look for and when to look for it is absolutely necessary in making correct decisions. [**Note:** See the February *Bee Culture* issue for more details, and continue to visit maarec.cas.psu.edu for updates on ongoing research.]

Review of What's Commonly Known

In collapsed colonies:

- Complete absence of older adult bees in colonies, with few or no dead bees in the colony, on the bottom board, in front of the colony, or in the beeyard.
- Presence of capped brood in colonies during time of year when queen should be laying.
- Presence of food stores, both honey and pollen, unless a drought or time of year restricts the availability of food resources.
- Absence of pest insects, such as wax moth and hive beetle.

- Lack of robbing by other bees.
- Robbing and return of hive pests are delayed by days or weeks.

In collapsing colonies:

- Too few worker bees to maintain the brood that is present.
- Remaining bee population includes predominately young bees.
- Queen is present.
- Queen may lay more eggs than can be maintained by workers or is appropriate for the time of year.
- Cluster is reluctant to consume supplemental food such as sugar syrup and pollen supplement.

However, these are the terminal symptoms. By the time colonies reach this point it is far too late to do anything but bury the dead. Being able to spot colonies that are just becoming affected is a real plus because beekeepers can turn them around most times and keep them productive. Even though they still don't know the cause, proper and appropriate management techniques go a long way in helping. Here's what has been found:

One year out: Colonies are "just not doing well" with few other visible symptoms. They seem healthy, but have lackluster honey production.

Six months out: Symptoms are vague and easily missed. Monthly inspections and careful comparisons are needed. Brood nests are slow to expand, with most in a single hive body. Mid-day inspections show bees dispersed in the colony, but this varies. Population growth slows to stops during growing season when compared to other colonies in the same yard. Honey stores remain untouched, bees are feeding on nectar recently collected. These symptoms are difficult to spot due to the careful comparisons needed.

Three months out: CCD colonies appear slow to grow and are outpaced by non-CCD colonies in the apiary. There is a noticeable population decrease going from 3 to 2 boxes, or 2 to 1, and often the bees are on only a few frames in the bottom box…and they appear restless. Brood appears shotgunned because of dead brood removal, and honey stores begin to diminish if it's late in the season, but if early, the honey remains untouched. Routine maintenance goes undone, and no propolis seals are noticeable.

One month out: Usually 8 frames of bees or fewer remain and they decline rapidly. Brood is produced, but can't be supported, queen replacement is often tried and abandoned brood is common. Stored honey depends on the season…in summer it may all be depleted, in winter untouched.

Finally: Remaining bees fail to eat supplied food or medications, and it's mostly young bees that remain now, as the older bees are gone. Queens continue to lay excessively, and the colony usually lacks any aggressiveness at all.

Visual Symptoms of a CCD Colony

- Just days before its collapse the colony seemed to be strong and fully functional.
- Mostly young bees remaining in the hive.
- Bees are not aggressive.
- Queen is present.
- Eggs are present.
- Full frames of brood may be present.
- Brood may show signs of shotgun pattern.
- Capped honey and fresh nectar are often present, although not in summer collapses, which are uncommon.
- Fresh pollen has been stored in the hive recently, if external resources are available.
- Supplemental feed (syrup and extender patties), if supplied, are ignored.
- No robbing occurs.
- No secondary pests (small hive beetles, wax moths, or ants) are found.
- No dead bees are noted around the entrance of the hive.
- Bees do not show any signs of winglessness, paralysis, or other adult bee diseases.

CCD tends to travel like a wave through a beeyard, and combining affected and unaffected colonies usually gives 2 dead colonies. Adding a package may help, and may not. There is a time until secondary pests will move in…using equipment before that time for more bees is risky, and the colony may die again. Although the cause of CCD remains unknown, the diagnosis, and thus the opportunity to administer remedial treatments, is getting better all the time.

From: February 2009 issue of the *Western Apicultural Society Journal*, with thanks to *Bee Culture.*

***Bee Dance**—Continued from page 1*

of the hive for food. This dance is fairly simple, and does not suggest a specific distance or direction.[v]

However, once a food source is more than fifty meters in distance from the hive, the forager utilizes a different tail-wagging dance. A diagram of this resembles a compressed figure-eight, and the bee exhibits tail-wagging dance movements while dancing down the straight part of the design between the two loops. The longer the distance of the straight stretch, the farther away the food source. Amazingly, the bee also communicates how much energy will be required to fly towards the source, and is able to account for wind-resistance as well![vi]

Each bee then averages the many completed dance circuits to determine the most-accurate distance to the food source. Interestingly, bees indicate actual flight distance to an object, even if they had to take a detour to get there.[vi] If a bee has to go over a rock or building, it subtracts the additional flight distance it had to take to detour. The information is useful to foraging and scout bees, because they are able to relocate sources, even if new obstacles are placed in the way or original ones are removed.

Not only does this dance indicate distance, but it also tells direction. The bees use the sun as a marker, orienting the angle of their dance to match the direction they must travel in respect to the sun. For example, if a bee rotates the dance forty degrees, the food source is forty degrees from the direction of the sun. This level of language, in itself, is remarkable. However, bee language can get even more complex and detailed. The bee calculates the angle of horizontal orientation and then transposes it to the vertical plane of the honey comb. A dance lining straight up represents travel in the direction of the sun on the horizontal, while a dance straight down represents travel in the direction opposite the sun.[v] The bee is forced to change the solar angle into a gravitational one. With this detailed way to exchange information, bees successfully communicate the direction and distance of food sources when they are more than fifty meters away from the hive.

These complex dances not only enable the hive to locate and exploit floral resources efficiently, but they are also used to discuss other tasks. The dance language is used to indicate the location of nectar and pollen sources, and is also used to indicate the location of resin sources. The resin is collected, then carried like pollen back to the hive, and used to seal cracks. Life-saving water sources are also communicated by using the dance language. In order to keep the hive between 34.5 and 35.5 degrees Celsius, bees utilize water to cool the beehive in especially hot conditions.[vi]

Traci Sirotiak, graduating senior, writes: I have been in 4-H for 8 years, and have project areas in poultry, horse, public speaking, photography, archery, leadership, and shooting sports. I am very active in community service activities and have logged more than 2,100 hours of volunteer time. I am planning on majoring in business management in college. Ultimately, I would like to work for a nonprofit organization. No matter what I do, I would like to continue giving back to my community through college and after.

Few animals' communication skills are more complex than honey bees'. Unlike many animal and insect species, they are able to efficiently communicate distances and directions to food sources and hive necessities. They utilize a symbolic language of dance patterns and sounds to effectively find and exploit resources. Bees are truly amazing insects, complex in many ways, and their unique characteristics separate them from any other creature.

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Sweet, Simple, and Bee-Friendly:

This Bellows Duster Makes Powdered Sugar Application a Piece of Cake!

Vigorously squeeze the bellows until the sugar reaches the top of the uppermost box in the hive.

Or, you could spray the sugar into the hive from the top down.

Sugar-dusting devotees (of which there is an ever-growing number) report that when the bellows duster is used properly, using approximately 1 cup of powdered sugar, about 75-80% mite drop can be expected.

Our recommended method of use is as follows: Install a screened bottom board in the hive. **Prop the top cover of your hive open wide** (approximately 8-9 inches) with a stick. Insert the directional tube, just barely, into the colony entrance. Vigorously squeeze the bellows until the sugar dusting reaches the top of the uppermost box in the hive. Alternatively, you could spray the sugar into the hive from the top down. Be sure to empty your bellows completely; powdered sugar attracts moisture.

We recommend following the procedure 2-4 times in both the fall and spring. Fall dusting should begin right after the honey is removed from the hive, no later than the end of August. Spring dusting should begin in warmer weather, after the bees come out of winter. Treatments should take place approximately 10 days apart.

Don't forget to use your smoker to calm the bees before using this treatment!

For more information, contact GloryBee Foods at (800) 456-7923.

UPCOMING EVENTS

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August 17–20: Western Apicultural Society Conference, Healdsburg CA

September 15–20: Apimondia, Montpellier, France

November 19–21: Northwest Corner Beekeepers' Conference, Seaside OR

FOR DONATIONS TO THE NORTHWEST APICULTURE FUND FOR HONEY BEE RESEARCH, EXTENSION AND EDUCATION

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- On the memo line, take care to write:

THE NORTHWEST APICULTURE FUND FOR HONEY BEE RESEARCH, EXTENSION AND EDUCATION

- Mail your donation to the: Oregon State University Foundation at 850 SW 35th St, Corvallis OR 97333-4015

If you have any questions regarding details of the fund or how to donate, please contact Kenny Williams, Chairman of the OSBA's Endowment Fund, at (541) 456-2631.

IMPORTANT: Making your check out only as described above ensures that your donation is correctly applied to the appropriate Endowment and not to any other program.

MEMBERSHIP AND PUBLICATIONS FORM

Membership in the Oregon State Beekeepers' Association is open to anyone with an interest in bees and beekeeping. You do not need to own bees or reside in Oregon to join. Membership includes a vote in OSBA elections, discounts on publications, and ten issues of *The Bee Line*. To become a member, send check made payable to OSBA with completed form to: Patricia Swenson, OSBA Co-Secretary/Treasurer, 11665 SE Webfoot Rd, Dayton OR 97114.

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June 22–28 is National Pollinator Week. For information and resources, see the Pollinator Partnership Web site: www.pollinator.org.

The **Oregon State Beekeepers' Association** is a nonprofit organization representing and supporting all who have an interest in honey bees and beekeeping.

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