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March 2019 LCBA Newsletter

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Questions? Suggestions? Resources you'd like to share, stories you'd like to tell? Please contact LCBA

Secretary Susanne Weil: secretary@lcba.community or call 360 880 8130.

UPCOMING EVENTS

March 14: Monthly Meeting & Bee Orders

Where: Centralia College, Walton Science Center 121; 701 W. Walnut St., Centralia WA 98531.

When: Bee Sales, 5 p.m. to 6:30 p.m.; Social Time 6 to 6:30 p.m.; Speaker, 6:30 to 7:30; Business Meeting & Beekeeping Q&A, 7:45 to 8:45 p.m.

What: Bee Sales; Presentation on Colony Removals (a.k.a. Carve-outs); Discussion – how have your overwintering bees fared? Why have bees died, and what can we do?

Bee Sales Information – what’s available, prices, limits, vendors, pickup dates and places – have all been emailed to members. If you did not get this email, please contact Susanne (secretary@lcba.community).

April 11: LCBA Monthly Meeting

Speaker: Megan Asche, WSU Entomology



Where: Centralia College, Walton Science Center 121; 701 W. Walnut St., Centralia WA 98531.

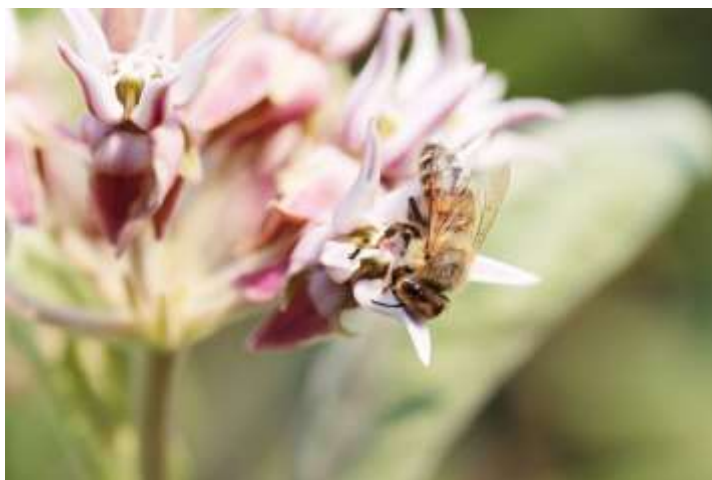
When: Social Time 6 to 6:30 p.m.; Speaker, 6:30 to 7:30; Business Meeting & Beekeeping Q&A, 7:45 to 8:45 p.m.

What: Megan Asche will share highlights of her Master’s degree research on honey bees with Steve Sheppard at WSU. She is currently working on her Ph.D. on wasps at WSU – we can ask her for tips on protecting our bees. More details in our April Newsletter! My master's work was with the sheppard lab studying honey bees.



May 4 – 5: LCBA at the Spring Youth Fair

LCBA will again have a booth at the Youth Fair with our Observation Hive, Honey Tasting Challenge, “bee the bee face” photo board, and other fun features for the kids. Would you like to volunteer? Please contact our Community Outreach Coordinator, Pamela Daudet: email her at blkws@yahoo.com or sign up at our March 14 meeting!



Saturday, May 11 – Mark Your Calendars!

Workshop: Photographing Honey Bees & Other Insects

Time, Location, & Sign-Up Details TBA

Workshop will be led by Megan Asche, WSU



Sunday, May 19

Hands-on WASBA Workshop: Wonders of the Hive

Inspect Colonies with Dewey Caron, Ramesh Sagili, & Others

When: 10:00 AM to 3:30 PM; **Where:** 4565 Riordan Hill Dr., Hood River, Oregon

Price: \$49.00 (includes catered lunch); **Registration:** Visit <https://bg-bees.com/wonders-of-the-hive/> Enrollment limited to 40!

What: For 2019 BG Bees will be offering “in hive” learning. Each bee club, state and regional forum is filled with information on various aspects of beekeeping. The typical Backyard Beekeeper reads, watches YouTube, and possibly browses other forums. What is screaming to acquire is “hands on” experience through the assistance of highly qualified “bee ICONs”. Each person attending will be exposed to a myriad of “in hive” techniques, norms, and abnorms. What needs fixing, what is normal, issues for future considerations. Small, intimate, groups will gather around each presenter for maximum exposure.

The Presenters:

Dr. Ramesh Sagili, Associate Professor-Apiculture, Oregon State University. An opportunity to ask your beekeeping questions. Dr. Sagili will discuss recent research.

Dr. Michael Burgett, Professor Emeritus, Oregon State University. General ‘rules’ of the first hive inspection post winter. Knowing what is wrong or right is critical in any hive inspection but most importantly to see a path to success for the coming bee season. How healthy does the colony appear? What to look for? What needs to be done depending on issues discovered?

Dr. Dewey Caron, Emeritus Professor of Entomology & Wildlife Ecology, University of Delaware, & Affiliate Professor, Dept Horticulture, Oregon State University. Identifying a Queen Right hive. What to look for? Laying Worker?

Carolyn Breece, Faculty Research Assistant, Oregon State University. Frame Diagnostics – Knowing the pests and diseases of honey bee colonies is an essential part of beekeeping. Learn how to read frames for evidence of brood diseases, mite infestation, and other issues, and learn techniques to keep your colonies healthy and thriving.

Ellen Topitzhofer, Faculty Research Assistant, Oregon State University. Mites, Mites, Mites! Sampling, treating, efficacy. So much has come to light in just the past year.

Notes from LCBA's February 14 Monthly Meeting

Members' DIY Beekeeping Projects



Above left, LCBA President Kevin Reichert with his custom-designed bee vacuum box; right, Steve Howard displays his screened bottom board.

Microphone & Sound System: President Kevin Reichert opened the meeting via microphone, using the sound system loaned by the College: we didn't end up using this for much of the meeting, but it will be great to have for softer-spoken speakers.

2019 Youth Scholar: Kevin announced that Damon Alexander is LCBA's new 2019 Youth Scholar. Damon is an 8th grade from Rochester who, along with his mother Jessica, is about to finish our beginning beekeeping class. He wrote a terrific essay, Kevin noted, and Cody Warren will be his mentor.

Tonight's DIY Projects: Kevin introduced our members who brought in projects they have been working on: Steve Howard and his screened bottom board, Cody Warren and his "Frankenhive" (see below!), Dan Maughan with a demonstration showing that not all frames and foundation are created equal, and Bob Harris and Kevin Reichert with an upgrade to the bee vacuum box design.

Steve Howard's Screened Bottom Board

Steve Howard has built a screened bottom board for seven to eight bucks, as opposed to \$32 from most vendors, and just as good. Steve greeted the "freshman and sophomore" beekeepers and asked how many used screen bottom boards: almost all do. Steve pointed out how important it is to get good woodenware that will last. He ran 18 to 20 hives last year, and noted that it can be spendy to buy woodenware for so many. The old bottom board design was solid wood, which helps gather moisture, dead bees, and all sorts of debris. Bees are always grooming themselves, and Varroa mites fall to bottom board. With a solid bottom board, if the mites are alive, they can climb back up and latch onto the bees again, but in a screened bottom board, the mites drop through, along with some of the hive detritus.

Steve shared details about his screened bottom board, listed below. He can knock one out in about 15 minutes. Steve noted that for his slider board, he uses signboard style plastic – it lasts well, better than wooden sliders. You can get them from politicians; also, Michael's sells the material. Steve said that if you've put together Lincoln logs, you can do this. He emphasized that

it's important to be precise with your cuts: measure twice, saw once! No fancy tools are needed – skill saw, hammer, and square. A compressor and brad nailer or staple gun are useful. Steve recommends using good waterproof glue; Bob recommends Titebond 3 glue. Also, with our wet climate, Steve urges painting the wood: he uses an oil based primer, noting that if you don't use, it you will have to paint five coats on pine, which will just soak up your paint. Steve uses the plain old cheap white barn paint.



Steve Howard's Screened Bottom Board (Sfhoward45@msn.com)

Material Needed Per Board:

- 2 (1" x 2" x 8') Pine Furring Strips: Home Depot, about \$1.30 per strip
- 1 (1" x 3" x 14 7/8") Pine: Home Depot, about \$0.60 per foot
- 1 (14 3/4" x 20 1/4") 4 mm. plastic sign board: Home Depot, \$24 for 4' x 8' sheet
- 1 (18" x 16 1/4") 1/8" hardware cloth: Sun Birds, about \$2 per linear foot, 36" wide

Cuts to Make to Maximize Utilization:

Furring Strip – 1	Furring Strip – 2	Remaining 48" of Furring Strip
2" (1 1/2")	2" (1 1/2")	Rip down center
2 – 17"	2 – 16 1/4"	3/4" x 3/4" 1/2" x 3/4"
2 – 21 1/2"	1 – 14 7/8"	1 – 14 7/8" 1 – 14 3/4"
1 – 16 1/4"	Total 47 1/4"	2 – 20"
Total 93 1/4"		

4 mm plastic

Can buy a 4' x 8' sheet at Home Depot
 Can cut 14 mite trays from a 4' x 8' sheet
 Also can buy half sheets at Home Depot
 And smaller sizes at Michaels

1/8" Hardware Cloth

Sunbirds or Rochester Lumber comes 36" wide. Buy 3 feet and can cut 4 bottom board screens

Approximate cost per bottom board: \$7 to \$8. Steve recommends purchasing a bottom board and using that as a template to help assembling parts.



Cody Warren and His “Frankenhive”

The Story of the Frankenhive: One of Gottfried Fritz’s mentees had a VERY hot hive: Gottfried and Cody took them home and “wanted to demoralize them,” so he got a hold of Kevin, and after taping themselves up so the bees couldn’t get them, they put a queen excluder between each box – four in all – then waited a week for all the eggs to hatch. He found the queen, a big girl, different color from the rest of the bees, in the second super. He sent a bee sample to WSU, but learned that they don’t test for Africanization. Cody then broke that hive down into four other hives: he took good brood from his long Langstroth to supplement them. Two of those four colonies are still alive.

Cody likes beekeeping in top bars, and when a colony fills out ten or fifteen bars, he splits them to start new colony. Swarms and packages very easy to put in a top bar hive: however, if you want to start with a nuc and transition it into a top bar hive from those deep Langstroth frames, how do you do it? You could “crop and chop,” which means shaking bees off the frames, taking tin snips and snipping frames down to fit into top bar hive. However, this pisses off the bees.

Cody’s solution was to build a mini-top-bar box with five top bars, each 1 3/8 inch wide, for bees to build on as they run out of room in the nuc. He linked this top bar box to a nuc box, cutting the hive entrance slits (four inches long by 3/4 inch high) and putting them adjacent to each other between the top bar and nuc boxes (see photo above). He makes an entrance reducer with #8 hardware cloth and wood and only a tiny bee shaped entry is left. He feeds the bees with a single in-frame feeder. Without the hardware cloth, etc., you can put a Boardman feeder into the entrance: the other side of his top bar has an entry also, so the Boardman doesn’t stop the bees from coming and going. It also stops yellowjackets from getting in. The edges of the bars are angled, which also stops robber bees and yellowjackets from getting in.

Cody is a frugal beekeeper: “I’m a wood butcher, not a carpenter, so it’s not pretty, but it works.” He gets all his materials from job sites. The whole apparatus cost about 50 cents in screws and paint. Cody got the paint at the Hazo Hut at the Lewis County landfill: every Wednesday, they give out free paint. He used Gorilla Glue to affix things and it has worked well.

The Frankenhive method works! It takes on average about two to three weeks for bees to transition from the nuc to the top bar. He feeds them every two to three days and the sugar helps them build. He also uses pollen patties, rolling them thin with a rolling pin, to help bees build up. Gottfried asked if he baits any of the top bars to encourage bees – Cody said that sometimes, he'll rub a wax bar mixed with lemongrass along the bottom of the top bars to attract them.



Above, Dan's bee yard with his version of a Slovenian hive setup (see the June 2018 Newsletter for details about Slovenian hive design). Sorry, photos of Dan's frames, described below, didn't come out.

Dan Maughan: Foundations and Frames - Fit Matters

First, Dan updated us on his bees. He shipped them to California to find beautiful weather, and bees started laying brood...at least, some of them did. Some colonies' numbers were too small to build up to the strength needed for a pollination contract, and about 40 hives died: now about half his bees are gone. Everyone has been experiencing severe losses.

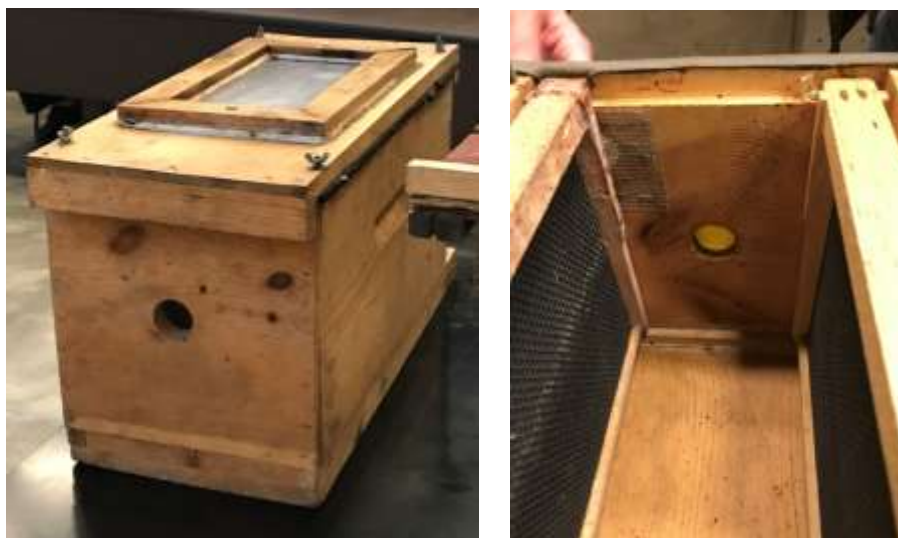
Frames and Foundation: Dan displayed wooden frames and plastic foundation from Pierco, Shastina, and Mann Lake and compared and contrasted their strengths and weaknesses. Pierco's frames come with the foundation built in, which Dan said is nice because they are already premade; the top frame bar has one quarter inch width, so there is more room for bees - the equivalent of an extra frame per box! The disadvantage, though, is that the frames seem to warp with heat and do not absorb moisture like wood does, so it's harder for the bees to maintain a stable climate inside the hive.

So this last year, Dan experimented with Permadent foundation, which he got from Mann Lake: if he had a deadout with ugly moldy frames, he would pitch it, and if he was putting in a new frame, he would clean it and put in the new foundation. The Permadent fit nicely in most frames – but sometimes it doesn't fit well. The frames may be standard on top, but the width of the top bar can vary, so not all foundation will fit. It's the same deal with foundation: some sheets are a little taller. Dan brought 3 different types of frames: the Mann Lake top bar measures 5/8 of an inch; the bottom measures 5/16 of an inch; the sides are 1/4 inch.

Dan displayed the frame from Beeline Apiaries: it is a little harder to assemble because of the ridge at the bottom, but Dan commented that these are really durable frames. They are 3/4 inch on top and about 1/4 inch on the bottom and sides. Finally, the Shastina frame, Dan finds, is the "beefiest": 5/16 inch on the bottom.

Both Shastina and Beeline frames come standard with Pierco foundation. Mann Lake has their own foundation, called Rightcell, which Dan finds pretty good. Permament is the cheaper version, from Minnesota. The others are cast and are fairly thick pieces of plastic, but the Permament is thinner. It is Dan's first year trying it, and so far, he's not too impressed.

LCBA VP Bob Harris noted that this suggests we need to buy our gear from one place to assure uniformity. Dan's favorite is Pierco for the foundation, Beeline frames for durability and because all three kinds of foundation fit into Beeline's frames.



Above, Kevin's and Bob's vacuum hive box, outside and inside views.

Bob Harris and Kevin Reichert: Updated Vacuum Box Design for Carve-Outs

Last year, Bob went to a carve-out and saw Kevin's extraction vacuum box in action. In years past, Bob had never been a fan of the vacuum approach because when he saw it in action, it was harsh, killing too many bees. Kevin, too, wanted a better way: he had a 5 gallon Craftsman vac with a bag and ribbed hose (see photo of Cody, above – he is standing by the vac), but only about 10% of bees survived this method. Kevin took a nuc box and put in a window of plexiglass on the top. Then, he put in a box inside the box for ventilation, and also a hardware cloth-covered hole to help with ventilation. He substituted a hose that was smooth, not ribbed, so that bees don't get beaten to death as they are sucked down the vacuum. Kevin has a bigger vacuum box now, made from a super box, and he uses it with the 5 gallon Shopvac for pressure. The boxes have worked really well, with far fewer dead bees.

Bob added that the Home Depot bucket vac is very underpowered with weak suction, and that is perfect for sucking bees without harming them. Bob has cut the bucket and made a 7 frame box which fits on top of the bucket vacuum, so he can sit it on top of the hive box (he attached it with little clips). The box Bob brought tonight has 5 frames, though. Gottfried noted that he has been to several removals, and the one thing that he has considered is making sure there's plenty of ventilation because of the heat in the season when we remove bees this way. A screened top could also have a tight vac tube seal, Gottfried suggested. Kevin warned that they can chew through with enough time. Bob noted another thing he discovered: they used to have to use an enormous extension cord, but now, he has a lawn mower battery with clamps which he can

attach to the vac and run it for three hours. It is good for jobs higher off the ground. Bob was asked whether the vibration of the motor would upset the bees: Bob said yes, but the bees' home is being deconstructed around them, so the vibration it is probably the least of their worries.



Above, Peter Glover & Susanne Weil's bees in one of our recent snowstorms.

February Business Meeting Notes

Treasurer's Report: Treasurer Rick Battin reported Rick noted that our main account balance is up from 2019 dues beginning to come in, bringing us to \$5,504.67 in checking; the Youth Scholarship fund has \$2,678.64.

Audit Committee Report: 2018 Audit Committee Chair Steve Grega reported for the Audit Committee (Steve, Gillian Davis, and Rick, ex officio).

o Findings: Steve reported that all accounts balanced and all transactions were fully accounted for: checks match what bank statements record. Once again, the March bee sales were the largest item. There was a small discrepancy between what was paid and what was collected because the board paid the price bees for the club apiary separately. Centralia College has not billed the association for room rentals; we have sequestered funds so that when billed, we can pay. Susanne noted that she annually reminds the college annually that we would like to pay the bill, but need an invoice to do so. Steve noted that last year's audit committee, of which he was a member, recommended recording what expenses are for on the check stubs themselves for clearer record-keeping, and Rick did that this past year.

o Recommendations: This year, the committee recommends that Rick label spreadsheets at the top of each page for clarity (e.g., Bee Sales), and that any voided checks be destroyed before witnesses at a board meeting or at the next year's audit committee meeting. The committee also recommends that the board consider awarding stipends to instructors for the beginning beekeeping course in acknowledgment of their labor and expenses, and that, should there be no youth scholarship students, funds be devoted to providing educational experiences for club members. Finally, the committee commended Rick for his efficient work and scrupulous honesty as LCBA's Treasurer.

o Kevin thanked Rick for his hard work as Treasurer for our club, and thanked Steve and Gillian for conducting the audit with Rick. Kevin noted that the board had accepted the audit committee's report unanimously.

Bee Sales: Kevin walked those present through the 2019 club prices for bees. We have options for packages and nucs from Beeline; nucs from Kevin Mills' Hive 5 Bees; and both pallets and nucs from JC Bees. Delivery is expected to be April 12 for all but Beelines' Carni packages. Bee Sales will take place from 5 pm to 6:30 pm, just before our March 14 monthly meeting. To buy bees, you must be current on dues. Only cash or checks can be accepted. Details of the bee sales have been emailed to the membership; if anyone missed this, please contact Susanne at secretary@lcba.community.

Education/Youth Scholarship Programs: Education Coordinator Peter Glover reported that the 5th beginning beekeeping class had to be postponed because of the snow, so the final class will now be on February 23. Most of the 35 students are still attending and seem to be very engaged. As noted above, we now have a Youth Scholar for 2019, Damon Andersen, from our class. We are still planning to hold some continuing education events for the membership. Dewey Caron is interested in giving a hands on workshop at the apiary this summer, and on May 11, we will have a bee photography workshop at the apiary, led by Megan Asche from WSU. We may send a couple of members to a queen rearing class, depending on cost.

Mentorship/Apiary Report: Cody Warren, our Mentorship Coordinator and Apiary Manager, reported that sadly, we now have only two colonies alive, despite feeding, treating, and moisture control boxes. Many have had severe losses. It has been a terrible year nationwide, and many are looking at weather as a key factor. Peter Glover noted that another key issue is the discovery that Varroa mites actually feed not on hemolymph, but on the fat bodies of winter bees, and that this is thought to collapse colonies in winter (see Bees in the News, below, for details on this discovery).



Above, two bees sleeping in a mallow flower – photo by Joe Neely

January Business Meeting Notes

(Your scribe apologizes for not having had time to write up January's excellent talk by Bryan Castro on pesticides and plans to include it in the April Newsletter.)

Treasurer's Report: Treasurer Rick Battin reported that LCBA's 2018 year end checking account balance was \$4,904.67; the savings balance was \$5001.95; and the Scholarship fund \$2678.64. Recent transaction: a check to Kevin Reichert for one of the potluck hams plus the meatballs. Rick also reported that the Audit Committee, Steve Grega and Gillian Davis and himself, would be conducting the audit later this month; they will report to the membership at the February 14 business meeting.

Bee Sales: Kevin reported that he is checking with Harold Weaver at Beeline, Kevin Mills at Hive 5 Bees, and JC Bees (through Dan); prices should be similar to last year. We will have more details at the February 14 meeting.

Honorary Lifetime Membership to Dan Maughan and Family: Secretary Susanne Weil announced that the board voted unanimously to extend an honorary lifetime membership in LCBA to Dan and Larissa Maughan and their children. As Community Outreach Coordinator, then Mentorship Coordinator, and then Community Outreach Coordinator again, Dan and his family have helped our club put on great exhibits at the Southwest Washington Fair, the Spring Youth Fair, Seedpod Farm's festivals, and more. Dan has also provided mentorship to many members of the club, helped teach the beginner's class, and hosted many workshops at his own home apiary over the years. We are grateful! Dan accepted the certificate on behalf of his family and thanked us all.

Youth Scholarship Program/Education Program: Education Coordinator Peter Glover announced that unfortunately, we did not receive any viable applications for this year's Youth Scholarship program. One applicant was in Randle, too far realistically to participate in all the required activities and a very long way for a mentor to drive, as we have no one that far out in east county. The other applicant's essay focused primarily on his fear of bees.

We discussed several suggestions by the board about how to spend the funds raised for this year. We could simply save it for next year, but the board would like to create some continuing education opportunities for our members. Among the possibilities would be sending past youth scholars and mentors, or other members, to events like the Silverdale Queen Rearing workshop and the WSU beekeeping short course in June, with the expectation that those sent would report back to the club at a meeting. Another possibility would be bringing an expert beekeeper to our apiary to hold a hands on workshop on more advanced topics, which would let more participate. Both have benefits and we will continue to discuss this.

Mentor Program Update: Cody reported that mentors are working with mentees on feeding bees, candy board, mite control, cleaning entrances, etc. Many have reported heavy losses, half their bees or more. Those present have all lost many colonies. Some wondered whether treating three weeks in a row with oxalic acid might be part of the problem; others wondered about the long wet winter and freezing snaps with snow. Some wondered if we are taking too much honey from the bees. We will discuss this further as the season unfolds.

Apiary Update: Cody reported that the bees are fed and so far nine hives are still alive. Go bees!



Pacific Northwest Honeybee Survivorship & Beekeeping Practices

Please Participate in This Year's Survey, March 15 – April 30!

Visit <http://pnwhoneybeesurvey.com/survey/>

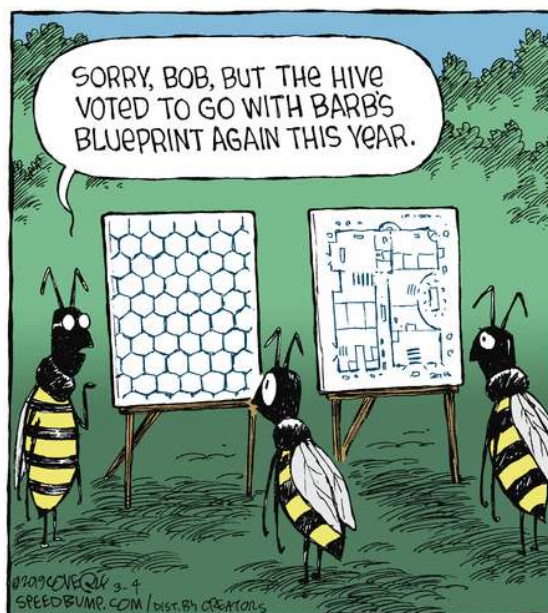
by Dewey M. Caron

In the 2017-2018 beekeeping season, 303 Oregon & 104 Washington backyarder beekeepers participated in the April survey that measures the health of our regions honey bee colonies. The survey tool also measures the local honey bees survival/losses with several diverse management variables such as the feeding, sanitation and Varroa sampling/control of individual beekeepers! These large sets of annual data have been intriguing to analyze over the last five years and are all available to review at the state and individual club level on our website.

The online survey instrument www.pnwhoneybeesurvey.com/survey will be opened March 15 and extend through month of April. It should only take a few minutes to complete, especially if you are using the “note sheet”, found online under the resources tab. Information requested this year is similar to previous years, but I have trimmed the survey so it is shorter with fewer questions. I will be visiting at a future LCBA meeting (you pleasantly surprised me at my last meeting appearance with Honorary membership). I very much appreciate the 38 responses from Lewis Co Beekeepers last year.

Colony loss levels from all 104 WA respondents were 44%; of 457 fall colonies, of which 88% were 8- and 10-frame Langstroth hives, 256 colonies were surviving in the spring). If you heard the NPR feed Feb 18th you heard Eric Olsen (Yakima area) talking about heavy losses again this year. He said “their hives experienced a dramatic loss this year. But it's not as bad as when he lost about 65 percent of them. <https://www.npr.org/.../massive-loss-of-thousands-of-hives-afflicts-orchard-growers-and...>

For the 38 Lewis Co respondents last year, overall losses were 45%, essentially the same as state-wide losses. Lewis survey returners were mostly new, single digit beekeepers. Sixteen



individuals (39.5%) had 1 to 3 year experience, 13 (34%) had 4-6 years experience, 6 (16%) had 7-10 years experience and the remaining 6 had 14-55 years experience. Sixteen individuals (42%) had 1, 2 or 3 colonies, 29% (11 individuals) had 4-6 colonies, 4 had 7-9 colonies, two individuals had 10 colonies and 2 owned 12 colonies. The remaining 2 had 14 and 35 colonies. 9 individuals had no bee losses while 7 individuals lost all their colonies. See graph.

While the main emphasis of the survey revolves around reporting how many colonies you had last fall compared to this spring which we assess three ways, through hive location, hive types and origination (meaning were they overwintered colonies, nucs or packages purchased, swarms or splits), other survey questions relate to some of the basic managements you might do for varroa control. In my annual report, I show things that worked for some WA individuals. Feeding dry sugar, basic sanitation and providing colonies a distinct address helped some individuals keep losses lower. Monitoring for mites and the use of some controls also resulted in lower losses by Washington beekeepers.

The question is what will the climatic events of this year, mixed with your ever-changing beekeeping practices result in this year? Only time and YOU will tell. It is my hope that the survey and reports have become a worthy asset in your beekeeping journey and once again you will share them with fellow beekeepers.

THANK YOU FOR SHARING THIS PAST SEASON. Please consider completing a survey for the 2018-2019 season. I will have loss report before spring season is completed.



Honey Bee Health Coalition releases new guide,

Tool to help beekeepers make informed hive management decisions

The Honey Bee Health Coalition has developed two new resources for beekeepers — a best practices guide for hive health and a decision support tool for taking on the honey bees most dangerous parasite.

An expert team of beekeepers, entomologists, extension and regulatory agents, bee suppliers and apiary inspectors produced and reviewed Best Management Practices for Hive Health: A Guide for Beekeepers.

The Coalition contracted Dewey Caron, emeritus professor of Entomology and Wildlife Ecology at the University of Delaware and Affiliate Professor at Oregon State University’s horticulture department, to draft the 80-page guide, available for free download at: honeybeehealthcoalition.org/hivehealthbmps.

“The guide includes information about safety considerations, apiary setup and maintenance, pesticide exposure, pests and diseases, queens and nutrition,” Caron said. “These best management practices will be updated periodically to ensure beekeepers have access to the best possible resources and strategies.”

American Honey Producers Association vice president Chris Hiatt praised the guide.

“Learning and understanding these techniques is vital for beekeepers, and there is a lot of questionable information out there that’s not based on the latest best practices,” Hiatt said. “The guide both promotes in-hive practices that strengthen bee populations and encourages beekeepers to communicate and work with farmers and landowners to improve bee health.”

Kentucky state apiarist Tammy Horn Potter said, “These best practices will help beekeepers — from hobbyists to commercial — establish and maintain the conditions necessary for healthy colonies. The guide is full of helpful photos and graphics, and the Key Points to Remember summary following each chapter will especially benefit new and small-scale beekeepers.”

The Coalition also launched a new free, mobile-friendly tool to accompany its Tools for Varroa Management. The Varroa Tools, also drafted by Dewey, was first released in 2015; Dewey has revised it and is now in its seventh edition. The manual helps beekeepers implement practical, effective techniques to control Varroa mites, one of the honey bees most destructive pests.

“The Varroa guide is downloaded thousands of times every month, but in talking to beekeepers, we find many are still confused about navigating which treatments are right for their situation and conditions,” said Mary Reed, Texas Apiary Inspection Service chief apiary inspector. “With this new tool, they can input their hive conditions and management preferences and receive a list of management techniques and treatment options that fit. They can then study their options using the provided information and videos before making a decision.” The tool can be found at www.honeybeehealthcoalition.org/varroatool.

“The tool asks beekeepers five basic questions and has links to background information if individuals are unsure of their answers,” Caron said. “The tool and the full download recommends that beekeepers regularly monitor and manage Varroa mites

The Coalition, a diverse group of nearly 50 organizations working to improve the health of honey bees and other pollinators in the context of production agriculture, announced both new resources at annual meetings of the American Beekeeping Federation and American Honey Producers Association. Dewey represents WAS as a Coalition member and along with Paul Andersen represented OSBA (when they were a member.)

Changes in the Washington Apple Industry – What Do They Mean for Beekeepers?

By Dewey M. Caron



Above, bee pollinating apple blossom, by Pompi, Pixabay.com

NOTE Lewis Co beekeepers – this is a copy of an article sent to the WASBA newsletter and ABF Quarterly newsletter. I include for Lewis Co newsletter, in case you are not member of either group.

We are well aware of the consolidations in the Bee Supply Business within the last few months and the role that Equity firms played in one going out of business and the other buying out a competitor to enable it to get bigger saying they needed the capital in order to compete. Although most WA beekeepers are small scale, over 150 individuals make their living from bees. Increasingly they rely on rental income. Apples are one of the major crops WA, and out-of-state, beekeepers pollinate annually.

Apples are grown commercially in 32 states. Currently Washington State is by far the largest apple growing state in the U.S. with 58% of apple production. New York (11%) and Michigan (8%) round out the top three. Remaining top 10 states Pennsylvania, California, Virginia, North Carolina, Oregon, Ohio and Idaho, all have 5% or less of U.S. apple production.

The U.S. Apple industry estimates there are 7,500 apple producers who, collectively, grow 240 million bushels of apples on average each year on 322 thousand total acres of land. Annual value is estimated at \$4 billion. China leads the U.S., followed by Poland, as top three world apple producers.

In our Oregon State surveys of annual pollination income in the PNW (Washington, Oregon and Idaho), apples (and related fruit) represent about 1/3rd of pollination income for Tri-State beekeepers (estimate excludes almond rental). American Bee Journal Vol 157, Sept 2017.

But changes are rampant in the Washington Apple industry. A recent article in by Dan Wheat, Capital Press (Jan 8, 2019) Tree fruit companies on sales block started with these statements: “Several tree fruit companies in Central Washington are being sold or have gone out of business as costs and competitive pressures continue to force consolidation in the industry. ...Out-of-state private equity firms are involved in some of the acquisitions“. Many of the recent consolidations involve sale/consolidation of multi-generation family owned apple growers.



Above, bee colonies in apple orchard (WSU Fruit Trees homepage).

There are plenty of reasons for this movement according to the article. Apple packer Jon Alegria, who packs Washington apples for an outside investor is quoted as saying “More apple varieties are competing for limited grocery shelf space and it takes \$60,000 per acre to acquire and plant land versus \$25,000 10 years ago. Land, labor and more organic production are all increasing costs, making the industry more capital-intensive, and that’s why outside investment is coming in.... It’s easily tripled in the last three to five years”.

Michael Butler, a Seattle investment banker reports “Mid-size companies running at 30 percent of packing capacity don’t have the income they need to pay debt on new packing lines and without controlling 10 percent of industry sales a company can’t be a long-term competitor. Fourth Leaf Fruit Co, whose last known owner was a Vancouver, B.C., investment firm, was cited as one example. Their apple production, mostly exported, was about 1.35 million, 40-pound boxes of apples annually. They are now closed. Too small?

David Henze, their last manager is quoted as saying: “You have to be big, grow your own fruit, have the best varieties and state-of-the-art equipmentin the next five years there will be fewer than 10 apple packers in the state.” Washington Apple Commission currently lists 69 tree fruit companies in the state, 46 of them packers only, 13 being packers and marketers and 10 are marketers only”.

What does this mean to us? For smaller scale beekeepers and those of us who regularly eat apples or apple products, not much. Apple growers were probably the first farmers that paid beekeepers to move colonies to their growing area. Records go back into the 1800’s from Annapolis Valley in Nova Scotia, Canada (which by the way is still famous for its apples with 1000 family farms still productive). And apples will likely remain a Major Washington crop, that will still need bee pollination.

As consolidations continue in basic agricultural industries, as reported here for Washington State apples, it moves the beekeeper one or two layers away from having neighbors contract for pollination services or their beekeeper products. Fewer multiple generation growers, means having to deal with absentee owners, or employees who might have to check with the ‘head office’ before using our bees.

Increasingly, employee managers hire crop consultants, adding yet another layer to what in the past has often been a handshake agreement between grower and beekeeper to ‘bring in the bees’. And fewer but mega-growers/equity company owners/investors in the apple growing/packing business mean the need for more colonies by individual outfits. Less competition could dampen rental price competition and likely mean larger out-of-state beekeeping operations supplying pollinating colonies.

Change is inevitable. Although honey production was down last year in the U.S., beekeeper survival means not so much to produce or provide service but rather to negotiate a fair return for

our products/services. Consolidation and GO BIG or GO HOME appears to be the norm in the apple industry. It offers both a challenge and an opportunity in our past business practices.

RECIPES OF THE MONTH

From the National Honey Board (honey.com)

Open Face Bacon-Cheese-Avocado Sandwich with Honey Drizzle

Ingredients:

4 honey wheat bagels, split open

4 Tb honey

1 cup shredded cheddar cheese

8 pieces crisp cooked bacon,
cut into bite sized pieces

1 large avocado

1 Tb honey

2 tsp. lemon juice

salt and pepper, to taste



Directions:

Preheat oven to 350°

Peel and pit the avocado into a small bowl and lightly mash with the honey, lemon, salt and pepper. Set aside.

Place bagel halves on a sheet pan and drizzle with the honey. Evenly divide the cheese between the bagels and top with the bacon. Cook the bagels until the cheese is melted and bubbly.

Remove the bagels from the oven and serve with a spoonful of avocado on each half.

Fried Drone Brood – A healthy and savory snack?

Dan Aurel, Bee Informed Partnership Blog, February 22, 2019



I live close to the town of Snook, TX – where the local roadhouse is renowned for its chicken fried bacon. This dish inspired a thought; why not fry something shocking myself? I was using drone brood removal as a method of mite control in a couple colonies, and they were producing a lot of drone brood around the time of the privet (*Ligustrum* sp.) flow. I'm a whole lot less squeamish about eating honey bee immatures than I would be about a lot of other insects. After all, honey bee brood is enjoyed as food in large parts of the world.

The tricky step was to get the drone pupae out of the comb. I found that my serrated bread knife was ideal for removing the cappings. The white-eye stage to purple-eye stage drones held together fairly well. Then I shook the whole piece of comb to dislodge the pupae into a mixing bowl full of water. Since then, I read "if brood cells are filled with water, most of the larvae can be dislodged much easier" (Krell, 1996) – I'll try that next time. I then scooped the pupae out of the water with a minimum of wax pieces. I then placed them on a tea towel and patted them dry.

Then I brought them to a friend's birthday party and we prepared them as below:

- Prepare a mixture of one part honey, one part soy sauce
- In a frying pan, heat a good dollop of coconut oil. Test that it's hot enough by adding a pupa – it should sizzle!
- Add some pupae and fry, stirring frequently. Don't overcrowd the pan
- Fry until they are beginning to turn golden-brown
- Add the honey-soy mixture and fry, stirring constantly for a short while until the sauce thickens and starts to stick to each pupa
- Serve hot

Even before adding the soy-honey mixture, they had a nice nutty flavor, with a hint of a Parmesan note. Once they were all done we passed them around as an appetizer. The change in expression on everyone's face was remarkably consistent when they tried the drone delicacy: first a suspicious look, that then quickly gave way to a smile of "oh, that's good." I look forward to the day I see chicken fried bacon, chicken fried chicken, and chicken fried drone brood, all on the same menu.

BEES IN THE NEWS

Thanks to Pamela Daudet, Gillian Davis, Cody Warren, Phil Wilson, & the good folks at Bee Culture Magazine and American Bee Journal for these news stories.

An Inside Look at How the Varroa Mite's True Diet Was Discovered: Entomology Today, February 21, 2019



In this colorized image of a honey bee, taken via low-temperature scanning electron microscope, a Varroa mite (arrow) can be seen tucked between the bee's abdominal segments. (Photo credit: USDA-ARS, Electron and Confocal Microscopy Unit, Beltsville, Maryland)

Arguably the most important discovery in bee science in years is the news that everything we thought about what part of bees Varroa mites feed on is wrong: in fact, “Varroa destructor feeds primarily on honey bee fat body tissue and not hemolymph.” When mites feed on the bees’ fat bodies – organelles that function like a liver – in winter bees, this can lead to sudden collapse of the colony.

This crucial finding may change the way beekeepers approach Varroa control: commercial beekeepers who treat regularly and prophylactically may be onto something, as their losses tend to be significantly lower than hobbyists’.

Here are links to the article above and other coverage of this very important news:

<https://entomologytoday.org/2019/02/21/inside-look-how-varroa-mite-diet-discovered/>

Short YouTube explanatory video by the lead author of the Jan 2019 PNAS paper:

<https://www.youtube.com/watch?v=Fyfyj-2O47Q>

<https://www.inverse.com/article/52843-whats-killing-the-bees-really-i-mean-it>

“There is a Protein in Royal Jelly that Causes Bee Stem Cells to Renew Themselves, So Queen Bees are Bigger and Contain More Cells Than Worker Bees”: Bee Culture’s Catch the Buzz, March 7, 2019

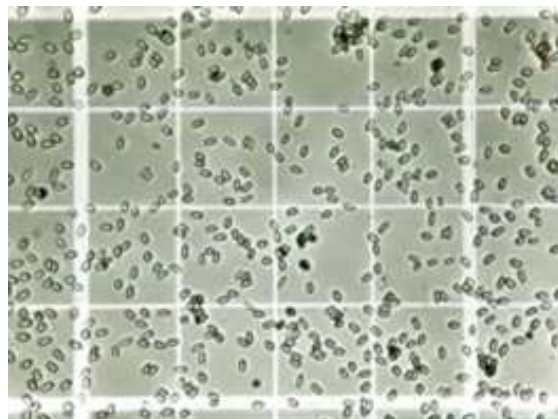


As we know, queens are larger than the other bees, live longer and are the only fertile ones in the hive. But why? “A queen bee’s stem cells can self-renew, but worker bees’ cannot. Just as hair or fingernail cells renew themselves and grow back after being cut, a queen bee’s stem cells are continuously self-renewing.

“Now Stanford researchers have found that a special protein within the royal jelly causes this. Like nature’s copy machine, this protein causes the queen’s stem cells to make many copies of themselves. And more cells make a bigger queen. Stem cells in larval bees are ready to grow into different body parts such as adult wings, antennae and more. But royal jelly protein molecules cause a queen bee’s stem cells to keep multiplying themselves, resulting in a larger body size. The protein that fuels this renewal was unknown before the Stanford study.”

To read more, visit: https://www.bee-culture.com/catch-the-buzz-there-is-a-protein-in-royal-jelly-that-causes-bee-stem-cells-to-renew-themselves-so-queen-bees-are-bigger-and-contain-more-cells-than-worker-bees/?utm_source=Catch+The+Buzz&utm_campaign=f627f6218e-Catch_The_Buzz_4_29_2015&utm_medium=email&utm_term=0_0272f190ab-f627f6218e-256261065

A Mobile Phone Microscope Is Good Enough To Find Nosema Spores In The Field: Bee Culture's Catch the Buzz, March 6 2019:



“Researchers at the UCLA Samueli School of Engineering, in collaboration with the Department of Biology at Barnard College, have developed a mobile-phone microscope that enables rapid and automated detection of *Nosema* spores in honey bees in field settings. This mobile and cost-effective platform, weighing only 0.8 pounds, is composed of a smartphone based fluorescence microscope, a custom-developed smartphone application and an easy to perform sample preparation protocol that enables fluorescence tagging of bee parasite spores even in the field.

“Disease diagnostics by this new platform involves sample preparation, where honey bees gut tissue is removed and midguts dissected, followed by adding a tiny amount of a stain to fluorescently tag parasite spores. A drop of the prepared solution is then placed on a glass slide, which is then inserted into the mobile-phone microscope for analysis. An image of the sample is then captured by the smartphone and transmitted to a computer for automated analysis to quickly reveal the spore count, which is sent back to the user in less than 90 seconds.

“The researchers tested the performance of this mobile platform using field samples and determined that the device is capable of detecting the parasite concentration per bee that is below the threshold needed to advise treatment against *Nosema* parasites. Therefore, this mobile-phone based instrument meets the required detection sensitivity for establishing the treatment.”

To read more, visit: https://www.beeculture.com/catch-the-buzz-a-mobile-phone-microscope-is-good-enough-to-find-nosema-spores-in-the-field/?utm_source=Catch+The+Buzz&utm_campaign=b65acae4f6-Catch_The_Buzz_4_29_2015&utm_medium=email&utm_term=0_0272f190ab-b65acae4f6-256261065

Microscopic Nanocrystals, the Size of Pollen Grains, Used to Track the Path of Pollen from Flower to Flower: Bee Culture's Catch the Buzz, March 4 2019:



Dr Corneile Minnaar, a pollination biologist from Stellenbosch University, is “using quantum dots to track the fate of individual pollen grains. This is breaking new ground in a field of research that has been hampered by the lack of a universal method to track pollen for over a century. The new method will enable pollination biologists to track the whole pollination process from the first visit by a pollinator to its endpoint – either successfully transferred to another flower’s stigma or lost along the way.

“Despite over two hundred years of detailed research on pollination, Minnaar says, researchers do not know for sure where most of the microscopically tiny pollen grains actually land up once they leave flowers: “Plants produce massive amounts of pollen, but it looks like more than 90% of it never reaches stigmas. For the tiny fraction of pollen grains that make their way to stigmas, the journey is often unclear—which pollinators transferred the grains and from where?”

“Quantum dots are semiconductor nanocrystals that are so small, they behave like artificial atoms. When exposed to UV light, they emit extremely bright light in a range of possible colours. In the case of pollen grains, Minnaar figured out that quantum dots with “fat-loving” (lipophilic) ligands would theoretically stick to the fatty outer layer of pollen grains, called pollenkitt, and the glowing colours of the quantum dots can then be used to uniquely “label” pollen grains to see where they end up. Minnaar has developed a device to track this in the field.”

To read more, visit: https://www.bee-culture.com/catch-the-buzz-microscopic-nanocrystals-the-size-of-pollen-grains-used-to-track-the-path-of-pollen-from-flower-to-flower/?utm_source=Catch+The+Buzz&utm_campaign=e92f975871-Catch_The_Buzz_4_29_2015&utm_medium=email&utm_term=0_0272f190ab-e92f975871-256261065

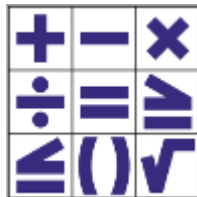
“Flowers can hear buzzing bees—and it makes their nectar sweeter”: National Geographic, January 19, 2019:

“Researchers looked at evening primroses (*Oenothera drummondii*) and found that within minutes of sensing vibrations from pollinators’ wings, the plants temporarily increased the concentration of sugar in their flowers’ nectar. In effect, the flowers themselves served as ears, picking up the specific frequencies of bees’ wings while tuning out irrelevant sounds like wind.

To see the stunning photos – and read the details - visit:

<https://www.nationalgeographic.com/science/2019/01/flowers-can-hear-bees-and-make-their-nectar-sweeter/>

“Scientists Discover Bees Can Solve Basic Mathematical Problems”: Bee Culture’s Catch the Buzz, February 26, 2019. More from the scientist who found that bees grasp “zero”!



“In a paper published in the academic journal *Science Advances*, scientists have found that despite having a brain the size of a sesame seed, honey bees are able to handle basic math operations.

“The results of the study are particularly fascinating, because if bees can manage such complex cognitive processes – long-term memory to recall the rules and short-term working memory to deal with the problem at hand – it is a discovery that forces us to further reevaluate our existing conceptions about the relation between brain size and intelligence.

“Using color-coded shapes, the research team trained 14 honey bees to do simple arithmetic operations. The fluffy insects were presented with a math problem and two possible solutions, only one of them correct. The bees managed to pick the correct answer between 63.6 and 72.1 per cent of the time, which is often enough to refute they were simply picking at random (and way better than many of us did back in kindergarten).

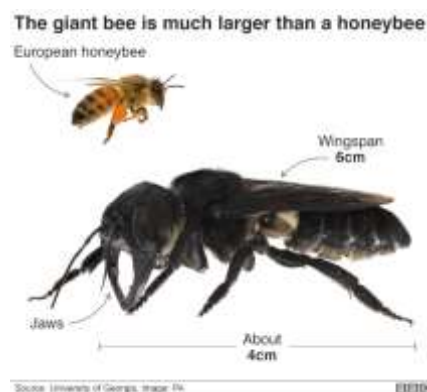
“In the current study, the bees not only succeeded in performing these processing tasks but also had to perform the arithmetic operations in working memory,” wrote study lead author Scarlett Howard, who carried out her research as a PhD student at RMIT University.

“Many animals are able to understand numbers at a very primitive level and use it in their everyday life for tasks like shoaling, foraging and managing resources. But more abstract

thinking like using symbols, labeling, or arithmetics are exclusive to a very limited group of nonhuman vertebrates.

“Howard and her team discovered that honey bees were able to learn colors as symbolic representations for addition or subtraction. For example, if a bee was presented with two blue cards – blue meaning addition – the correct answer was three, while if the bee was presented with two yellow cards – yellow meaning subtraction – the correct answer was one.”

To read more, visit: https://www.beeculture.com/catch-the-buzz-scientists-discover-bees-can-solve-basic-mathematical-problems/?utm_source=Catch+The+Buzz&utm_campaign=2acab0d61d-Catch+The+Buzz+4+29+2015&utm_medium=email&utm_term=0_0272f190ab-2acab0d61d-256261065



“World's biggest bee found alive,” by Helen Briggs BBC News, Science and Environment, 22 Feb 2019: Wallace's giant bee (*Megachile pluto*), the world's largest bee - the size of an adult person's thumb - has been found alive on a remote Indonesian island. To read more about the “bulldog of bees,” visit: <https://www.bbc.com/news/science-environment-47311186>

ANNOUNCEMENTS

Also see “Upcoming Events”

Western Apicultural Society Newsletters: http://groups.ucanr.org/WAS/WAS_Journal. Click on the line in the paragraph on the right as directed. If you're still getting the old issue, click on "empty cache" in your browser or "refresh" or "reload" under VIEW in your menu bar.

WASBA Newsletter: Pick up your copy of this bimonthly online at www.wasba.org: click on "Newsletters."

That's all for now ~ take care, & bee happy!

~~ Susanne Weil, LCBA Secretary (Secretary@lcba.community; 360 880 8130)