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## July 2013 LCBA Newsletter

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*Questions? Suggestions? Resources you'd like to share?*

*Please contact LCBA Secretary Susanne Weil: [susanne.beekeeper@gmail.com](mailto:susanne.beekeeper@gmail.com) or call 360 880 8130.*

## UPCOMING LCBA EVENTS:

*LCBA's board is organizing an August mentoring workshop focused on how removing honey supers without hurting bees, as well as a September honey spinning and fall management workshop. Check our website & watch for email announcements. . . .*

### **Saturday, July 13, 5 p.m. till ~ ?? LCBA's 5<sup>th</sup> Annual Summer Potluck**

***Please note Saturday date!*** This year, our summer potluck comes on a Saturday so those with full time jobs and kids to get to bed on school nights can linger longer – and we hope you will! Water & pop provided by LCBA. ***Guests are welcome!***

***Where: Contact Susanne for directions: [Susanne.beekeeper@gmail.com](mailto:Susanne.beekeeper@gmail.com); 360 880 8130***

#### ***Please bring:***

- \* A dish to share (honey involvement welcome, but not required\*\*);
- \* A plate & cutlery;
- \* A chair to sit on;
- \* Beekeeping gear if you'd like to peer into a hive; and
- \* If you like, an item for our monthly fundraising raffle.

***N.b.: this month's raffle is a benefit for beekeeping training in Kenya led by former LCBA member Wilma Sofranko, one of our February 2013 speakers. See below for more information about Wilma's quest to train 300+ Kenyan beekeepers.***

This gathering is in lieu of our regular monthly meeting, though we will have a short business meeting as members munch, including criteria for SW WA Fair Honey Judging & other LCBA Fair events.

***\*\*Looking for a new recipe?*** Check the HONEY link on our website: the National Honey Board has sent directions for a bunch of new dishes. Feel like experimenting? Maybe one will take your fancy.

**July 13-14, 9 a.m. to 4:30 p.m.: West Sound Beekeepers' Queen Rearing Class** at Stedham Bee Supplies, Silverdale, WA, \$125. LCBA members who took this class last year had a great experience. For details, visit: <http://westsoundbees.org/Queen%20Rearing%20in%20the%20Pacific%20Northwest%202013%20rev2.pdf>.

**July 19: "The Art of Queen Rearing" - Mt. Vernon Agricultural Station.** Sue Cobey & the WSU APIS team will offer "The Art of Queen Rearing" a second time – for registration information, visit <http://entomology.wsu.edu/apis/>.

**July 26-28: Pacific Northwest Treatment-Free Beekeeping Conference.** Pacific University, about half an hour south of Portland. Tuition of \$268 includes room and board. For more information, visit [blisshoneybees.org](http://blisshoneybees.org).

**August 13-18: Southwest Washington Fair – please see article below for more information on brand-new LCBA honey bee outreach events!** LCBA will have a booth in the Floral Building – if you'd like to help staff our table or have display items, please contact Susanne or Membership Coordinator Steve Howard ([sfhoward45@msn.com](mailto:sfhoward45@msn.com)).

**August 14: LCBA Monthly Meeting, 7 – 9 p.m., 103 Washington Hall, Centralia College**

*Social Time 6:30 to 7 – Come Talk Bees!*

**Topic: Testing Bees for Diseases & Parasites – featuring microscopic images live on the big screen...** LCBA board members will demonstrate how to take testing samples, how to make slides, and then project them for all to see. VP Dave Gaston will report on July's Pacific Northwest Treatment-Free Beekeeping conference, and we'll have a discussion of the pros and cons of treatment(s).

**Business Meeting: Beekeeping Q&A. Also: monthly raffle – if you have something to share, please bring it to the meeting !**

*TBA: Mentor Workshop on How to Remove Supers – Working Around Bees.*

**September 11: LCBA Monthly Meeting, 7 – 9 p.m., 103 Washington Hall, Centralia College**

*Social Time 6:30 to 7 – Come Talk Bees!*

**Topic: Fall Management Issues.** Conducting fall inspections, removing/reversing hive boxes, treatment options, and more. Special feature: Tim Weible will demonstrate candy boards.

**Business Meeting: Beekeeping Q&A. Also: monthly raffle.**

*TBA: Honey Spinning Workshop; Fall Management Issues Workshop.*

**September 29 – October 4, 2013: International Apimondia Congress, Kyiv, Ukraine.**

Representatives from over 35 countries will discuss the theme, “Beyond the Hive: Beekeeping and Global Challenges.” For registration and program information, visit:

<http://apimondia2013.org.ua/en/exhibition-program/become-a-delegate/>

**October 3 – 6, 2013: WSBA Conference, Federal Way, WA. Please note new dates & location**

**– the conference was originally slated for Oct 31 - Nov 2 in Seaside, OR.** Note: nearer than Ukraine ;) Registration info isn't yet available, but see WSBA's website for details on major speakers, including *Beekeeping for Dummies* author Howard Blackiston: <http://wasba.org/event/wsba-annual-conference/>.

**October 24, 31, Nov. 7, 14: LCBA / WSBA Apprentice Beekeeping Course, Lewis County Extension Classroom, Old Chehalis Courthouse; Cost: \$30 individual; \$45 couple or family.**

LCBA Past President Bob Harris and President Norm Switzler will teach this introductory class, assisted by Peter Glover, Sheila Gray, and Susanne Weil. The course is sponsored by Lewis County Extension. The registration brochure is available on our website. Questions? Contact LCBA Secretary Susanne: [susanne.beekeeper@gmail.com](mailto:susanne.beekeeper@gmail.com) or 360 880 8130.

## NOTES FROM LCBA'S June 12, 2013 MONTHLY MEETING

### Speaker: Bob Smith, Olympia Beekeepers: Criteria for Judging Honey

LCBA President Norm Switzler introduced Bob Smith of Olympia Beekeepers' Association, whom we invited to explain how honey is judged in competitions. Bob bought his first honey at the Puyallup Fair in 1968; he started beekeeping in 1985 with Olympia Beekeepers. He has been teaching beginning and journeyman beekeeping for about 15 years and judging honey at the Thurston County Fair for about 10 years. His experience comes from being shown how, and then just doing it. He has a sheet of rules and a score card for judging, as well as a sheet telling those who'd like to show honey what to do before bringing honey to a show (details below). Norm asked whether one must be a member of Olympia Beekeepers to show at the Thurston County Fair: Bob thought not, noting that the highest number of entries he's ever had was five!

Bob shared three helpful handouts, reproduced below; his handouts are followed by a summary of his honey judging overview and our group's discussion. For more on honey judging, Bob recommends *Honey Shows: Guidelines for Exhibitors, Superintendents, and Judges*, by Roger and Mary Lou Morse (Wicwas Press, 1997). Also, the July 2013 edition of *American Bee Journal* has an interesting article on the topic.

Bob's criteria and our group discussion helped the board develop criteria for LCBA's honey judging at the fair – our criteria are different and appear in their own section, following business meeting notes.

#### **“Getting Your Honey Ready to Exhibit”**

*Courtesy of Bob Smith & Olympia Beekeepers' Association*

1. Start early.
2. Be sure all your equipment is clean and free of lint before you start. If possible, air dry everything the honey will touch. Any lint will show up in the judging and will cost you points.
3. Strain your honey through a fine nylon strainer, as cotton tends to leave lint in the honey.
4. When filling the jars, tilt to eliminate air bubbles or use a piece of PVC pipe cut in half to fill from the bottom. Set them in warm water until the air bubbles are out, then remove any specks or foam with something like a toothpick. Fill all three jars to the same level (the shoulder of the jar) with honey that is the same color.
5. Before putting the lids on the jars, be sure to place plastic wrap over the jar. This will eliminate the problem of honey on the lid, which will cost points in the judging.
6. Take a damp cloth and a lint-free cloth to clean off the outside of the jars before you leave them. Also be sure to remove the protective liner under the cap.

## **“General Rules for Showing Honey”**

### **Olympia Beekeeper Association ~ Thurston County Fair**

1. Entrants are limited to one entry per lot. Items shown shall not have been previously entered in any show competition.
2. Each entry shall consist of three (3) one-pound glass queenline honey jars. Color lots to be determined by the show coordinator prior to judging.
3. Identifying labels attached to the entries are forbidden.
4. All entries must be the product of the entrant’s apiary and must have been produced within the 15 months prior to the show.
5. Entries must be brought to the Home Arts building by [dates, times, places for drop off and pickup listed]
6. All liquid honey shall no exceed 18.6% moisture. All entries above 18.6% will be disqualified. In the event of a tie, the honey with the lowest moisture content shall be declared the winner.
7. No one judging a Division may enter in that division.

### **Thurston County Fair ~ Score Card for Evaluation of Honey**

Placing:

Exhibitor’s Number:

Div., Class, Lot:

Description:

Excellent      Good      Fair      No placing

1. Moisture Content  
(above 18.6% disqualified)
2. Freedom from Crystals
3. Cleanliness
4. Freedom from foam & air bubbles
5. Fill
  - a. Uniformity among containers
  - b. Appropriate level
6. Containers
  - a. Cleanliness
  - b. Neatness
  - c. Uniformity
7. Flavor: down-grade for overheating, fermentation, & other objective flavors
8. Brightness
9. Uniformity of Honey

Comments:

**Bob's plan for this meeting was to run through how he judges honey, using the samples that LCBA members brought in.** He noted that when appointing a judge, an association can decide on judging criteria. Bob ran through the Thurston County judges' scorecard.

**Color is not** on the list of criteria because color is what divides honey into classifications for judging. To make that classification, judges go by how light penetrates honey, from lightest to darkest: among the darkest are buckwheat and Japanese knotweed. There are five basic colors – white, light amber, amber, dark amber, and dark - the range can expand to 7. Our LCBA samples displayed 5 color classes to show. Bob uses "Jack's Scale" to check honey color: an inexpensive set of laminated, ruler-shaped cards which help judges match a given sample's color to the different shades. Thurston County entrants are only allowed one set in each of the color classes so as not to compete against themselves.

**#1: Moisture content.** If a honey sample's moisture content is above 18.6 per cent, it is disqualified. Moisture is tested with a refractometer: Gary Stelzner noted that he had just ordered a digital refractometer that can be used in our honey judging.

**#2: Freedom from crystals:** when you show your honey, you must certify that it was produced within the last 15 months. Crystals not only suggest moisture content but age. Bob was asked how to de-crystallize honey. As honey is warmed up, the crystals melt down. Honey sold in stores has been run through a flash heater: at about 165 degrees, the heat melts points of crystallization and gives a longer shelf life in store. Crystals start at the bottom of the container. When crystals form, they lose a tremendous amount of moisture and can help get honey disqualified under criterion #1.

**#3: Cleanliness:** Bob noted that in old books, filtering is always described as being done through cheesecloth: now we know that cheesecloth is linty, so to avoid getting cotton into the honey, we wouldn't use it. Bob's personal preference is to use nylon paint strainer bags: he suggests even doubling them when straining honey to get crystals out. Only particles under one-hundredth of an inch would get through. (Also noted: one can also filter from the extractor through women's pantyhose, though, of course you want to wash it first...)

**#4: Freedom from Foam & Air Bubbles:** This is also referred to as **clarity**. Once a judge has divided honey entries into color classes, he/she must make sure that the honey contains no debris, like wax or lint, no air bubbles, and no foam under lid. Bob notes that one thing you can do to avoid air bubbles is to pour down the side of jar, not directly into the center. However, he commented that any honey sample will contain some air bubbles: it is very difficult to strain honey without getting any air into it, and Bob asks that if anyone knows how to avoid bubbles, please, teach us all! Honey comes from the middle of the barrel; it has been sitting as long as the beekeeper can let it sit to get all the air bubbles out of it. The very best honey Bob's seen in terms of bubbles was knotweed gathered last year: it was so low in bubbles that it was best of show, even though it was darkest. Bob was asked: why not use centrifugal force to get rid of bubbles? He said that he is not sure: if you could centrifuge a jar of honey and that works, do it.

**#5: Fill: uniformity among containers.** The lid should be put on over clear shrink-wrap and then presented to the superintendent at the fair: this allows the judge to look for any foam that may be on the top. This is the first thing Bob will do: if there is any honey on the lid, the sample is disqualified. Also, the fill level should be at same spot, just under the edge of the lid, so judges can look at it and see. Bob was asked whether transport wouldn't necessarily make honey splash on top? One has to take care in transport.

**#6: Bottles and labeling:** Thurston County requires queenline one pound glass jars. Containers themselves must be clean, neat, and uniform. Bob recommends buying a case of 12 queenline glass jars and picking out the three best to show your honey in, avoiding any imperfections in the glass. Then, you can open a jar and place a drop on the refractometer, painting it on so that it is uniform; read it in the light to know the moisture content. Next, there can be no labels: that would give away whose honey one's judging, and since relatively few beekeepers tend to enter, it would be too easy to recognize names. How entrants and judges hold the jar is important: it is illegal for the judge, or anyone, to hold the jar by the front and back – rather, the jar should only be touched on the sides so that the front of the jar is not smudged. Ideally, all 3 sample jars must be perfectly clean outside and inside.

**7: Flavor: down-grade for overheating, fermentation, & other objective flavors:** Next, Bob takes a toothpick and tastes the honey: what he looks for is no “scorched” flavor, since scorching shows that the honey has been overheated. Some entrants overheat honey in seeking to get bubbles out, but if you heat it above 120 degrees, you destroy the enzymes which help keep honey viable. Also, 146 degrees is where beeswax melts, so if the honey is heated too high, beeswax could be incorporated into liquid honey. The Morses' book discusses this. Typically, one can taste as much as a toothpick will hold.

Also to be avoided is the opposite of overheating and scorching: fermentation, when the honey has picked up mold or been exposed to something that ferments on its surface. With the toothpick method, you can get honey off the surface, where fermentation starts. As the honey gets more moist (which it can do as crystals give off moisture), spores in the air will start to ferment in the honey. Honey won't ferment at 18 percent moisture or less.

Bob noted, however, that eventually, all honey will ferment unless you can dry it again. Honey is hygroscopic: if not sealed up, it will gather moisture, even in wax combs – “if honey is not with bees, it will be getting bad.” Honey is an antiseptic material – nectar, say of pears, has only 10 percent moisture, and bees add to it – the very best nectars consist of no more than 50 or 60 percent sugars and 40 percent water. Field bees give nectar to house bees; each bee adds some enzymes to the fluid that will be honey and helps reduce it down to 18 percent moisture. To combat fermentation, Bob recommends getting aluminum cookie sheets, warming to 110 degrees, and drying honey that way: but, he warns, be careful not to heat too much, just to dry it.

**8: Brightness:** Perhaps this one is self-explanatory!

**9: Uniformity of Honey:** The 3 jars presented in competition should come from the same source.

## *Questions & Answers:*

***Judging Standards:*** Tim Giese asked whether the swing toward more natural, unfiltered honey will affect judging standards – is there a “raw honey” category? In raw honey, Tim noted, clarity could actually be a negative, not a positive, because trace minerals and other things that get filtered out are increasingly seen as desirable.

Bob answered that the Morses’ book *Honey Shows* (publication info above) is a good starting point to discuss issues like this. The late Roy Thurber of Highline Community College (the chair that Steve Sheppard holds at WSU is named for him) impressed on Bob that to show honey, the first thing one must do is ruin it: to impress the community with how clean and pure and natural it looks. Tim believes, though, that the community needs to be educated: that sugar is not a pure, clean food, and that what is presented at supermarkets is a valueless product. Bob agreed, noting that LCBA as a group will need to set our own criteria.

***What about taste?*** Bob said that flavor is subjective, so, odd though it sounds, flavor is not what honey is judged by. Some prefer lighter or sweeter honey, some a richer, darker bouquet. Different flavors are coming into hive via bees all the time, too – honey from spring is better than fall honey, in Bob’s view, but that might not be your point of view. Judging focuses on things that can be objectively measured; Tim Giese noted that judging, then, is about the skills of the person who bottles the honey, rather than the bees who make it. Tim notes that different flavors of honey will appear different too.

***Who sets current standards every year for the honey?*** Bob goes by *Honey Shows*, but suggests that if you can find more current standards, go with those: each group has the prerogative to set its own criteria. Gary noted no one should get too worried about criteria for judging – all comments will be taken up by board, taking comments made at this meeting into account; the criteria LCBA will use will be in the July and August newsletters, as well as posted on the website. Bob also commented that the process of entering and judging should be enjoyable: if you’re not having fun, why do it? It was suggested that LCBA could have a couple of different categories to give our community a chance to see the different types. Don Hershey asked if people who come to see could taste the honey so they’d know what there is and could try it. Since it’s subjective, why not let people choose? Bob noted that owners of the honey have to decide if they are ok with having people getting into that honey; if you show it, Bob says, you still own it, and normally, you get it back.

***What is the best way to preserve honey?*** Bob seals it in food grade buckets and heats his house with a masonry stove; he puts buckets of honey near that stove to keep the honey warm and retard crystallization. All honey ultimately will crystallize, though it’s worth noting that if it does crystallize, it will stay honey forever (as long as it doesn’t take on moisture).

***Toothpick test of our honey at this meeting:*** Gary’s honey had a good deal of air bubbles, but only 17.1% moisture, so, with about 83 percent sugars, very good honey. Bob thought this was probably a mix of mostly spring honey: Gary said it was probably 50 percent blackberry. It was not strongly maple flavored. Bob just extracted his spring honey, which he keeps for himself. Maple, he finds, has a sharper flavor. We ran short of time, so Bob didn’t taste all samples.



**Cleaning the refractometer:** Using water and a dry rag, clean the refractometer carefully after each test so that it is completely clean for each new sample to be examined. Bob commented that, usually, when he does this at home, he licks it clean and then washes it out. We will have a digital refractometer, but will still have to do the cleaning.

**Polarized light:** Peter asked about using polarized light – they ask for clear jars and then shine light through 2 frames of polarizing film and can see impurities.

**What about comb honey?** Bob noted that it is discussed in the Morse’s book; members noted that it is among the Fair categories for honey judging.

## June Business Meeting Notes

**Raffle:** The raffle netted \$86. Steve Howard took the swarm catcher. Norm won the new hive tool. Diane O’Brien won the antique wasp trap. Gary Stelzner won the flat of “bee plants” – and then put them on the table, inviting anyone who wished to take one on the way out. Ted Saari won the Boardman feeder and more hive accoutrements. After the meeting, Steve and Ted swapped prizes. Finally, Gordon Bellevue won a top feeder.

**LCBA’s 5<sup>th</sup> Summer Potluck is on a Saturday this year – July 13 in Chehalis, 5 p.m. till??** [contact Susanne for directions – [Susanne.beekeeper@gmail.com](mailto:Susanne.beekeeper@gmail.com); 360 880 8130). The board decided to move the summer potluck to a Saturday in hope that those with full time jobs and child care to handle might more easily be able to attend and to stay longer. For details re: what to bring, etc., please see “Upcoming Events,” above.

**Southwest Washington Fair:** Steve Howard called for volunteers to staff LCBA’s exhibit table in the Floral Building: this year we will have 4 tables and a more visible location, plus “see the bees” signs around the fair to draw kids in to see our observation hive. Steve noted that the Fair provides some complementary tickets for admission and parking, and that our board cover all other admission and parking tickets for LCBA volunteers. A sign-up sheet was passed around and will be available at our summer potluck on July 13.

**Candy Board demonstration:** Tim Weible will bring candy boards to our September meeting on fall management issues and walk us through how to make and use them.

## Beekeeping Q&A

**Pests:** Norm noted that ants are likely to be our nemesis this year: they are not a big problem in the hive, but they create waste, so beekeepers may want to discourage them. Some members sprinkle cinnamon on the ground around the hive: this deters ants. Some use diatomaceous earth, which is not chemically active and will not hurt bees. Others place the legs of their hive stands in containers of soapy water. Earwigs usually are not a problem: they don’t multiply in the thousands, like ants. (We’ll discuss yellow jacket issues at our July Potluck.)

**Forage:** Norm said he thinks we will lose our flowers early this year: in downtown Centralia, blackberries are halfway through their cycle, so feeding in fall may be something to consider. When we face nectar dearths, he warned us to watch for robbing and to be ready to constrict entrances down to protect hives. This will vary depending on one's area – available forage is partly elevation-dependent, with higher elevations sometimes lagging a month behind. Gary Stelzner said he's hardly seen any bees on his blackberries. Norm has noted an almost equal number of bumblebees to honey bees: he wonders if bees are still getting locust flowers. One member who lives behind the blueberry farm in Rochester has not seen the blueberry growers bring their bees to fields yet, but Bruce Casaw reported that they have been and gone in Mossyrock. There could be a later strain of blueberries.

**To feed, or not to feed:** Cathy Lilienthal noted she is still feeding her bees. Norm says that if you feed them, they will take it till have something much better: "they are little piglets – they'll take it as long as they can." Bruce accidentally reversed the 2:1 formula, instead giving 1 part water to 2 parts sugar: he got honey bound hives and had to stop feeding. He saw a "nice little chimney effect and 3 frames each side packed with nectar but no room for brood." Norm noted another problem in overfeeding on sugar water: bees don't get nutrition. However, Norm is also rethinking his "hard love" philosophy of not feeding since he's seen others' bees do well on a feeding regimen, with some ready for honey supers now. Tim Giese said that it is normal for bees to be light in honey now: they will bulk up later in the season, so since we have more time later in this cycle, no one should panic.

Mr. Baginsky, who sold his beekeeping equipment to the Gieses, said that the real killer he ran into is weather pattern changes and how those correlate with the bloom. Overfeeding can be a problem because bees get used to being fed and not foraging. On a positive note, he observed that about 15 to 20 years ago, there were only a few who were keeping bees, but now he sees many more – a change for the good.

**Nuc and package reports:** Kimo Thielges said that his nuc is doing better and building up faster than package bees. Norm said that his nuc bees have thus far refused to move off the first five to six frames. Some reported mean bees: Norm pointed out that if bees are agitated, that usually it means something wrong in the hive: they may be queenless, so it's important to inspect. Herb Keeling reported that his package bees have built 14 bars in his top bar hive.

Rich Harned asked about managing bees he acquired during a removal the previous week: how soon after hiving comb from removal should he go in to see how they are? Norm recommended waiting about a week: they will have waxed anything loose in the box by then.

Cathy bought a nuc and a package: her nuc bees are just on 4 frames, and the colony seems to be queenless – she never did find a queen in the nuc colony, though she did find the queen in her package. She just got a queen for her nuc, but then saw that her package bees were still just in the one box too, and now found what look like supersedure cells on the outer frame. She will let those cells alone. The brood pattern in package looked normal. Norm said that it's odd to find supersedure cells at this time of year unless you have a bad queen.

**Cool home-made tools:** Kevin Reichert brought a homemade bee vacuum, which Norm demonstrated. At Home Depot, Kevin had gotten a 5 gallon bucket, plus a draw hose, non-corrograted but reinforced, to suck bees in: as long as you do not suck nectar in with bees (which will injure the bees by sticking them together), the vacuum is great for removals, allowing you to reach up and get bees that tend to cluster right up above the comb. It seems to work better than Norm's Goodwill Shop-Vac, Norm noted. One reason for that is Kevin's front relief valve: a controller to dampen down or open up the vacuum so there's not too much draw. You don't want to turn bees inside out: the relief valve keeps the vacuum from "running bees down the washboard" while you suck them in. Trying to sweep bees into a dustpan works for brood bees, but not foragers, who will fly away. He draws them into a nuc box, and the current pushes bees to the outside of frames. Kevin transfers the frames into a box when he gets them home: his initial report was that there were "very few casualties." All told, it cost Kevin \$45 to build.

Norm noted that it would be great to have a "creator's corner" in the newsletter (or on the website) to feature helpful devices like these; possibly one of our winter meetings, when we don't have "active beekeeping" questions, could be devoted to members' showing innovative devices and techniques they've developed.

**Appreciations & announcements:** Don Hershey thanked Norm for holding informative, enjoyable meetings, and for being a wonderful president; he thanked Susanne for the newsletter.

Steve announced another opportunity for members to fill out forms for the membership directory, which will have no pictures for this first edition. Steve also noted that a great book to have, particularly for those taking the Journeyman class, is *The Hive and the Honey Bee*, which has been republished in a new edition: if anyone is interested, contact him, as he can get a copy for \$27.

## **LCBA AT THE SOUTHWEST WASHINGTON FAIR, August 12-18**

We've planned new events for our Fair exhibit this year. We'll hold our first-ever "People's Choice" honey tasting contest – a chance to show the public the difference between raw, local honey and that processed stuff in supermarket honey bears. (Interested in entering your honey? See how it works under "People's Choice," below.) For kids, we'll have a hands-on "jobs in the hive" game (thanks to Sharette Giese), as well as "find the queen" in observation hives (thanks to Bob Harris and Norm). Susanne and Peter will hold a couple of "how to get started in beekeeping" overviews, Kimo will give a mason bee talk, and we'll have show and tell stuff, too: a Langstroth hive (*sans* bees), tools, a display of "gifts from the hive" like wax, pollen, and royal jelly, trifolds with photos from our workshops and colony removals, and more. Our booth will be in the Floral Building, with about 4 tables and a more visible location.

Please help us reach out to share knowledge and concern about bees with our Lewis County neighbors! If you are interested in helping staff our table, or if you have display items, please contact Susanne (see above) or Membership Coordinator Steve Howard (sfhoward45@msn.com).

## **Honey Contest #1 ~ Official SW WA Fair Contest Criteria:**

Drawing on Bob Smith's presentation and questions raised in our monthly meeting discussion, and with help from Tim Giese and Roy Schaafsma, LCBA's board developed the following set of criteria by which the official honey judging at this year's Fair will run. Roy Schaafsma has graciously agreed to serve as judge for the Fair's official honey contest.

*N.b.:* guidelines below apply only to the 2013 Southwest Washington Fair and may not be how other fairs conduct honey judging.

- \* Color: classified based on Jack's Scale. There are no points for color; color sets judging classes only, and judging takes place within each color class: for this competition, colors to be judged will be light, amber, and dark.
- \* Moisture: honey over 18.6% moisture is disqualified;
- \* Flavor: honey will be tasted only for scorched flavor that would indicate excessive heating.
- \* Filtering: micron filtering no less than 400. (Those who filtered their honey at LCBA's honey spinning last September will fit this category; if you have questions, please contact Susanne.)
- \* Submit 2 jars: 1 pint glass jars for official judging; optional, additional half pint for "People's Choice" tasting contest on Saturday, August 17 – details below. Tim. Gary, and Norm have jars to donate – these will be available at our July 13 potluck for anyone who wants them.

## **Honey Contest #2 ~ LCBA People's Choice Honey Tasting**

Remember, above, how we asked contestants in the Fair contest to submit 2 jars, one 1 pint, one half pint? That half pint will be for our People's Choice Honey Tasting Contest, 1 p.m. on Saturday, August 17. The samples will be set up for visitors to our exhibit to taste till the samples run out. The tasting will be prefaced by a short overview of how honey is made, spun, and filtered, as well as some of the differences between commercial and raw honey. Tasters will be asked to focus on flavor, aroma, and texture. If you enter your honey in this contest, don't expect to get it back ;)

Once tasters have sampled, they will write the number of their preferred honey on a piece of paper and put it in a jar. Votes will be counted when the tasting is concluded, and the winner announced: the winner will be LCBA's first People's Choice Honey Tasting Champion.

Since honey is a non-hazardous food, County health regulations permit us to have a honey tasting station at our exhibit, provided we have one-time-use tasters and a disposal jar. We will also have a hand cleaning station. To avoid that "woody flavor" affecting the tasting, we will use small plastic spoons rather than toothpicks.

## **LCBA's WILMA SOFRANKO TO TRAIN 300+ BEEKEEPERS – IN KENYA! YOU CAN HELP. . . .**

Would you like to help 350 Kenyan farmers and their children learn beekeeping so that they can sell honey to help fund their kids' schooling? Our July Potluck raffle will be a fundraiser for this initiative. Read on for details:

At our February meeting, Wilma Sofranko described her sustainability adventures in Kenya (you can find a writeup of her talk in our March newsletter, and her PowerPoint is on the Monthly Meetings link on our website). Wilma joined LCBA 2011, then went to Kenya to start a non-governmental organization focused on organic farming: Kisii Rural Education and Empowerment Coalition (KiReeCo). KiReeCo's focus is helping farmers become more self-sufficient through projects like their heirloom seed bank. Wilma's also working to train beekeepers so that they can raise – and sell – honey: sales will help fund local children to attend school, which is neither public nor free in this region of Kenya.

KiReeCo plans to train 350 new beekeepers this August, based on WSBA's apprentice workbook, which WSBA is letting them use free. The new beekeepers will learn basics of beekeeping and build their own Langstroth hives. Among these new beekeepers will be children, who, Wilma reports, have been thrilled to get suits on and work with bees. To carry out their plans, KiReeCo is raising funds to buy honey production tools, shipping, timber purchase and labor, and a locally manufactured extractor: as of our February meeting, they had raised \$2660 of their goal, \$4389.

For the beekeeper training program, Wilma projects a cost of \$352 in materials and transportation – about a dollar per new beekeeper. If you'd like to help support this project, please bring an item for our July potluck raffle – or bid on items at the potluck. Questions? Contact Susanne – or contact Wilma directly at [kireeco@wordpress.com](mailto:kireeco@wordpress.com).

## **JUNE HIVE INSPECTION WORKSHOPS & COLONY REMOVALS**

**Hive Inspection Workshop III:** About 20 beekeepers gathered at Gary Stelzner's apiary at 10 a.m. on June 22, before it got too warm: we focused on colony challenges. Norm took one hive apart and determined it was queenless so that new members could see how to check this, identifying swarm and supersedure cells. Gary also examined one of his most vigorous hives, which displayed an exemplary brood pattern: for that hive, we did a sugar shake for Varroa mites – a way to test without killing any bees (photos will be on the website soon). We also shook bees off the inner cover of Gary's queenless hive and into a tub of isopropyl alcohol, so that he can send a sample to WSU for testing: we watched Varroa mites float off the bees and into the alcohol. In fact, in this particular hive, we spotted mites on drone larvae that we opened. (The mites did not discourage members' appetite for doughnuts, cruellers, and banana bread provided by Gary, Terrie, and Susanne, however.)

At our August 14 monthly meeting, we will demonstrate how to set up a sample to send to WSU, as well as how to dissect a bee and put it on a slide to test it yourself: Gary is getting a

microscope for this purpose; at our August meeting, we'll have the college's microscopes hooked up to the computer and projector, courtesy of Centralia College Biology professor Dr. Steve Norton, so we can see magnified images of Varroa, Nosema, and possibly tracheal mites.

**Getting Started in Beekeeping:** In the afternoon of June 22, Peter Glover and Susanne Weil held an overview of "Getting Started in Beekeeping" at Centralia Timberland Library: 19 people attended, even on a beautiful sunny day, suggesting how interest in bees and beekeeping is growing. They had plenty of questions, and Susanne and Peter distributed brochures for our fall apprentice course (see Upcoming Events, above), as well as flyers re: LCBA meetings & events.

***Are there topics you'd like to see covered in a mentor workshop? Please let us know!*** Contact Susanne (see above for phone & email).

***Have you done a swarm or colony removal? Please let us know:*** So far, LCBA members have done at least 32 swarm and colony removals, and those are only the ones that Susanne knows about! Homeowners have been very appreciative; it seems that more and more people are aware that honey bees are facing hard times and wish to save them. LCBA's board is keeping a log of removals in hope of applying for grant funding to help defray members' expenses. No promises – but we will try!

## BEES IN THE NEWS

*Many thanks to Dave Gaston, Rich Harned, Steve Howard, Maggie Keeling, Steve Norton, Tomme Trikosko, and more for sending news about our favorite members of the Genus apis ~ please keep 'em coming! There's so much to report this month that some stories are being held for August. First, an update on last month's focus: the impact of neonicotinoids on honey bees.*

**“Neonicotinoid Pesticides and Bees”:** Dr. Tim Lawrence, director of WSU-Extension, Whidbey Island, and Dr. Steve Sheppard, WSU-Professor of Entomology, were asked by Extension to provide a fact sheet responding to Thurston County's request that the WSDA (1) investigate the effects of these pesticides on bees and (2) consider whether urban use by non-licensed pesticide applicators should be prohibited. Their conclusion: while neonicotinoids clearly do have an impact on bees, we still do not know just how significant that impact is, particularly in urban settings. While neonicotinoids are used on 75% of U.S. farmland, it isn't clear how much is used in city agriculture and by home gardeners, who might conceivably buy seeds treated with neonics. Another concern is whether studies to date have explored how “field-realistic doses” of neonics – rather than high, contrived lab-condition doses – affect bees. *To read more, see the attachment to the electronic version of this newsletter or view the PDF, posted on our website under “Bees in the News.”*

**“Impaired Olfactory Associative Behavior of Honeybee Workers Due to Contamination of Imidacloprid in the Larval Stage”:** A November 2012 study published in *PLOS One* has studied “field-realistic doses,” with the goal of replicating toxicity foragers bring into the hive. What follows is a fascinating detective story. In 2008, Yang *et al.* had tested sublethal effects of imidacloprid on foraging behavior and found that even low doses affected bees' foraging

effectiveness, delaying their return to the hive; some bees did not return at all. *To read the complete 2008 study, visit: <http://ntur.lib.ntu.edu.tw/bitstream/246246/186257/1/10.pdf>.*

In their 2012 study, Yang *et al.* gave bees a range of doses of imidacloprid, measuring effects from the relatively low amounts typically brought into hives by foragers on up to larger doses. In nature, Yang reports, studies show that concentration of imidacloprid in soil, nectar, and pollen is very low and causes neither immediate death nor behavior modification. However, these studies focused on adult bees, not larvae. Since imidacloprid brought into a hive by foragers will enter pollen/honey stores, it will be in food nurse bees give larvae. Yang looked at the long term impact of field-realistic doses on larvae. Their assumption: since larvae don't eat raw nectar or pollen, they would be protected by how foragers and nurse bees detoxify food. However, detoxification in honey bee is "deficient": in fact, bees have only one-third the detoxification genes that other insects have. This means that it is relatively easy for a bee's system to become stressed by toxins, a factor that clearly has implications beyond studies of neonicotinoids.

Here's what Yang found: The rate of capped brood dropped significantly with imacloprid doses in pollen/honey stores. High doses killed nurse bees, after which larvae starved. However, the initial effect of imidacloprid in food given to surviving larvae was surprising: larvae seemed to tolerate the pesticide better than adult bees did. Why? Larvae lack nAChR, a form of acetylcholine key to neurological impulse transmissions: nAChR is attacked by active ingredients in imidacloprid. Yang found that when these larvae hatched out and grew to become foragers, long-term effects of imidacloprid emerged: olfactory associative behavior in adult honey bees was damaged by larval stage exposure to even smallest doses of IMA in study. This means that bees can't remember all the details of what they find when they forage. These sublethal doses did two additional things: first, they raised the threshold of sucrose needed for bees to find a food source acceptable, and, second, they reduced waggle dancing. *To read Yang et al.'s study, visit: <http://www.plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0049472&representation=PDF>.*

**“The Effects of Pesticides on Queen Rearing and Virus Titters in Honey Bees”:** Those effects aren't good. Earlier this year, Gloria DeGrandi-Hoffman, University of Arizona-Tucson, and colleagues found further disturbing effects of neonicotinoid exposure. When they tested bees by feeding pollen laced with chlorpyrifos, they found that the neonicotinoid leads to lower rates of queen emergence. Not only that: all emerged queens fed with these test pollens emerged with deformed wing virus, and many had black queen cell virus, as well. This effect was made worse when they added Pristine, a fungicide. *To read this study, published in the January issue of *Insects*, visit: <http://www.mdpi.com/2075-4450/4/1/71>.*

**“Substances in Honey Increase Honey Bee Detox Gene Expression”:** A ray of hope shines from Dr. May Berenbaum's May 2013 study, reported in *ScienceDaily*. Although bees, as noted above, have only one-third the detoxification genes that other insects do, honey bees' diet can activate those detox genes and help the bees break down pesticides better. Specific components in natural nectar and pollen activate a specific enzyme group to work (cytochrome P450 monooxygenases, for the biochemists among us). These enzymes break down foreign substances

– originally phytochemicals in plants – but they also work on pesticides. Honey, pollen, & even propolis contain a component called p-coumaric acid, which turns on not only the P-450 enzymes, but “every other type of detoxification gene in the genome . . . [including] honey bee immunity genes that code for antimicrobial proteins.”

*One take-home message for beekeepers from Berenbaum’s study:* since high fructose corn syrup and even pure cane sugar water mixes do NOT have p-coumaric acid, feeding sugar water may provide bees with needed calories, but it doesn’t help them detoxify. Berenbaum recommends feeding some honey to bees whenever you feed, maybe even all year round. She notes that honey bees are adapted to honey for a reason: this may be one such reason. Still to be tested: whether p-coumaric can help defend against sublethal pesticide effects, as well as viruses, microsporidians like Nosema, and bacteria like foulbrood. *To read more about Berenbaum’s study, visit: <http://www.sciencedaily.com/releases/2013/05/130501132051.htm>.*

**“Oregon investigating deaths of 25,000 bumblebees”:** Here in the Pacific Northwest, neonicotinoids made headlines as the killer of what ultimately turned out to be over 50,000 bumblebees. King 5 News reported on June 20 that dead bumblebees “blanketed” the parking lot of a mini-mall off I-5 in Wilsonville. The Oregon Department of Agriculture and the Xerces Society, a nonprofit working to educate the public about native pollinators, investigated two smoking guns: pesticides that recently applied in the area and the presence of European Linden trees, which have caused bee deaths in Europe. Xerces sent samples to their toxicity lab in North Carolina, concerned both for the bees and the Willamette Valley’s berry crops for which, they noted, “bumblebees are critically important, probably the most important pollinator.”

The next day, while “bee-proof netting” was draped over the Target parking lot’s linden trees to deter bumbles’ attraction to the area, ODA announced that the pesticide applied on June 15 to eradicate aphids was the bumblebees’ killer: Safari, whose active ingredient, dinotefuran, is a neonicotinoid. Scott Hoffman Black, Xerces’ Executive Director, said, “They made a huge mistake, but unfortunately this is not that uncommon. Evidently they didn’t follow the label instructions. This should not have been applied to the trees while they’re in bloom.” As the death count reached 50,000, the dead bumbles’ memorial was set for Sunday, July 1: Xerces and other groups hope to “draw attention to the plight of bees and their importance to life on earth.”

*To read more, visit “Oregon investigating deaths of 25,000 bumblebees,” 20 June 2013, KING 5 News, [http://www.nbcnews.com/id/52260189/ns/local\\_news-seattle\\_wa/](http://www.nbcnews.com/id/52260189/ns/local_news-seattle_wa/); “UPDATE: Cause of bee death determined” 21 June 2013, KMTR-TV, [www.kmtr.com](http://www.kmtr.com); and “Dead bees to get memorial,” 25 June, 2013, KPDX-KPTV Broadcasting Corporation, <http://www.kptv.com/story/22688139/dead-bees-to-get-memorial>.*

**“Russia Warns Obama: Monsanto,”** 28 May 2013: According to *Top Information Post*, Russian President Vladimir Putin expressed “extreme outrage” to US Secretary of State John Kerry over the U.S. government’s “continued protection of global seed and plant bio-genetic giants Syngenta and Monsanto in the face of a growing “bee apocalypse” that the Kremlin warns “will most certainly” lead to world war.” A number of readers sent links to this report, which attributes some of Putin’s outrage to the USDA’s refusal to follow the EU’s lead in (temporarily) banning neonicotinoids, and its startling message warranted investigation.



As wonderful as it would be to see any world leader champion bees, threatening world war might be throwing the proverbial baby out with the bathwater, so it's perhaps a relief that urban-legend-busting website *Snopes.com* classifies this report as false. First, though many are concerned whether Monsanto's genetically modified seeds have been adequately tested for health and environmental safety, Monsanto does not manufacture neonicotinoid pesticides. Second, as *Snopes* notes, *Top Information Post*'s source is a conspiracy website that gives no links to credible sources, and no records authenticating the content of Putin's and Kerry's conversation have been made public.

However, as with most urban legends, there are grains of truth here, too, some rather chunky. In March, Congress did, in fact, pass a rider to the Agricultural Appropriations Bill for 2013 that authorizes unapproved genetically modified products to be put on the market without government restriction or regulation for at least the six months that the bill funds, and President Obama did sign it. *To read Section 735 of H.R. 933, visit: <http://www.govtrack.us/congress/bills/113/hr933/text>. To read the original story, visit: <http://topinfopost.com/2013/05/28/russia-warns-obama-monsanto>. To read *Snopes.com*'s analysis, visit: <http://www.snopes.com/politics/conspiracy/monsanto.asp>.*

**“British Honey bee losses double in a year due to poor winter,”** BBC News: At our May meeting, we learned about BeeInformed.org's survey of U.S. beekeepers, documenting 31% bee losses in 2012-13, up from 26% in 2011-12. The British Beekeepers' Association now reports its members' worst losses in their six years of keeping records: 33.8% in the wake of a “poor winter, following on from a disastrous summer.” Beekeepers fear that viruses and other illnesses have depleted bees' resistance, leaving them vulnerable in times of pollen and nectar dearth.

Further, “If the weather is changeable, a queen may not execute her mating flight properly . . .” “If she doesn't get properly mated she can only lay drones, and if she is doing that, that's the death knell for the hive,” said Tim Lovett, BBA. British bees also suffered from “isolation starvation: [b]ecause of the cold, the bees cluster very closely together to maintain hive temperature and consume the stores of honey closest to them. If the weather is so cold that they can't actually move, the bees will starve - although there may be plenty of food sources nearby.” *To read more, visit: <http://www.bbc.co.uk/news/science-environment-22861651>.*

**“Bee rustlers add to misery of struggling hive owners,”** 25 May 2013: In Wales, struggling beekeepers face a new threat: bee thieves. Cardiff beekeeper Elaine Spence believes the smugglers must know bees: “To steal a colony of bees, you need to know what you're doing. A person walking the street would not know how to come in and effectively remove a colony of bees. They lifted the six frames out of the hive complete with the colony on it, put them in the box, shut the box up, Bob's your uncle, away they go, and probably as quickly as that.”

Spence commented, “All bee-keepers strive to ensure that their bees last through the winter: you care for them, they're a bit like part of your family, really. And to come and find that they have just been taken from you - it was really distressing.” She added, though, that “[t]he bees that were taken were a fairly angry lot - they even managed to put me in accident and

emergency last year through stinging me, so maybe there might be some poetic justice." *To read more, visit: <http://www.bbc.co.uk/news/uk-wales-22660132>.*

**“Your Honey Isn’t Honey”:** *FoodRenegade.com*. Many already know that much commercially available honey would more accurately be called honey-flavored corn syrup. Both the FDA and the World Health Organization agree that only the “presence of pollen . . . authenticates honey.” Food Safety News, in a test of 60 commercial samples, found that 76% contained no pollen at all, and that at “drug stores like Walgreens, Rite Aid, and CVS, the failure rate went as high as 100%.” *To read the original 2011 FSN study, visit: [http://www.foodsafetynews.com/2011/11/tests-show-most-store-honey-isnt-honey/#.UdC0rUbn\\_IU](http://www.foodsafetynews.com/2011/11/tests-show-most-store-honey-isnt-honey/#.UdC0rUbn_IU).*)

Mark Jensen, president of the American Honey Producers’ Association, notes that the extreme filtration needed to eliminate pollen – a “high-temperature, high-pressure” process that goes far beyond ordinary filtering to screen out bee parts and wax – is both costly and destructive to quality, so he can’t imagine U.S. producers choosing such methods: “In my judgment, it is pretty safe to assume that any ultra-filtered honey on store shelves is Chinese honey and it’s even safer to assume that it entered the country uninspected and in violation of federal law.”

Chinese honey, according to the *FoodRenegade*, “is cheap, diluted with high-fructose corn syrup and sweeteners, and tainted with crazy chemicals and antibiotics.” We know how *Varroa destructor* mites came here from Asia, but evidently American foulbrood hit China in 2001. Chinese beekeepers treated with potent antibiotics, “including chloramphenicol — a carcinogenic antibiotic that’s been banned by the FDA. As recently as 2010, the FDA confiscated \$32,000 worth of imported Chinese honey that was contaminated with this drug.” However, since approximately 5% of honey from abroad actually gets tested by the FDA, U.S. supermarkets may be harboring many tainted bears on their shelves. Even worse, much Chinese honey has led contamination, since small scale honey producers in China use “unlined, lead-soldered drums to collect and store honey before it is collected by the brokers for processing.”

In 2001, the Federal Trade Commission hiked tariffs on Chinese honey, but products still enter the U.S. through middleman nations. *Food Renegade* alleges that “honey suppliers are ultra-filtering their so-called honey to hide its origins.” Although U.S. District Attorneys carried out a successful honey sting operation, arresting brokers connected to ALW, “the largest honey importer in the U.S., [ALW] began networking with Chinese honey producers and brokers desperate to unload cheap products. In exchange for contracts with ALW, honey brokers agreed to move Chinese-origin honey to Russia, India, Indonesia, Malaysia, Mongolia, the Philippines, South Korea, Taiwan and Thailand” – so the hunt goes on. The story reads like it ought to be a feature film, with Sandra Bullock as an intrepid ICE agent busting underworld honey brokers. Come to think of it, a script like that might pay for a lot of package bees. . . .

*To read the U.S. Immigration and Customs Enforcement account of the 2011 sting, visit: <http://www.ice.gov/news/releases/1102/110217chicago.htm>. To read the full FoodRenegade blog, visit: <http://www.foodrenegade.com/your-honey-isnt-honey/>.*

**“Turns Out 80,000 Bees Can Craft 3D-Printed Sculptures,”** 21 June 2013: In lighter news, the “3-B Printing Project” at Dewar’s White Label blended Scotch has put 80,000 bees to work: the bees have created honeycomb sculptures of Dewar’s new Highlander Honey bottle, as well as Dewar’s “Drinking Man.” How did they do it? Read on:

“[D]esigners first crafted molds of their sculptures using specialized CAD software. Each mold was textured with strategically placed hexagons of beeswax that provided a familiar blueprint for the bees to create their own honeycomb. That meant guiding the bees in building their new home, as a honeycomb's hexagonal cells lend it incredible strength and structure — perfect for design. The molds were then placed inside clear plastic enclosures that the bees could enter and leave of their own volition, freeing them to travel to the flowers lining the 3-B lab and collect the pollen needed for their honey and beeswax. From there, they placed a queen bee inside each mold. Her pheromones compelled the bees to construct a nest for her.”

*To watch a video of the Dewars’ Bees actually making these sculptures, visit: <https://www.youtube.com/watch?v=cYPHeg1vKaE>. To read more, visit: <http://studioatgawker.kinja.com/turns-out-80-000-bees-can-craft-3d-printed-sculptures-514093610>.*

## ANNOUNCEMENTS

*See Upcoming Events, above, for mentor workshops & our fall Apprentice Beekeeping class.*

***Beekeeping Gear for Sale:*** Two sources of used beekeeping gear are for sale this month. First, LCBA member Al Chappell is about to leave us to become a snowbird, so he’s unloading his gear, including a brand-new stainless steel 6-12 frame extractor. To contact Al, email: [christineyoungquist@gmail.com](mailto:christineyoungquist@gmail.com). Also, longtime Chehalis beekeeper Curtis Johnson of Hummingbird Farm is getting out of beekeeping and has much equipment for sale: you can contact him at 291 3044. This announcement comes with our standard *caveat*: used equipment may have been in contact with unhealthy bees, so talk to the seller and take precautions like flaming woodenware to kill any possible pathogens.

***Queen Rearing program update:*** Need to re-queen one of your colonies? Contact LCBA VP Dave Gaston ([fauxelk@hotmail.com](mailto:fauxelk@hotmail.com)). Dave has been raising queens this summer – a pretty labor intensive process! He only has a few available at any given time. Our WSU Caucasian queens will arrive in late July, late for grafting; our plan is to over-winter these queens and graft from them late next spring. To see a short video on WSU’s queen rearing program, visit: <http://news.wsu.edu/Pages/Publications.asp?Action=Detail&PublicationID=36513&PageID=>

***Want to add a colony to your apiary?*** Maple Valley beekeeper Norm Holcomb (“Bees in the Burbs,” 425 432 0546, [beesintheburbs3@gmail.com](mailto:beesintheburbs3@gmail.com)) has some nucs for sale– 4 frames, \$125.

***Kids’ Page for LCBA Website – coming this summer:*** Susanne is searching for age-appropriate videos, websites, texts, and of course illustrations to help children learn more about honey bees. If you know any great resources for children interested in bees, please let her know!

**July Western Apicultural Society Newsletter:** Visit [http://groups.ucanr.org/WAS/WAS\\_Journal](http://groups.ucanr.org/WAS/WAS_Journal) and 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.

**July WSBA Newsletter:** Pick up your copy from the main page, [www.wasba.org](http://www.wasba.org): click on "Newsletters" under OUR SPONSORS on the lower right of the page. Then click "Current issue."

***Take care & bee happy!***

~~ Susanne for LCBA ([Susanne.beekeeper@gmail.com](mailto:Susanne.beekeeper@gmail.com); 360 880 8130)