Updates on Varroa Research Projects at Oregon State University

Ramesh Sagili, Oregon State University

(1) Effects of Oxalic Acid Sublimation (Vaporization) On Honey Bee Brood

Oxalic acid (OA) dribble method has been used by beekeepers for several years to control Varroa mites. Over the past couple of years, there has been increased interest among both backyard and commercial beekeepers regarding using oxalic acid in vapor form (sublimation) during brood rearing season (spring, summer, and fall). Toxicity to brood (eggs, larvae, and pupae) is a concern when using oxalic acid in presence of brood in a colony. To evaluate toxicity of oxalic acid vapor to brood, we conducted a short study during July/August 2019. For this study, we used 30 colonies of similar size (two deeps) with equal number of frames of bees and brood, and similar mite levels. Out of the total 30 colonies, ten received OA treatment, ten colonies served as controls (no OA), and the remaining ten colonies received formic acid (Formic Pro). Formic Pro was used as a positive control, and each of the formic acid treatment colonies received two pads of Formic Pro. Each oxalic acid treatment colony received a single dose of 2 gm oxalic acid vapor as per label recommendation (see Figure 1). In each experimental colony we marked 50 eggs, 50 young larvae, and 50 old larvae using acetate sheets (see Figure 2) before the application of treatments (oxalic acid vapor and formic acid). A few Master-level students from our Master Beekeeper Program also participated in this study. Mortality of eggs and larvae was recorded 24 hours, 48 hours, and one week after the oxalic acid vapor and formic acid treatments.

We did not observe any significant differences in brood (eggs and larvae) mortality between colonies receiving oxalic acid and control treatments. However, the brood mortality was significantly higher in formic acid treatment group when compared to oxalic acid and control groups (please see Figures 3, 4, and 5).
Happy New Year to you all! It is hard to believe yet another year is already in the rear view mirror. Winter time is a great time for us to reflect on what we have learned over the past season and consider what we can do better. In my business, Old Sol Apiaries, we like to periodically do what is known as a SWOT analysis. This means carefully and objectively looking at our Strengths, Weaknesses, Opportunities, and Threats. This is a very handy process that helps us formulate our game plan and mitigate risks so we can make good decisions. While I am in this mode of thought, it occurred to me that it might be useful to consider a SWOT analysis for Oregon Beekeeping as a whole. An exhaustive SWOT analysis would take volumes, but perhaps we can key in on a few key issues here.

What are our strengths? We continue to have some successes raising research funds for contributing to the OSU Honey Bee Lab. The endowments we are supporting continue to show positive growth, and we did very well at the last conference raising funds with the auctions and donations from the regional associations. Thank you all for your amazing efforts and contributions. Honey bee research will continue to be a crucial element for adapting to the difficult challenges we continue to face. Another strength we have is that demand for pollination services remains very strong. This can be both an asset and a liability in terms of a business model; however, if you can grow bee colonies, they surely will rent for a decent rate. In addition, honey demand still exceeds domestic production and this could potentially have a positive effect on honey prices if we ever get a handle on the weaknesses of fake honey and cheap adulterated imports.

There are so many weaknesses that plague the modern beekeeper. Chief among them would be our arch nemesis, the Varroa mite. Even for the most careful and observant beekeepers, adequate Varroa control continues to be elusive and hit or miss. Add to the aforementioned a growing scarcity of good forage, manufacturers testing their own pesticide products for safety, and the overall lack of prioritization of honey bees as the backbone of our agricultural economy. These weaknesses are real and tangible. The only way we will ever be able to address them is collectively through our actions and voices. We all have a role to play here and organizations such as the OSBA will continue to try and make advances on these fronts.

At times, when it comes to the opportunities in front of us, it can take a little creativity and optimism to visualize them so we can make them a reality. A very important opportunity that we should all seize upon is the opportunity to utilize our diverse and vast networks to find that big donor, or donors, to fully fund our research endowments so we can support the OSU Honey Bee Lab to the fullest extent possible. This will help fast track the research we need to keep bees and beekeepers on a sustainable footing. Donating is easy and donors can be pointed here: orsba.org/donations. To run the OSU Honey Bee Lab and Extension Outreach it takes about $500,000 a year. As such, Dr. Sagili ends up spending a lot of time writing grants to keep the operation running. We could all rest a little easier if we had a five to ten years worth of funding set aside to maximize the potential of the lab. Supporting research is very important. Should we press ourselves to set some set fundraising goals in 2020? Consider a few examples of opportunities honey bee research has created for us. One of the most potentially impactful is the exciting breakthrough known as MARKER ASSISTED SELECTION, or MAS for short. This technology stands to revolutionize honey bee breeding by allowing us to use tissue samples instead of years of observation to identify and select valuable traits. This will save decades of time and fast track our breeding efforts. An informative treatment of the subject can be found in the Journal of Economic Entomology if one would like to learn more: academic.oup.com/jee/article/110/3/816/3073489. Continuing in the vein of opportunities that have come from research is the development of a nutritional supplement that helps bees maintain adequate nutrition levels so their immune system can effectively fight off viruses. This newly developed feed supplement stems from the research efforts of Paul Stamets and Dr. Steve Sheppard with fungi, and will hopefully come to market soon. Clearly, supporting research is very impactful and important. This is most evident when we come to market soon. Clearly, supporting research is very impactful and important. This is most evident when we

Now we come to the ominous category of threats. There are so many threats to modern beekeeping that it can be overwhelming and perhaps a bit depressing. We could go on forever in this category. Ironically, one could include pollination services in this category due to the ongoing risks of pesticide exposure. This is an example of how an issue can be both a threat and an opportunity at the same time. There is an old idiom that states crisis equals opportunity. This takes me back to when I first started beekeeping in 1997. Many of my family and peers thought I was crazy or a fool to throw myself headlong into an industry that was in crisis. Twenty-three years later we are still in a state of crisis that is ripe with opportunities to fail. Economically
speaking, most beekeeping operations would be classified as small farms, and the state of affairs for small farms broadly speaking is rather dire. According to most metrics, small farms are disappearing rapidly and are predominately in deep trouble financially. For a general summary of the state of affairs, check out this article: time.com/5736789/small-american-farmers-debt-crisis-extinction. Beekeeping is not mentioned here, but considering we are operating in this environment with a livestock that regularly can have from 30 to 40+ percent loss, this trend should be of great concern.

To close on a more positive note, it would good to reiterate that crisis equals opportunity. The more we work together like honey bees do, the more we can achieve. I look forward to setting some goals and meeting these challenges with all of you amazing beekeepers. May your 2020 be bountiful and blessed.

John Jacob

OSBA General Membership Meeting
October 26, 2019 | Florence, Oregon

Called to order at 4:45 pm by President John Jacob.

Minutes were approved as they were printed in the OSBA Bee Line.

Treasurer’s Report—Joe Hansen: 2019 a favorable year, our organization is looking good financially. Annual income to date (10/24) was $66,292, of which membership dues are $12,710. 295 people registered for the state conference, up 50 or 60 people from 2018. Net operating income for 2019 is $28,278. As of 24 October, total accounts are $84,000, and research fund is in excess of $19,200. OSBA is projected to carry $30,000 into the new year. Membership voted to approve treasurer’s report.

Conference Venue—Vice President Joe Maresh solicited group input on 2020 conference. Discussion centered on 2020 conference location as 2020 location is still undecided. The Florence Events Center is reserved. Board has been looking at a central Oregon location called Eagle Crest, but it is too expensive. Hood River is too small. Joe is still looking at alternatives. Consensus on the floor was that Florence is a good, central location. Joe asked for a show of hands regarding which days are preferred; the vast majority of the group prefers a Friday–Sunday conference. Jan Lohman pointed out that a repeat location is much easier for the organizer.

Regional Representatives/Affiliated Associations

South Coast—Mureen Walker: Election of officers—current officers will continue. November is a big turkey potluck. Maarty Van Otterlou will serve as the group’s permanent proxy to attend and vote at Executive Committee meetings.

Coos County Beekeepers—Mureen said the Curry group is much more active; Coos is helping Curry group with oxalic acid treatments. They are talking about a cross-border partnership with a northern California beekeeping group. Bees are still active, foraging in ivy and coyote brush.

Eastern Oregon—Jordan Dimock reported bees look good, a better season across the board.

Southwestern Oregon—Eric McEwen said SOBA held elections in September, most officers will repeat. A big range in honey production across region. For most, the blackberry flow was a bust. September’s rain made for good flows on star thistle at the end of the summer.

South Willamette Valley—Tim Wydronek reported a year of low honey production and very low mites. Linn Benton group has 80 paid members; they had their own bee school this year and are planning for next year.

Columbia Gorge Beekeepers—Jerry Frazier said despite being only four years old the group has 60 members, including one canine. They participated in state fair booth, which was a great experience. They had good speakers at their meetings, including Ramesh, Priya, George, and Andony. They have been sponsoring youth beekeeping/education in cooperation with the OSU Master Gardeners, and he suggests other groups look into this. The group has a librarian now, has revised their bylaws, and will announce officers at the end of the year.

Lane County Beekeepers—Polly Habliston (treasurer) said the mission of the association is education, and that they have been part of lots of Lane County events and now are focusing more on youth education: eight school talks and three school projects with member supervisors. Also they had a mason bee training. The group is proud of funds raised specifically for the Oregon Bee Project.

Southern Oregon Beekeepers—Risa Halpin reported they successfully ran two bee schools last spring. Membership is stable. They have done outreach to children’s programs, and at ag day science fair reach 12,000 kids. Outreach has broadened to Josephine as well as Jackson County. Hives look great.

Tualatin Valley Beekeepers—Eddie Frie said they are focusing on outreach, now have a 4-H program, bee school, had speakers from OSU Honey Bee Lab, and Marjie Ehry came out and taught them about honey/honey judging. They have an election in November.

Northwest Apiculture Fund for Honey Bee Research, Extension, and Education

Jan mentioned that there is a growing need to build the endowment funds to sustain and develop programs in Oregon and at OSU. Donors can find links on website.

Continued on page 15
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Do you ever wonder about the beekeeping experience of the author of the tips? How do you react when someone says, “Follow The Directions; It’s The Law”? In terms of mite treatments, I’d argue it’s the Wild West. I also believe that beekeepers who Do Follow The Directions are struggling to control Varroa.

Let me tell you a little about myself, then let’s get back to the Varroa discussion.

I got into bees because of my grandparents, Lu and Anita Alexander. My grandfather, born in 1917, was a sidelinier and had around 300 hives at his zenith. He regularly moved bees into fireweed, produced and sold queens for a time with his daughter, and sold a lot of honey. Honey bees were very productive back then—no tracheal mites, no Varroa. Foulbrood, yes! He never was paid for pollination.

I was deemed too allergic to work bees as a kid. And I did react acutely to bee stings back then. My role was limited to the honey house. Later it was discovered that I was of great utility carrying supers laden with honey.

Lu died in April of 1996. I think at that time there were about 15 hives left; I don’t recall doing anything with the hives that first summer. Alan Ehry came up and worked the bees prior to winter that first year. Going into winter the next year, I recall there were eight hives left. It snowed that winter and the bees crawled out onto the snow and died. Come spring, I had three tracheal mite resistant hives left, which in large part became the basis of all the hives I’ve ever owned since. I’ve never purchased bees except queens. My growth was always slow and steady, culminating in a max of around 170 hives—too many! I’ve come to equilibrium at around 100 hives. My primary job is in forestry, like Lu. I was president of the Tualatin Valley Beekeepers Association for seven years. In 2010 a medical issue became front and center for me. I’ve attended three local bee meetings since, two this year! I regularly attend state meetings.

Back to the Wild West and Varroa. Let me give two examples that exemplify the variables and unknowns we are dealing with. No names. Long ago, while advocating that people remove their Apistan* strips (fluvalinate) from colonies after the prescribed treatment period, I was presented with a dissenting opinion (privately). An Oregon commercial beekeeper bluntly stated that he leaves the strips inside his colonies so that his bees will be marginally better in the short term. He said that other commercial beekeepers are doing the same, so why should he handicap his operation and be less competitive?

This same beekeeper had serious problems with Mite-Away II. He did not remove it after the prescribed period, and he experienced severe losses that winter. I strongly believe it was because he did not remove the treatment. Not long after, Mite-Away II was discontinued. It didn’t fit the commercial beekeeping model.

These examples underscore some of the realities in how we treat for Varroa—the variableness. People are struggling with this most important issue now: How to treat. I’ve spoken to a few small scale beekeepers who are almost ready to throw in the towel. I understand their frustration.

Let me discuss amitraz a little bit. I think it is representative of other mite treatments. In 2018, Ramesh Sagili said 10 percent of Varroa here in Oregon are now resistant to amitraz. Then in 2019, he retracted that statement saying amitraz still works but that there are “outliers.”

Harry Vanderpool shared with me his experience using Apivar (3.3 percent amitraz). He believes that Apivar does not work for Varroa infestations at 3 percent or higher.

When Ramesh and Carolyn made a visit to my home this fall investigating small hive beetles, I shared with them how I have used Taktic in the past (until this fall I had not used it for a very long time, four or five years). I mixed Taktic at a rate around 15 percent, the balance canola oil. Their eyeballs nearly fell out of the heads. Clearly there is a dosage issue.

Regarding dosage, shortly afterwards I had a conversation with beekeeper Dan. Dan said his bees look great this fall. He did his usual treatment in late July or early August. He applied ½ shop towel of Taktic. After a week he recharged the shop towels with fresh active ingredients. At the beginning of week three, he applied brand new towels. That is a change! When Ramesh and Carolyn made a visit to my home this fall investigating small hive beetles, I shared with them how I have used Taktic in the past (until this fall I had not used it for a very long time, four or five years). I mixed Taktic at a rate around 15 percent, the balance canola oil. Their eyeballs nearly fell out of the heads. Clearly there is a dosage issue.

So, there you have it. I have identified a bunch of variables regarding the use of amitraz. I could have had the exact same kind of discussion regarding other mite treatments. For example, Randy Oliver loves Apiguard® thymol gel. The first time I used it following his directions, it was devastating to my hives. I’ve had bad luck with formic lately. Beekeepers tend to follow that adage: Fool me once, shame on you; fool me twice, shame on me. They’re not inclined to put products back into their hives that have had very deleterious effects on their bees. I have never used Apiguard® thymol gel again. I probably should—maybe it was a bad formulation of that initial batch I used. Who knows? With oxalic, I have heard stories of people applying continuous sublimation...
treatments from about the end of July until fall rains mark the end of robbing season.

This scenario is causing some people, namely Harry Vanderpool, to rethink old ideas about queen sequestering and forcing all of the mites to become phoretic—then treating. I suspect this will become more popular.

**Departing Thoughts on Varroa**

A study that Harry Vanderpool occasionally refers to states that robbing bees can remove 35 percent of the Varroa from a collapsing (PMS) hive. Couple this with the apparent higher incidence of outliers, and you can draw a direct line to the reinfestation problem.

It is suggested to sample a minimum of four times during the year (Honey Bee Health Coalition). Varroa growth is exponential and is based on brood cycles. After about eight brood cycles, growth is explosive. You can calculate that if you start with very low counts in February, you can make it to about the end of July before the dam is breached. I liken the growth of Varroa to a tsunami wave. During the early months the tsunami wave is crossing open waters—you hardly notice. Come late July or early August the tsunami wave makes landfall and reigns destruction. Of course, in this story the initial wave is followed by aftershock waves that represent drifting, absconding, and robbing which cause the reinfestation of previously mite free hives. Keep this imaginary tsunami wave of Varroa in your mind. Prepare for it. Don’t be caught off guard. Know how to deal with it. Be prepared for the aftershock waves.

On a side note, I think it would be of great interest for readers of *The Bee Line* to have a “Monthly Varroa Infestation Report.” It would be like *Bee Culture’s Monthly Regional Honey Price Reports.* I envision bee associations taking turns sampling and reporting the infestation statistics to Rosanna. Granted the reports would be slightly obsolete, yet it would remind readers of this most important aspect of modern beekeeping—keeping track of and controlling Varroa. I’d recommend a minimum of 20 observations (samples), max of 30 for the basis of the association’s Varroa report. We’d want representation from multiple apiaries, yards, and different beekeepers to sample a range of the population distribution. Okay, laugh it off.

**From the State Meeting . . .**

Ramesh Sagili is doing a comprehensive study of an entire apiary infected with Varroa mites. They sacrificed the entire apiary for this study. A complete tally of all mites is being done, both phoretic and within brood. You can probably still volunteer to count mites in brood, contact them. Ramesh tentatively suggested that during summer months 55 percent of the mites are in the brood, the balance phoretic. I can’t remember how many days he suggested the mites stay out of the brood cells before reentering another one. He did suggest possible interval treatments at 5-day intervals. He also said powdered sugar shake works great for Varroa sampling.

**Quick Discussion Regarding Small Hive Beetles**

I mentioned that Ramesh and Carolyn visited my home in Forest Grove this fall. They were at my house to investigate a small hive beetle infestation. If you recall, many years ago I reported seeing small hive beetles (mostly the larvae, always the larvae) in my honey house out in Sandy, Oregon. I attribute them to a commercial beekeeper who had his hives adjacent to my honey house. Next I had them within some of my hives after coming back from almonds. More recently, I’ve seen them in late summer, early fall (like this year). In late summer/early fall, I find them in failing hives (queenlessness, whatever) that are full of pollen.

My recommendations to keep small hive beetles away:

- **Weak hives, nucs, whatever are more vulnerable. Err on strength.**
- **Keep division feeders clean.** Let me be clear on this. I allow my bees to put comb in my division board feeders. I put other items (sticks) inside my feeder so feeding bees don’t drown. But the feeders otherwise are clean, nothing fowl or smelly. Do not put pollen in division board feeders.
- **Keep queens out of supers.** You don’t want pollen or brood in your supers—the beetles are strongly attracted to this, and they may visit your honey house because of it.
- **When you take off honey supers, extract as soon possible.** The honey flows better anyway.

If you do find an invasion of small hive larvae (they mostly hang very close together in a cluster, at least in the beginning phase—I don’t want to see the end phase—put them all in a plastic bag, seal it, and put them in a freezer. This will kill the lion’s share of them.

As usual, Ramesh asked the attendees at the state meeting if anyone had seen small hive beetles. I saw more hands than ever, easily a half dozen. Ya know, I am right here in Forest Grove, Oregon. There are other beekeepers around me—hobbyists and commercials. The beetles don’t discriminate. They’ve got wings and are great fliers. They look for the right
conditions. Keep an eye out for them and, if you find them, kill ’em! Their incidence is low; let’s keep it that way.

The Actual Tips for January and February

- I hope you did an oxalic acid treatment in late November or early December. If not, make an effort to get your Varroa mite loads low at the beginning of the year. Maybe consider using amitraz (Apiguard®) or an oxalic acid treatment—or research other treatments options.
- Brood is being raised now, and food stores are being consumed. Ventilation is even more important—some use holes in their brood boxes; others, rims attached under lids. A simple nail under a corner of a lid works.
- Watch food reserves. Heft hives for weight. It is very frustrating to see hives starve—any time. And this is prime time for starvation through spring. Don’t feed syrup at this time. Randy Oliver recommends Baker’s fondant, hard “candy boards,” or even granulated sugar over newspaper. If you do an excellent job of keeping condensation from accruing under your hive lids, then you may add some moisture to the granulated sugar to make it more palatable.
- Visit Randy Oliver’s website. It is a wealth of knowledge.
- Attend meetings; share information with other beekeepers. Knowledge is power.

Bring Our Oregon Honey Bees Home Alive

Lynn Royce

A friend and commercial honey bee keeper called me from California last spring (2018) and asked me why returning honey bee foragers were dropping dead near their hive entrances as they returned from almond flowers. I told him I had heard of this happening the year before and that it had been traced to a toxic mix of a herbicide and pesticide. Neither substance was highly toxic to bees when used separately.

I did some Web searches after the call and was astounded that this problem has been known since 2014. Dr. Reed Johnson, Ohio State University, was the lead author of a published study of the mixture of a herbicide and pesticide sprayed during almond bloom. Some foragers make it back to the hive dropping dead near the entrance. Even though this problem has been identified, it continues to happen.

So, the time approaches this year when Oregon beekeepers begin to prepare their colonies for the trip south to pollinate almonds. Almond pollination is important income for Oregon beekeepers, but how many are aware that it could also be a time of tremendous colony losses due to this toxic mixture? Help make other beekeepers aware, and ask your almond growers if they know and have trained their staff.

ADM Portland Welcomes Beekeepers

Harry Vanderpool

Recently, I was invited to sit down and meet with Kevin Lewis, Plant Manager of ADM Portland, to review policies and procedures for beekeepers obtaining syrup in their facility. The management and staff of ADM are grateful for the business that the beekeeping community generates and happy to support our industry. The ADM staff and many Oregon beekeepers are on a first name basis after many, many years of acquaintance.

Because new beekeepers come on line from time to time, I have been asked to pass along the following guidelines:

- ADM does not fill buckets or barrels; 275-gallon totes, minimum.
- ADM no longer allows feed additives to be handled inside their facility. If you wish to add anything to your tanks, please do so prior to entering their facility. They will disallow additives in the Control Room.
- If you require water to be added to your tanks, please do so prior to your visit to ADM. ADM is charged for water and has not been passing that expense along. Add your own water at home and help keep syrup prices low.
- The ADM facility in Portland is a food grade facility. Please make sure that your totes and truck are clean. They don’t expect you to do a paste wax job on your truck every visit, but pine needles and mud patties dropping off of mud flaps will not be allowed. Mold on or around the filler cap will not be allowed. If you are asked to leave and return with a clean rig, you have been warned.
- When you arrange for syrup, realize that your date for filling needs to be firm. If you cannot make it to the ADM facility as arranged, please call them at (503)286-0124 and make new arrangements. Ask for the Control Room.
- Optimal hours for beekeepers:

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<th>Time</th>
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<tr>
<td>6 – 8 AM</td>
<td><strong>optimal hours for beekeepers</strong></td>
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<td>8 AM – noon</td>
<td>is when 11,000-gallon tankers are filled.</td>
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<td>Noon – 2 PM</td>
<td><strong>optimal hours for beekeepers.</strong></td>
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- Please call to avoid problems. If you cannot make it to ADM by 2:00 PM, please call to make arrangements. If you can make it on time but are traveling a long distance, by all means call first to assure everything is running on schedule and you will be able to return home with your syrup! Prior to leaving home, call (503)286-0124. Ask for the Control Room. Add this number to your contacts.

Pacific Northwest beekeepers have a great friend in the management and staff at ADM in Portland. Let’s work to keep this relationship for future years.
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Central Coast Beekeepers finished out the year with a honey-tasting at their November meeting. Becca Fain will be the incoming President for 2020. Looking forward to a holiday potluck with the Tillamook Beekeepers in December.

Kathy Cope

South Coast

Florence conference site gets Kudos from everyone who attended from South Coast. The Oregon South Coast November meeting was its best-yet Thanksgiving potluck. Election was quick and easy, a unanimous vote for all current members to continue for 2020, with member appreciation for excellent service. The group at Gold Beach was glad to be able to share the festive evening with a neighboring county beekeeper, Albert Esquivel, and wife from Coquille. Coos County election results are expected in January, with re-election of all officers.

At the final meeting of the year, there was a slide show from the OSBA Conference and several of the eleven people who attended from South Coast shared insights gleaned. The local organization was pleased to be able to join in donating to the research funding for the second year.

Kelley Argenta, of Coos County, completed her Oregon Master Beekeeper Apprentice year one, second year as a beekeeper, and is eager to help as a mentor. She had an amazing array of hands-on learning experiences in this time, more than most would ever want! She is focusing currently on the condition of the healthy gut, for us and that of the honey bee. Mid-December she attended a class for making honey bee. Mid-December she attended a class for making a beekeeper, and is eager to help as a mentor. She had an amazing array of hands-on learning experiences in this time, more than most would ever want! She is focusing currently on the condition of the healthy gut, for us and that of the honey bee. Mid-December she attended a class for making a beekeeper, and is eager to help as a mentor. She had an amazing array of hands-on learning experiences in this time, more than most would ever want! She is focusing currently on the condition of the healthy gut, for us and that of the honey bee. Mid-December she attended a class for making a compact field microscope. “Have a microscope, will explore!”

By December, an interior moisture problem was soaking both the beehives adopted by swarms which apparently survived last winter in the wild. They needed to be moved to a sunnier spot. After covering the frames with a piece of red wool blanket and replacing the covers, they were rescued by Maarty Van Otterloo, who even built a nice roof for them to stay at his place. The minute after we repositioned them, the rain began, expected to be daily for weeks thereafter. Maarty says that the transparent rain and wind shelters he has provided for his hives have made a big difference. He added a shim with one wine-cork-sized hole, screened for ventilation, and a half hole for one-bee egress at the top. A good emergency exit in case the one at the front porch gets completely clogged.

Educational Apiaries for both southern associations, Curry and Coos, have been greatly challenged, with barely any hives still active. Beekeepers are eager to put to use the valuable gleanings from this time of consideration. Happy 2020 Visions!

Mureen Walker

BEE EVENTS


May 10: Oregon Coast Honey Lovers Festival. Yachats. Save the date!


October 20: Washington State Beekeepers Association 2020 Conference. Save the date!


REGIONAL NEWS

Note: All affiliated associations invite and welcome visitors to join them at meetings. See page 17, their websites, or orsba.org for meeting time, website, and/ or contact information.

Many regional associations also offer additional opportunities for learning; take care to check their websites as well as postings under Events at orsba.org.

Regional Representatives

North Coast

The coast hosted OSBA’s conference this year and rewarded that choice with some pretty good coastal weather. It was a great opportunity for beekeepers all over the state to hobnob and compare stories with one another as well as take advantage of the many excellent speakers. I always come away from these types of get-togethers with such a renewed enthusiasm for beekeeping.

Coastal weather continues to be nice with cold nights and days in the fifties and sixties. Beekeepers are keeping an eye on their hive strengths and making decisions regarding dealing with weak hives or late season queen losses. Many are cautiously optimistic that this could end up being a good year.
BY CUSTOMER DEMAND, OHB will be offering 5-frame Nucs starting as early as March 7th, 2020. If you are looking to get a jump on the 2020 Bee Season there is no better way! Fresh, young, vigorous queens and brood right out of the box.

- PICK UP ONLY AT OUR FACILITY IN ORLAND CA
- MARCH 7TH-APRIL 3RD, OHB KONA ITALIAN QUEENS ONLY
- APRIL 4TH THROUGH JUNE 30TH OHB ITALIAN, CARNIOLAN AND SASKATRAZ AVAILABLE UPON REQUEST
- CALL FOR AVAILABILITY AND PRICING
- GO TO OUR WEBSITE FOR MORE DETAILS

• OUR STOCK IS CERTIFIED AFRICANIZED HONEY BEE FREE
• SMALL HIVE BEETLE FREE
• FOUNDING MEMBER OF PROJECT APIS M (PAM)
• FOUNDING MEMBER OF BEE INFORMED PARTNERSHIP
Regional Associations

Central Coast Beekeepers
Well, a bit of rain and wind has slowed us down, but most members are in the process of completing their final assessment for the year, doing year-end mite treatments, putting on moisture boxes, and getting sugar patties in. We held our final meeting of the year in November with our annual Christmas raffle, refreshments, and a great talk by Max Kuhn explaining his Queen Containment Cage which he developed as part of his work on completion of the Master level with the Oregon Master Beekeeper Program.

We plan to try a new approach in 2020, with the first 45 minutes of our meeting focused on timely needs of new beekeepers followed by an hour presentation by an expert who will address new research findings/ideas and their potential application around the same topic to keep our more advanced members engaged. The first quarter, we will address topics related to getting a successful start on the bee year with presentations on Varroa, diseases, and nutrition covered by Ramesh, Carolyn, and Priya from OSU.

Becca Fain

Central Oregon Beekeepers
We in Central Oregon are hunkering down now that winter has finally arrived (at least when it isn't warm and sunny). Current experience tells us there isn’t much we can do at this point to help our hives (except maybe a late mite treatment) through the winter. Over the last two or three years, many of our members have suffered die-offs during heavy snow storms in January or February (lots of food and they seem to just die, maybe a higher mite load), so we’re interested in hearing what our members are doing differently to try to alleviate this occurrence.

We had a great beginner/first year bee school taught by Dr. Dewey Caron and Heike Williams this fall, which really helped our new and newer beekeepers who didn’t get to attend a school last spring. We’re also looking at a great class of 15 Oregon Master Beekeeper Apprentice students this year. Previous year’s students have become great members and resources for our association.

We had a great talk about efficient beekeeping by a local commercial beekeeper member as well as a wide-ranging honey tasting and description last month. Next month we're looking forward to learning about products of the hive. Allen Engle

Columbia Gorge Beekeepers
What a strange year! Drones and yellowjackets have outlasted their stay. Hives in the Columbia Gorge witnessed them into late November. Mite levels, languishing below 1 percent up through September, appeared to have gained strength in October overwhelming a number of hives. Application of miticides did not appear to have the intended effect.

On a brighter side, a recent application of oxalic acid dribble to hives around the Gorge found 16 percent had not survived the fall. Those still active were strong and vibrant. The mysteries of the honey bee being maintained by beekeepers continues to excite and frustrate us all.

Our association determined to offer a honey tasting and potluck as our final year meeting this past November. What a delightful time to share with our families a pleasant variety of morsels, tasting honey from around the world. Dr. Dewey Caron even shared honey from Bolivia. Weather in the Gorge is tricky at best. Our first snow was Friday, November 28, followed by two inches on November 30.

A bylaws change allowed voting for association officers to be held in November to bring the new slate into position at the beginning of the new year. We are fortunate to have a strong group of willing members who served in 2019 to reaffirm their desire to continue to grow our bee community education. Our first new year meeting is scheduled for February 19. Our speakers for 2020 are already committed to sharing their expertise. Our association continues to be blessed with the willingness of icons traveling long distances. Jerry Frazier

Douglas County Bees
The year finished well for Douglas County Bees. We still have a few yellowjackets circling the drain, but they are thankfully on their way out. We reminded members that this time of year is perfect for prepping for next spring, cleaning equipment and possibly purchasing new equipment (good gift ideas, too). Lifting your hives to get a general idea of weight...
should be done so come early spring you can see if they are short on resources and will need some help. Our bees should be in full cluster now that the colder weather has set in with even some snow in outlying areas. We have had far less rain than normal, so hopefully that isn’t a sign for drought in the spring.

Max Kuhn graciously had a gift delivered for us, a mock up of his Queen Confinement Cage. Special thanks to Rick Olson and Becca Fain from the Lane County Beekeepers for making the long trip to deliver and talk about it. We look forward to some feedback from our group on what works for them and what they might change in the future.

Our new board is ready to take their positions starting in 2020! We always appreciate and welcome a change of the guards, giving our group new insight and ideas to move forward.

Jack Reilly has volunteered for the President
Phil Moulton volunteered for the Vice President
David Humbert volunteered for the Treasurer
Clarence Adams volunteered for the Secretary

We look forward to hearing more in the new year! Have a happy and joyous holiday season, see you in 2020!

Ivory LosBanos

Lane County Beekeepers

The Lane County Beekeepers had elections in November for the 2020 officers. We are happy to announce our 2020 officers:

President: Mike France
Vice President: Brian McKinley
Secretary: Paula Sablosky
Treasurer: Polly Habliston
Board of Directors: Becky Lemler, Fonta Molyneaux, Nancy Ograin, Janine Piercey, Jim Rundall

We are looking forward to hosting Dr. Ramesh Sagili from Oregon State University at our first meeting of the year in January. If you are in the Eugene area on January 21, please consider joining us to hear an update. Michael France

Linn Benton Beekeepers

Happy New Year! We hope that you and your families enjoyed the holidays. Let’s also hope that our bee families have survived the holidays as well. Hefting your hives to check for lightness is strongly encouraged during these months as the queen starts laying more eggs. The bees will have consumed a large portion of stored foods over the month of December and going into January. If your hives are light, consider feeding your bees candy fondant and/or a winter patty.

Our association is busy at work planning for our first bee school to be held on Saturday, March 7, in Corvallis at the Waldorf School. The school will be held from 9:00 AM to 2:30 PM and is geared towards beginning beekeepers. We will cover topics such as: bee biology, equipment, acquiring and installing bees, and hive management throughout the seasons. It is a free class for paid members of LBBA or $25 for nonmembers. Each participant will receive a book and handouts. Information at: www.lbba.us. Amber Reese

Portland Metro Beekeepers

Short days are not fun for bees or their humans! Weather has been everything from beautiful and sunny for late fall to absolutely freezing on some days, and simply raining as expected in the Pacific Northwest. Chores outside hive and home must be completed quickly and likely with few resources! There are a few, very few blooms left on plants such as broccoli and borage; otherwise, trips outside may be for a breath of fresh air when the sun does shine. I/we hope for minimal or no overwintering losses.

So, to increase the odds of overwintering success, while hive checks are short and some members report high mite loads and some evidence of brood disease, we are treating for mites and antibiotics as needed. Personally, I have seen improvements even in short hive checks. Making certain each hive has sufficient resources (honey, pollen and/or supplements) is
Portland Metro members turned out for a film, *The Pollinators*, in early November, an excellent documentary on the state of decline of honey bees as well as native pollinators. Hopefully, this documentary will make its way into our nation’s consciences. We have also noted that Oregon senators Merkley and Wyden are introducing legislation intended to help pollinators.

We were well represented at the OSBA Conference in Florence; the highlight most reported is the importance of raising our own small hives and nucs, especially in the fall. Those who attended appreciated the information and obviously had a great time – in their B-spirits [see photo, page 1]!

Mandy Shaw of Portland Urban Beekeepers provided a high-energy look at beekeeping in an urban area (Portland); we held elections for board positions for 2020. The December meeting will be a holiday dinner. Meanwhile, the board is already planning and scheduling events for 2020, thinking of Bee Day, local Farmer’s Markets, beekeeping classes for new-bees and old-ies, and perhaps a mead class, too.

**Nancy Winston**

**Portland Urban Beekeepers**

For November and December, we have our hives tucked in for the winter. If able, protected from wind and rain. Winter, sometime around the solstice, is the time to think about those mite treatments most effective when the colonies are in the broodless state, so for those of us who have all of our safety equipment, oxalic acid vaporization is an efficient miticide during the broodless period.

The November meeting was well attended with about 57 members who showed up to support urban beekeeping with minimal constraint. This was one of our most important meetings of the year, not only was it election night, but the Portland City Council is currently reviewing the code for keeping backyard livestock in city limits.

Julia Gisler, tasked with rewriting this code, was kind enough to attend the first ½ hour of our meeting to discuss the proposed changes and rationale, and to hear what we thought about these changes. Mike Rodia, from the Oregon State Beekeepers Association, was also in attendance to lend support. To her credit, Ms. Gisler was already planning to implement many of the best practices cited in Oregon State University extension services’ publication, *Residential Beekeeping: Best-practice guidelines for nuisance-free beekeeping in Oregon* (2018). After a lively back and forth from the audience about why limited hive numbers is not a good idea, Ms. Gisler requested a written document that outlines our concerns and why hive limits are a problem. Our major concern is the rapid fluctuation of hives through the seasons and years. If taken to a hypothetical extreme, with high winter losses, nucleus hive creations during the spring and summer, and hiving swarms, any given beekeeper could go from 0 to 8 hives and back to 0 in a given year. How would that be regulated, and who would be the *Bee Police*?

Our second speakers for the evening were Drs. Jennifer Han and Nick Naeger, post-doctoral researchers from Washington State University, who each gave a fantastic presentation on their current research that examines the different roles fungi may play in honey bee health. Dr. Han talked to us about how a common soil fungus, *Metarhizium brunneum*, which is entomopathogenic (kills insects), may play an important role to control *Varroa destructor* without harming honey bees. Long and very complex story short, a strain of *Metarhizium brunneum* was selected and demonstrated significant virulence to Varroa mites in the study hives. This very promising development is on its way to commercial viability. We watched a great video demonstrating the lethality of this sporulating fungus!

Dr. Naeger talked about the role of the mushroom, specifically *Ganoderma lucidum*, and more specifically when grown on Birch, and its antiviral properties when fed to honey bees. You can find details at: www.nature.com/articles/s41598-018-32194-8. For more about human health benefits of this medicinal mushroom, see: www.ncbi.nlm.nih.gov/books/NBK92757/. Dr. Naeger’s exciting research suggests that when honey bees are fed *Ganoderma lucidum* as an alcohol extract, there is strong evidence for antiviral action seen as viral load reduction in bees infected with Deformed Wing Virus and Lake Sinai Virus. He stressed, however, that, while there are already human preparations of this mushroom available, there is an important interaction between the mushroom and the wood that it is grown on; for the most effective honey bee product, it seems that the mushroom must have grown on Birch. The Ganoderma products currently available are grown on another substrate, which has not been investigated in honey bees.

In December, PUB will be hosting its annual honey tasting. Congratulations to our new Board of Directors and Officers:

1. President: Cheryl Wright
1. Vice President: Dewey Caron
1. Treasurer/Secretary: Mandy Shaw
1. Board Members: Education & Events: Katie Fackler, Board & Public Affairs: Jessica Anderson, Librarian: Kiko Diaz, and Member-at-large: Brian Fackler.
1. Zenger Apiary Manager: Bruce Koester
Our annual Bee School starts February 20, 2020, and will occur over eight months in four two-hour classes with unlimited access to Zenger Farms Apiary. Cheryl Wright

Tualatin Valley Beekeepers
The rains have finally arrived. We can only imagine the bees huddled together for warmth and hope their honey is nearby. Most of our colonies have survived to this point. Whereas mite counts were low throughout much of the year, the October/November counts were indeed up. So, there was a lot of treating going on.

The November meeting was our annual honey tasting and elections. Brad York put together a presentation of all of our accomplishments for the year. We now have over a hundred paid members, which is significant for such a small town. We had our usual outreach at the Home and Garden Show, Master Gardeners’ Plant Sale, the county fair, and two “To Bee or Not to Bee” classes. One of our members became active in a bee program at the South Forest Camp, a minimum security prison facility. Brad spoke at the Chamber of Commerce meeting and at several other area meetings. Another member gave four talks at the Nehalem Bay Campground. It was a great year for outreach! Our other two big accomplishments were the creation of a fully functioning honey house and the development of a website (www.tillamookbeekpeakers.org). We have six local sponsors for which we are truly grateful. The website is a large collection of educational information. Be sure to check out everything in the forage section! Parts of the website are open to everyone and other parts are members-only pages.

The December meeting was a relaxing Christmas potluck social. We wish each of you, your families, and your bees a healthy and happy new year. Claire Moody

Tualatin Valley Beekeepers
Tualatin Valley Beekeepers Association had its final 2019 member meeting in November, with table stations offering timely tutorials on elements of beekeeping. Steve Gomes demonstrated an effective method to mite check using an easily made double plastic container, plus details of oxalic acid vapor treatment for hives. Paul Andersen showed how to treat with oxalic acid using the dribble method treatment. Mike Van Dyke and Miles Seeley demonstrated methods of winter feeding, including Miles’s recipe for 20:1 sugar pucks to feed directly on top box frames. Alden Potter showed how to make a “Max Kuhn style” queen confinement cage to set up brood break for summer season mite control. Dr. Dewey Caron added good counsel for everyone’s benefit. Members were enthusiastic about the small group education opportunities, and we plan to do more demos at future meetings. Members voted in new executive board and directors to serve in 2020. Our 2019 president Eddie Frie passed the torch to incoming president Debby Garman. Thanks to fantastic work by board member Mark Gorman, TVBA now has a fine new website and membership management system at: tvbabees.org. The board is grateful for Mark’s work, and we hope for simplified membership and financial management for our volunteer board ongoing.

Members have been experiencing some late fall losses to yellowjackets and mites; our fingers are crossed for good overwintering results. We look forward to starting our year with a showing of The Pollinators film on January 28, 2020. Please check our calendar on the new website for more details. Happy new year to our fellow beekeepers! Eddie Frie and Debby Garman

Update from OSU — Continued from page 1

(2) Evaluating Potential Amitraz Resistance in Varroa Mite Populations in USA and Canada

There is anecdotal evidence that beekeepers are unable to get optimal Varroa control with amitraz (Apivar™). Due to lack of adequate effective Varroa control products, beekeepers (especially commercial beekeepers) over the years have resorted to off-label amitraz formulations to control Varroa mites. The average concentration of off-label amitraz treatments is approximately 12.5 percent, which is approximately four times higher than the concentration in Apivar™ (3.3 percent amitraz). Some beekeepers have reported using off-label amitraz formulations several times in a year to get adequate control. There is concern that Varroa mite populations may be developing resistance to amitraz due to extensive and long-term use of off-label amitraz. During July/August 2019, we evaluated Varroa mite resistance to amitraz (Apivar™) between two geographically separated mite populations: Oregon, USA, and Alberta, Canada. We chose these two geographical regions because of significantly different beekeeping management practices with respect to amitraz use and differences in reported efficacy of amitraz in Varroa control. Oregon beekeepers commonly use Apivar™ and off-label amitraz formulations each year, while Alberta beekeepers do not use off-label amitraz products.

We pre-screened approximately 500–600 colonies in Oregon with alcohol washes and used about 300 colonies for this study that had at least 2 percent mite infestation levels. A modified field assay similar to Pettis et al. (1998), which was designed to test mite resistance to fluvinate was used. About 300 honey bees from a brood frame were collected from each colony and placed in a 500 ml glass jar with a 25 x 38 mm section of Apivar™ strip suspended in the jar for contact exposure. After 24 hours, all dead mites were
January–February 2020

Harry Vanderpool said that if anyone knows of someone who is passionate about bees, and who is considering a large donation/legacy/stock gift, there is a very specific path to take and to please contact him, Jan Lohman, or George Hansen.

Northwest Apiculture Fund for Honey Bee Research, Extension, and Education (created by OSBA): $15,549.11 expendable, $87,799.76 in perpetuity.

OSU Apiculture Fund (COSI and COSI beekeepers): $85,533.60 expendable, and $65,857.10 in perpetuity.

Dr. Herman A. Scullen Memorial Fellowship Fund: $6,450.37 expendable, and $64,372.00 in perpetuity.

Legislative Update
Dr. Mike Rodia summarized his efforts in 2019 with the state legislature, testifying about siting agri-voltaics on farmland, and working out city and county rules for residential beekeeping in Salem, Marion County, and ongoing with the city of Springfield. OSBA prefers there be no rules for beekeeping, but works with municipalities that are interested in making them.

Constitution/Bylaw Changes
Charlie Vanden Heuvel motioned that 2019 changes to constitution and bylaws, as published in the last two Bee Lines, be adopted. Approval was unanimous without further discussion. The constitution/bylaws will be published in next directory and are available on the OSBA website.

State Fair
John Jacob announced the state fair was a big success and more volunteers are needed for next year as outreach efforts expand. The OSBA fair effort is skillfully piloted by Bonnie King and Marjie Ehry.

Website/Communications
Rosanna Mattingly thanked folks for sending reports and other materials her way all year long. Board has authorized her to send a postcard to clarify the changes to membership and explain her plan of prorating membership changes to get everyone on the same calendar by end of the year. Asked officers and state representatives to contact her with updates for contacts and names on the OSBA website. Asked the membership to be prompt about sending her names of officers/other changes by end of year, making sure the president is a member of state OSBA as well. Rosanna is setting up website to allow easier access for people wishing to make donations to research and outreach programs. She asks that people continue to send photos, notice of events, and that people take time to review and update text contained in the website. She reminded members to take advantage of classified ads.

OSBA Donations for Honey Bee Research
The Executive Committee announced this year’s donations to honey bee research programs. OSBA will donate $19,950 for research: $15,000 to the OSU Honey Bee Lab, $1,500 to Steve Sheppard’s program at WSU, $2,200 to Oregon Bee Project, and $1,250 to Project Apis m.

The research donation monies come from what was raised at 2018 conference fundraising auction and various personal donations from the membership.

OSBA board matches $500 of funds donated from the associations to research. These checks to be presented Sunday. Checks should be made out to Agricultural Research Foundation.

Officers
Jan Lohman solicited but did not receive any further nominations from the floor. Current officers have consented to serve another year in their positions. Membership voted to retain current officers and regional representatives: John Jacob president, Joe Maresh vice president, Joe Hansen treasurer, and Karen Finley secretary.

Meeting adjourned at 5.50 pm.

Respectfully submitted,
Karen Finley

Note: The minutes from the OSBA Executive Committee Meeting on October 25, 2019 are similar in most aspects to those from the General Membership Meeting (above), with the exception of the state fair report, which is printed below. To receive a copy of the minutes from that meeting, please contact osba.newsletter@gmail.com.

State Fair/Honey Judging
Bonnie King and Marjie Ehry reported that the State Fair effort was 11 days, plus prep time, with estimated 1,000 people thru booth every day. They had 80 volunteers!!! Honey judging was at booth, brings a lot of attention, and, despite no sales allowed in building, there was a lot of information shared on using honey and buying local...
honey. Honey bear costume is not comfortable; despite help cleaning, they are getting a styrofoam helmet to go inside, so next year it’ll be a go. Nature’s Kick donated honeystix, and was at booth to see impact; Shonnard’s of Corvallis provided bee plants for booth.

A few road bumps, but in general went smoother than last year. Kids loved the “cell wall” with colored sheets. Next year Bonnie wants to get kids involved in the fair booth, 4-H kids and others. There is need for list connecting people to bee-related 4-H leaders. Bonnie suggested OSBA become a sponsor of the state fair spelling bee; it’s in the same building.

Also another event is Oregon Ag Fest, first Saturday in April. Willamette Valley Beekeepers had been running that, but they are not as active as previously. Bonnie wants to make it happen, and she proposed that she coordinate OSBA participation in that event as well.

Board voted to allocate $2000/year for Bonnie’s stipend to organize volunteer staff and coordinate the Ag Fest and State Fair activities.

DUES AND ASSOCIATION AFFILIATION

Many thanks to all who have found the way through the change in membership dues structure. For those who have not, the deadline for prorated dues for members is January 15, 2020. Your renewal supports the work of the organization as well as provides access to swarm call, free classified listings, and other benefits. Contact osba.newsletter@gmail.com with concerns.
Oregon State Beekeepers Association
EXECUTIVE COMMITTEE

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Treasurer
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Past President
Harry Vanderpool—503.399.3675; shallotman@yahoo.com

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Eastern Oregon
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Southwestern Oregon
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North Willamette Valley
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South Willamette Valley
Tim Wydronik—541.740.4127; tim@aldercreekhoney.com

*AFFILIATED REGIONAL ASSOCIATIONS*

Central Coast Beekeepers
Meets 6:00 PM, fourth Wednesday, Newport
President: Becca Fain—rfain18@gmail.com
Website: www.ccbao.org

Central Oregon Beekeepers
Meets 6:00–7:30 PM, fourth Tuesday, Bend
President: Allen Engle—aengle@bendbroadband.com
Website: www.cobeekeeping.org

Columbia County Oregon Beekeepers
Meets 6:00 PM, first Thursday, Deer Island
President: Linda Zahl—503.799.7073
Facebook Page: ColumbiaCountyOregonBeekeepers

Columbia Gorge Beekeepers
Meets 6:15–8:15 PM, third Wednesday, Hood River
President: Jerry Frazier—jerry1.frazier@gmail.com
Website: gorgebeekkeepers.org

Coos County Beekeepers
Meets 6:00 PM, third Saturday, Myrtle Point
President: Randy Sturgill—541.430.4095; randys@rfpcou.com

Douglas County Bees
Meets 7:00–8:30 PM, first Wednesday, Roseburg
President: Jack Reilly—douglascountybees@gmail.com
Website: www.douglascountybees.org

Klamath Basin Beekeepers
Meets 9:00 AM, fourth Saturday, Klamath Falls
President: Paul Davitt—president@klamathbeekeepers.org
Website: www.klamathbeekeepers.org

Lane County Beekeepers
Meets 7:30 PM, third Tuesday, Eugene
President: Mike France—michaelj62@gmail.com
Website: www.lcbao.org

Linn Benton Beekeepers
Program Manager: Chad.E.Naugle@doc.state.or.us

Oregon Prison Beekeepers

Oregon South Coast Beekeepers
Meets 6:00 PM, third Tuesday, Gold Beach
President: Jesse Fletcher—jesse.fletcher@gmail.com

Portland Metro Beekeepers
Meets 7:00 PM, second Thursday, Gladstone
President: Rex McIntire—503.720.7958
Website: portlandmetrobeekeepers.org

Portland Urban Beekeepers
Meets 7:00–9:00 PM, first Wednesday, Portland
President: Cheryl Wright—cwright80@hotmail.com
Website: portlandurbanbeekeepers.org

Southern Oregon Beekeepers
Meets 6:30–9:00 PM, first Monday, Central Point
President: Risa Halpin—303.807.1830; rhalpin906@gmail.com
Website: southernoregonbeekeepers.org

Tillamook Beekeepers
Meets 6:30–8:00 PM, second Tuesday, Tillamook
President: Brad York—dbradleyyork@gmail.com
Website: www.tillamookbeekeepers.org

Tualatin Valley Beekeepers
Meets 6:00 PM, last Tuesday, North Plains
President: Debby Garman—debbaygarman@gmail.com
Website: tvba.weeby.com

Willamette Valley Beekeepers
Meets 7:00 PM, fourth Monday, Salem
President: Richard Farrier—rfarrierfarms@gmail.com
Website: wvbahive.org
**The Bee Line**

*The Bee Line* is the official publication of the Oregon State Beekeepers Association. Annual subscriptions to the newsletter are included with membership.

Please send news about your bees and your experiences in keeping them, as well as events, corrections, comments, questions, photographs and stories, interviews, recipes, points of view—and ads/advertising—to: Rosanna Mattingly, *The Bee Line*, 4207 SE Woodstock Blvd Ste 517, Portland OR 97206; e-mail: osba.newsletter@gmail.com. It’s your newsletter—we want to hear from you!

The next issue to be printed will be the **March** issue, 2020. The deadline for submitting copy is **February 10, 2020**. Please let me know if you find difficulties with the deadline so we can work out the space and timing for the material.

*May all be well!*  

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**Advertising**

### Event

- **All events, space permitting (15 words)**
- **For a nonprofit group event**, an additional 30 words (total of 45) in the listing or an article

### Listing

- **Free**

### Advertising

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