Lewis County Beekeepers' Association: ***October 2010 Newsletter***

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**** Informational flier on preparing to over-winter your bees (courtesy of Jason Sherwood):*** *file is attached to your cover email.*

Upcoming Events:

Weds, October 13: Monthly Meeting, 7 p.m., WSU Extension Classroom, Old Chehalis Courthouse, 351 N.W. North Street, Chehalis

**** Speakers: Jamie Allwine, Hannah Sherwood, and Sharette Giese***

**** Topic: How to make soap (Jamie), lotion (Hannah), and candles (Sharette) using honey and beeswax.***

This will be an overview, since we can't do a full scale demonstration without a kitchen. If you are interested in having a complete, hand-on workshop, please let Susanne know at this meeting or by email (Susanne.beekeeper@gmail.com) or call 360 880 8130: we can reserve a couple of hours at the Newaukum Grange before our December holiday potluck and actually make these products then!

- ***October Business Meeting Agenda:***
  - ***Treasurer's Report (October is the month to renew dues!)***
  - ***Bees—Getting Ready to Over-Winter—Troubleshooting Q&A***

October 14 & 15: ***Want an excuse to visit the great state of Montana?*** Fran Bach reports that the **Montana State Beekeepers Annual Meeting** for 2010 will be at the Hilton Garden Inn, Kalispell, Montana. For information, call 406.756.4500.

October 27: WSU Extension Beekeeping Class Starts!

4 sessions, Wednesday evenings, 6:30 to 9:30 in the WSU Lewis County Extension Meeting room, Old Historic Courthouse, 351 N.W. North Street, Chehalis. Dates: 10/27, 11/3, 11/17, and 11/24. The course will be taught by our own Bob Harris and Norm Switzler. It's designed to be "an introduction to beekeeping for novice beekeepers, as well as a comprehensive refresher course for experienced apiculturists. Topics covered will include: bee biology, equipment, seasonal management requirements, identification and management of pests, as well as honey removal and processing." Participants will get a workshop manual to complement lectures. The exam is an open book test, and those who pass will receive the Apprentice level certificate; after this, apprentices may work toward the Journeyman and then Master Beekeeper levels. The cost of the course will be $40 per person or $60 per couple. To register, send your name, address, daytime phone, email address, and a check for your amount made out to WSU Lewis County Extension: mail it to the address above, or drop it off at the Extension office. For more information, call 360 740 1214.

October 28-30: "Honeybee Losses: How to Keep Our Bees Alive": Northwest Corner Beekeeping Conference, Hood River, Oregon (a joint conference of the Oregon and Washington Beekeepers Associations). WSBA and ORSBA say: "Join us for three days of learning from some of the most respected people in beekeeping, and networking with other beekeepers in the NW. This is your opportunity to learn about the latest products, treatments, and techniques available to keep your bees healthy and ready for early spring pollination and nectar flows!" The full program is not yet available online, but I picked up a hard copy at the WAS meeting, so call 360 880 8130 if you'd like more details. For information on accommodations, see: www.hoodriverinn.com/mainsite/index.html, or call 800 828 7873.

November 10: LCBA Monthly Meeting at the WSU Extension Classroom, Old Chehalis Courthouse: Topic TBA.

December 8: LCBA's 2nd Annual Holiday Potluck at the Newaukum Grange, 7 to 9 p.m.. After dinner: brief monthly meeting & our usual Beekeeping Q&A.

Bring: a dish of food to share & a plate, cutlery, and cup to eat/drink from. The Grange has tables and chairs, 3 ranges, a refrigerator, and plug-ins for hot pots. LCBA will provide coffee, tea, hot chocolate, and napkins.

Directions to Newaukum Grange, 104 Browns Road East, Chehalis, WA from I-5, Exit 77:

- **Left onto Hwy 6 West.**
- **Left onto Riverside Rd.**
- **Riverside Road turns into Shorey Rd.**
- **Continue on Shorey Road until stop sign at Hwy. 603: The Grange is across the street.**

Questions? Contact Susanne Weil, LCBA Secretary, at *Susanne.beekeeper@gmail.com* or by phone: 360 880 8130.

Our September Meeting: Honey Extraction Workshop at the Sherwoods':

About 2 dozen beekeepers had a great time spinning super frames and extracting honey at Jason & Heather Sherwood's farm on September 8th. Thanks to Jason & Heather for welcoming us, and thanks to them and to Jon Wade for loaning folks the use of their extractors, hot knife for uncapping, etc. We didn't have a formal meeting—just a good time :)

New Feature: Cooking With Honey~~~October Recipes:

You put on the supers . . . you extracted your honey . . . and now, it's time to enjoy it! Here are the first two recipes in our new series, "Cooking With Honey." If you try these, let me know how you like them!

Recipes from the American Beekeeping Federation, "Honey Recipes 2010":

Salmon with Pecan-HONEY Sauce (6 servings):

Ingredients: 6 salmon filets (6 ounces each)
¼ tsp. salt
¼ tsp pepper
¼ cup canola oil [can use olive or other oils to your taste]
¾ cup butter, divided (you can use margarine . . . but it's just not the same)
1 cup coarsely chopped pecans, toasted
And, of course.....
1 cup HONEY :)

Process:
* Sprinkle the salmon with salt & pepper;
* In a large skillet, cook salmon in oil & 6 Tbs butter, 10 to 12 minutes, or till fish flakes easily with a fork;
* Meanwhile, in a small saucepan, cook the pecans & honey in remaining butter over medium-low heat for 8 to 10 minutes or till it is bubbly;
* Serve with salmon. Over rice is nice.

HONEY-Pineapple Sweet Potatoes: *October calls for "comfort food"—enjoy!*

Ingredients: 3 pounds sweet potatoes, peeled, cut into ¾ inch cubes
1 cup water
1 can (8 ounces) crushed pineapple
1 can (8 ounces) pineapple chunks, drained
¼ cup HONEY
½ cup coarsely chopped pecans—optional!
[FYI: if you like apricots, they are a good substitute for pineapple in this recipe.]

Process: Preheat oven to 350 degrees;
Place sweet potatoes & water in a 2-quart microwave-safe dish;
Cover & microwave on high for 8 to 10 minutes or till sweet potatoes are tender;
Drain sweet potatoes;
Drain crushed pineapple & reserve the juice;
In a large bowl, combine crushed pineapple, pineapple chunks, & sweet potatoes;
Coat the 2& ½ quart baking dish with cooking spray or oil;
Transfer sweet potato & pineapple mix to the baking dish;
In a small bowl, combine the HONEY & reserved pineapple juice;
Pour honey & pineapple juice mixture over sweet potatoes;
Bake, uncovered, at 350 degrees for 10 minutes;
Stir; (if you are adding the pecans, sprinkle them on now);
Bake uncovered at 350 degrees for another 15 to 20 minutes longer or till the mix is heated through.
Enjoy!

LCBA NEWS & ANNOUNCEMENTS: *First up, new announcements; next, our regular announcement items. . .*

September Announcements:

WSU Extension Beekeeping Class Starts October 27: See "Upcoming Events" at the beginning of this newsletter for more information.

Have Bee Business Equipment to sell? David Griffin is looking for any information we may be able to share concerning anyone who is wishing to sell their bee business. He is interested in existing hives, honey separators, vehicles, forklifts and all other such assets of a commercial bee business. Any business in whole or in part is desired. If you can help David out, please email him at: glasseyedave@gmail.com.

LCBA and Sherwood Apiaries: First Prize for Educational Exhibit at the Southwest Washington Fair, 2nd year in a row! Thanks to Jason, Heather, Hannah, and David Sherwood for co-hosting LCBA in the Sherwood Apiary booth; thanks, too, to all of our LCBA members who turned out to help answer the public's questions. Special congratulations to David Sherwood, whose woodworking—showcased in the observation hive that drew so many fair visitors to our booth—won a special 4-H prize!

Our standing announcements, available in every newsletter:

Need Help with Your Bees? Call LCBA Secretary Susanne at 360 880 8130 or email Susanne.beekeeper@gmail.com, and she will put you in touch with a mentor in your area.

Free Swarm & Colony Removals: Swarm/colony removal is a free service that

LCBA, as a nonprofit educational organization, offers the public. See list of beekeepers, above, to call if you—or someone you know—needs help removing a swarm of honeybees. Also, if you're interested in riding along on a removal to observe and learn more, give Susanne a call (see # above): it's free, fun, & educational.

Want Bees & Equipment? [2012 note: see our website link to beekeeping supply options]

Washington State Beekeeping Association Beekeeper courses: Bob Harris, our president, is the contact person for this and all WSBA classes: if you are interested, email Robert@Roseofsharonfarm.com. The apprentice class is not hard or long; the Journeyman and Master Beekeeper courses, however, are much more involved. WASBA hasn't given a master beekeeper certificate for years. 5 years experience and 30 service points are required, and the prospective Master Beekeeper must write a paper; since WASBA added that requirement, no one has done it. Also, students need some lab experience.

LCBA Swap Meet—real or virtual! Got bee equipment to sell, swap, or give away? Email or call Susanne—see above. Have a "bee wish list"? Email that, too.

LCBA T-shirts and caps: Queensboro has lowered their prices on LCBA T-shirts, long-sleeved shirts, caps, etc. They offer an unconditional 10 year guarantee and will replace items if they get torn or broken. To order online, visit http://www.queensboro.com and use our LCBA logo number: **11342127.**

Respectfully reported,
Susanne Weil, LCBA Secretary: the writeup of Tim Lawrence's August talk is below.

AUGUST 11, 2010 LCBA MEETING

DR. TIMOTHY LAWRENCE, WSU EXTENSION, ISLAND COUNTY

A cautionary note from your scribe: Tim presented a lot of information quickly, and I know I missed a number of points, which I've indicated in brackets. If anyone can help me fill in the blanks, please email me at Susanne.beekeeper@gmail.com or talk to me at our next meeting. Thanks!

Tim's Background: Tim has been keeping bees for 48 years; his mother still tells the tale of the day he came home with a swarm. In college, he focused on entomology, his Master's degree is in rural sociology, and his Ph.D. is in environmental science. During his days as a commercial beekeeper, he even got drenched with a spray plane while trekking his bees around: but it took Varroa mites to make him decide to stop commercial beekeeping work. Prior to taking his position in Island County, Tim was a post-doctoral research associate leading the Honey Bee Health Program in the CAHNRS Department of Entomology in Pullman, working with beekeepers, growers, and others to identify issues related to the health and viability of honeybees and their pollination

efficiency. In addition to his current work with WSU Extension, Tim works in a honeybee health program; he is also working on a USDA project to combat *[sorry, I missed the name of the mite!]* that would "make Varroa look like a picnic." Suffice to say: Tim has been around the world of bees! In relation to his current mite project, Tim may be calling us to request bee samples. Today, though, Tim came to talk to us about the human dimensions of Colony Collapse Disorder and our impact on honeybees.

What are the Human Dimensions of Beekeeping? Tim began by surveying us—who has over 500 colonies? Over 100? Most of us are small scale beekeepers. We may be primed to grasp the human dimensions of beekeeping: but what does "human dimensions" mean? Tim explained that this means developing a recognition that humans play an intricate role in honeybee biology. Of course, human forces are not the only forces in play: economic forces are an important factor in understanding issues related to honeybee health, and political forces are real—as Tim learned when he headed WSBA while varroa mite issues heated up. Tim's goal in his work is to bridge the gap between economic, biological, sociological, and environmental perspectives—so that we can transcend these individual perspectives to help the honeybee.

Beekeeping History: The human/bee relationship began with bee hunting, as early as 7000 B.C.E. Bee robbing, through which humans robbed bees' honey, was the primary relationship, though some cultures did cultivate bees. The beginnings of bee management, as we might recognize it, were around 1500 A.D. to 1851, In 1851, Lorenzo Lorraine Langstroth discovered "bee space"—the space between hives and frames in which combs are built; bees don't build comb across bee space, and frames spaced at 3/8 of an inch were, therefore, truly movable. This discovery marked an immense change in how bees were kept. Moses Quinby, 1810-1875, was the first commercial beekeeper in the U.S.: he operated 1200 colonies in St. Johnsville, New York from 1830-1875 and wrote "Mysteries of Beekeeping Explained: being a complete analysis of the whole subject."

Modern beekeeping: Modern beekeeping is primarily a big business venture. There are 2.3 million commercial hives in the U.S. *[I'm not sure I got this # correctly.] They produce* pollination, honey production, package bees and queens, other products like pollen, royal jelly, cosmetics, even venom are produced, marketed, and consumed by a voracious public. The value of the honey bee is immense: Tim displayed a chart from *The New York Times* detailing the most valuable fruits, vegetables, nuts, and field crops—the information came from the USDA, "so they must be right," Tim quipped. Tim disagrees with their conclusion that peach and orange production are dependent upon honeybees, but almonds are dependent—as are soybeans, cotton, grapes, apples, strawberries, peanuts, and blueberries. There are other means of pollination: other insects, birds, wind, and rainwater all play key roles with a range of plants. However, bees are the most transportable, and this helped make them key to the industry.

Honey production: 148,341,000 pounds per year in the U.S. alone; the average price is $107.70 *[Sorry, I missed the unit for this sales figure.]* California is central to the honeybee industry. Massive numbers of bees are annually brought into California: in

fact, 50% of honeybee colonies in the U.S. are moved to California each year for almond pollination. California plants nearly 800,000 acres of almonds; 85% of the world's almonds come from California's actual 680,000 bearing acres. Almonds are the leading agricultural export in CA (by value) and the production numbers continue to increase. To meet pollination demands for all these acres, 1.6 to 2 million hives are needed. The average 2010 price for pollination was $135, with a range of $100 to $180. *[This may have been per acre or per bee colony moved—sorry, not sure.]* Some beekeepers tried to store bees in Idaho in isolation to protect them from mites, but this didn't work and many bees died. That die-off helped to drive up the cost of bees in California so much that one beekeeper got more money for 3 frames than previously for 8 frames of bees because of this shortage.

When pollination is finished, farmers want the bees out because they need to spray and move on to the next stage of cultivation. Some bees are taken north to pollinate berry and apple plants and trees; other bees, originally from the south, will go on to pollinate cranberries, with much action in the northeast. Some crops only need bees for 1 or 2 days to pollinate and then beekeepers move them on.

Genetic modification: Genetic modification is one big change hitting the industry. Genetic modification is not a new idea: it began in 1889, when a Dr. Doolittle developed first queen rearing system; he is now attributed as the one who started the package bee and queen industry. Beekeepers supply of about a million queens each year for U.S. beekeepers; queens currently sell, on average, for $20, and package bees for about $22 per pound—IF one buys in bulk. Demand is so great that "anything with 6 legs will sell." When Tim was involved in the package bee and queen business, bees would be stored, then trucked to where they were going, and beekeepers would start building their bee population. Then trucks and planes would transport the bees.

Disease changed the playing field: In 1987, commercial beekeeping changed because of tracheal mites, which caused a huge adjustment in the economics of the bee industry. And yet now tracheal mites are, relatively speaking, a minor problem. But restrictions on transporting bee genetic material reached back earlier: in 1922, "Isle of Wight disease" led to the banning of any honeybees imported into the U.S. In 1956, when African bees were introduced to Brazil, honeybee semen could no longer be imported.

As a result of the 1922 order, no new honeybee stock was allowed into the U.S. until early 1990, when the Yugoslavian and Russian bees were brought to Baton Rouge by the USDA. In 2005, Australian package bees were approved for import; in 2008, U.C. Davis and Washington State U. began to seek sources for greater genetic diversity. Honeybee semen can only be imported in very tightly controlled circumstances with very stringent rules and regulations. A USDA scientist now in Georgia (Russia's Georgia) is working on this, with bees literally in a sea of wheat. These bees and their progeny must be tested for a variety of diseases before they can be released. Yet restrictions are almost non-existent for imports from Australia. In Australia, there are no tracheal or varroa mites: while that may sound good, the problem is that the Australian bees are not under genetic pressure to adapt to survive the onslaught of these mites, whereas European or Russian

bees would have had such selection. Apis cerana have now been discovered in North Queensland, Australia, and this is problematic b/c of an Asian bee mite called trophylalaps *[this may not be the correct spelling]* This Asian mite, which readily transmits to honeybees, has decimated the honeybee industry *[in Asia or in Australia—I missed exactly where the decimation occurred.]*

Modern queen production: Fewer than 5000 breeder queens produce all of the U.S.'s million queens. This has produced a genetic bottleneck effect – the gene pool has been limited for so long that we do not have capacity to select for resistance to problem diseases. This is not just true of honeybees, but any restricted breeding population. Currently there are three races of bees in the U.S.: Italian, Carniolan, and Caucasian bees. New world "carnies" are the result of cross breeding with Canada.

Bee breeding on the commercial level works via artificial insemination. In nature, bees mate in air, with up to 20 drones in a drone congregating area: these DCAs can be predicted—comets of drones will fly up at anything that flies through there. Clearly, this is not a controllable situation, so commercial breeders control breeding by doing it artificially in lab, selecting for: pollen and honey, temperament, hygienic behavior, brood viability, spring build up, swarming tendency, color, nosema resistance, and reduced susceptibility to varroa and tracheal mites. They also select for behavioral characteristics, but of the characteristics are of the colonies, not of individual bees. Bees respond very favorably to selection when faced with just a little selection pressure. Should we, then, select for color? A debate is ongoing.

Colony Collapse Disorder: One paper that Tim referenced associates 65 individual factors with CCD, but has not isolated one single, definitive factor. Among the associated factors are: viruses, pesticides, Nosema, Apis Ceranae, nutrition, parasitic mites, and stress.

How is CCD affecting beekeepers in Washington State? Eric Olson carried out a 2009-2010 study. Among other findings, the Olson study showed:

> Average loss 39 %
> For beekeepers with 10,000 hives or more, 35% loss rate
> For beekeepers with under 1,000 hives, 44% loss

In Tim's opinion, *varroa destructor* is the single most significant issue causing the problem. We've been able to get away with beekeeping practices for a long time, but varroa is the tipping point, and now, bees are in serious trouble. Beekeepers may think that we don't contribute, but those who buy queens from breeders who stress their bees excessively. *[Sorry—I missed the list of bad beekeeping practices—maybe someone else who heard Tim's talk could fill this in!]*

How do mites get introduced? There are many factors: smuggling (pocket importation); hitchhikers (container shipping as part of the global economy); and migration (African

bees from South America) among them. These are having a huge impact on commercial beekeeping.

Progress toward solutions: There is much frustration among commercial beekeepers about what they perceive to be the slow pace of science to solve the problem. To make effective scientific inquiry and get reliable answers, however, scientists must eliminate variables and test systematically. Some beekeepers are now doing their own experiments, using in-hive chemicals: Tim thinks that this is to the detriment of research and bee health. As one example, Tim noted *amitraz (I may not have spelled that correctly.]* Unfortunately, this chemical is not labeled for honeybee colonies. It is a good mitocide: it is in Crisco, is colored with dyes, and is put in colonies. What happens? Other chemicals are useless because they absorb into the wax and do not leave, so the chemical stays in the colony indefinitely. One might ask: wouldn't this be good, since the chemicals would be continuing to kill mites? Maybe not: since honeybees communicate 90% by chemical cues, this may screw them up. One scientist thinks that using amitraz would make bees start flying earlier than they normally would based on their own chemical and physiological cues. That, in turn, leads to nutritional problems. Why is nutrition a problem? Bee bread / pollen patties will pass right through humans because we do not have the enzyme needed to break it down, but bees store it, and less microbial activity happens because of this.

Most commonly found chemicals in bee comb: include fluvalinate, cumaphos, cumaphos oxon, chlorpyrifos 2,4, dimethylpheny formamide, according to a recent study by Judy Wu. There are also surfactants: agricultural pesticides. These pesticides are more and more effective on pests, but also on bees, because of their sublethal effects—effects that don't necessarily kill the bee right away, but have impact in the long term. 150 agricultural pesticides were studied by Wu—many chemicals found in wax of colonies, as well as microsporidians, like nosema apis and nosema cerenae. In the Wu study, the queen laid in 2 different conditions: those reared in pesticide-laden comb were much more likely to get nosema than those laid in queen comb. Granted, this was a small study using a small sample, to see if the research is worth pursuing, but it is suggestive that chemicals are not the smartest approach.

Viruses: A wide range of viruses plague our bees, including: chronic paralysis; cloudy wing; Israeli acute paralysis; acute paralysis; black queen; deformed wing; Kashmir bee virus; and more.

Monoculture agriculture is an issue because it promotes loss of nutritional diversity, heavy reliance on honeybees for pollination, and intense use of chemicals to control undesirable pests and diseases. We should encourage weed areas, letting fields go fallow and regenerate, etc, but farmers are under pressure. A change in farmers' mindset is in progress, and more and more farmers now avoid spraying during bloom and are developing products or strategies that reduce impact on pollinators. Also, it is possible to select for increased nectar and pollen production to increase nutrition and attraction; promoting natural vegetation, too, would help bees. It would be in the best interest of

seed producers to select for those that attract bees . . . all sectors need to change to help save the honeybee.

Changing demographics of honeybee industry: the population of beekeepers is aging. There are smaller, more labor intensive operations. There is also growing ethnic and cultural diversity with the rise of Mexican/Central American and Russian/Eastern European beekeepers. These populations tend not to join associations and do things the way they have always done things where they came from. So this is a major concern: how to get everyone on same page?

What needs to happen? We must continue to seek short term solutions in detection and treatment; scientists must be sensitive to the need beekeepers have to stay in business. We also need aggressive funding and implementation of long terms strategies like breeding programs. We need more research on interactions of various stressors: *e.g.*, varroa. Currently the honeybee research program is only funded to tune of four million dollars over four years spread over 100 universities: this is just not enough. Beekeepers themselves need to put more money into research. Industries dependent on bees should be funding research, and the USDA should be more proactive in funding. Given the stakes, the current, piecemeal approach is "pathetic and ridiculous." There are some bright spots of hope, like the new hops being tested by the USDA. But we can't just jump to conclusions from one study to start treating lots of bees—scientific study is needed. For example, Tim told the story of one beekeeper who said hey, hops are great, but why are all my queens dying? Tim's wife, Sue Cobey, only uses thymol to treat bees and has no tracheal/varroa mite problems at UC Davis. Many beekeepers don't understand what the acceptable threshold for mites may be, and they so throw chemicals at the mites, whereas we need to develop more non-chemical management strategies. We also need expanded outreach education: there has been too much pandering to the industry. It would be pointless to preserve the commercial industry only to end up with no bees.

QUESTIONS: At this point, Tim asked for questions.

With all pesticides being used to control mites, how much gets into the honey? Tim isn't sure, but recalls picking up a package of bees outside Davis: he got honey from that beekeeper, but he and Sue would not eat it because chemicals absorb into wax and do not go away.

What about the wax we buy to replace the wax in our frames—should we be concerned about pesticide residues in that? Tim: commercially bought wax probably has some level of pesticide in it. The USDA may have studied this, but Tim was not sure; in any case, the level of pesticide in bought wax may vary.

Norm Switzler asked if Tim talks to many people who refuse to use chemicals? Tim said that he finds that even those who want to avoid chemicals will have a hard time succeeding in doing so, unless they live in an isolated area. Tim noted that some chemicals—like thymol, which is relatively benign, and like essential oils—seem to have

a pretty good effect. But are beekeepers monitoring to check the impact of these treatments on their bees' mites? There is a quick easy test: take two honey jars with twist cap, glued together with a screen in between, then put in ethyl alcohol or antifreeze windshield washing fluid; next, put in bees; next, flip the jar, and then count the number of bees. This correlates closely with more intensive tests and can be done in the field. Beekeepers can send samples to WSU and they will test for varroa, tracheal, nosema levels for free.

Norm asked whether scientists are doing genetic diversity tests? Tim said yes: Steve Shepherd has found that stock from Italy, Germany Yugoslavia, Austria, and Georgia (in former USSR) is increasing genetic diversity, but it is a slow process.

Bob wondered if what he had heard about New World Carniolans was just anecdotal: are their genetics more diverse? Tim said that on Whidbey, Carniolans seem to do well, but people need to know how to work them as opposed to working with the gentler Italians, who will brood up. Beekeepers in California love that trait of Italians because it yields populous colonies, which they then feed. But Carniolans are sensitive to what is coming in and will need more room to keep them from swarming because of their tight, compact brood nest; beekeepers choosing to work with them need to know they will build up quickly when pollen comes in and they will swarm. This happens mainly due to beekeeper error. Carniolans will also fly in colder weather, when Italians will not: he's seen them flying on a rainy January day.

Jim Thielges asked how Carnies fared during the hot, dry summer of 2009. Tim did not was not here then, so was not sure; he says that they respond well when nectar stops coming in—that is, they will stop brooding up, so anyone keeping them would probably have to feed them at that point.

Would Buckfast bees be worth bringing into our northern climate for diversity? Tim noted that many like these bees; Caucasians also are available and are gentle bees, but have their negatives, such as heavy use of propolis. Tim commented that beekeepers just have to try different kinds—no one bee is the right bee for everyone.

Do bees groom each other? Yes: Tim says that, in fact, they can be bred to select for hygenic grooming behavior. [*I MISSED THE CONNECTION TO REMOVING INFECTED CELLS & FOULBROOD RESISTANCE AND THE ATTEMPT TO ADAPT SOMETHING FOR VARROA….]*. However, any time you select only for one characteristic, you must ask what are you giving up in exchange. Also, it's important to look for industrious bees, for gentle bees, etc.: you have to develop an index of priorities when you select. If you are transporting a lot of bees, you may not have time to do selection and breeding.

One member asked about what is happening to Canadian bee production with the border now closed? Tim answered that Canada accepts bees from Hawaii and Australia and is trying to develop queens: Canadian beekeepers have over-wintering cellars and don't do massive package bee truckloads now.

John Panesko asked Tim's opinion on using powdered sugar to control mites. Tim thinks this is useful, but also labor intensive, and he noted that there is some dispute on its effectiveness. He has heard good testimony, though. Thymol, when used at the right time, is useful - if your honey flow is over with, this coming week would be good time to put it on. Stuff like oxalyic acid not legal, but some evidence suggests that is more effective—as an Extension agent, however, Tim cannot advise on how to use it, because it is prohibited. Perhaps inevitably, prohibitions like these lead to lack of precision as people experiment. If you get deck cleaner at hardware store and 70% is oxylic acid, what is the other 30%, and its impact on bees, not to mention on you, yourself, as you mix it up?

Our visitor from Cowlitz County asked whether wild bees are resistant to mites, as they are still around. Tim noted that many beekeepers transport bees in significant numbers, so when we see wild bees, we don't know whether they are around because they just swarmed or whether they are real survivor stock. Survivor stock can be wrong way to go: you don't know the history of that colony that just appeared in your tree this morning. Tim thinks we can do better than that by careful experimenting—so far, beekeeping has not meet level of sophistication of other industries—there has not been enough research and long term monitoring yet. Cornell scientists took honeybees, selected for varroa resistant lines on islands, and had good results, but then, once those bees were exposed to mainland populations, they proved no more resistant.

Tim had to leave at 8 to be on time to catch his ferry: the audience gave him a round of applause and many thanks for his informative presentation.