

WAS Journal



Journal of the Western Apicultural Society of North America

Volume 43 Number 1

February 2020



Montana Honey Bee Summit | 2020 WAS Conference | Welcome, New Board Members
Varroa Update | Keeping Associations Relevant | Creating Pollinator Habitat | State of WAS Bees

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WAS Journal

Journal of the Western Apicultural Society of North America

Volume 43 Number 1

February 2020

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- Dr. Sam Ramsey, USDA-ARS, Bee Research Lab, Beltsville, MD
- Dr. Tom Seeley, Cornell University
- Dr. Dewey Caron, U. of Delaware, Oregon State U.
- C. Bee, Master Beekeeper, Appalachian Beekeeping Collective, WV
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- Jennifer Lund, Maine State Apiarist
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- Andrea Nurse, Climate Change Institute, University of Maine
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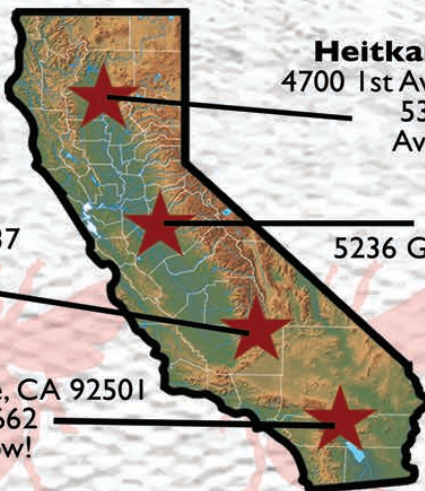
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Message from the President

January 14, 2020

It has been an odd winter in Montana. I wrote my first *WAS Journal* message in mid-September, while we were receiving the earliest and heaviest snowfalls on record. Today, January 9, it is 41°F, and I still have green grass outside my window. However, temperatures will go to sub-zero next week.

Jaylene Naylor has done a superb job organizing speakers for the WAS Conference next July. Loren Stormo and his committee have been working on getting students to Missoula for the WAS Conference Student Poster Session. Moreover, I have a good start on speakers for the 4th International Conference on Bee and Hive Monitoring, but I have some catching up to do. It takes a bit longer to organize a worldwide conference as well as a Technology Demonstration Field Camp.

With back-to-back conferences and a shared field camp, I am going to refer to July 9–14 activities as the *Montana Honey Bee Summit*. Before getting into specifics, I would like to solicit everyone's help:

First, let me encourage everyone to come to the six-day Honey Bee Summit in western Montana. Come for the 2020 WAS Conference, and then stay for the Technology Demonstration Field Camp and the 4th International Bee and Hive Monitoring Conference. Bring a friend! Help make this the best conference ever. Plan to take some extra days to explore Montana, the *Last Best Place*. It is an excellent venue for a vacation.

Second, and more importantly, I am asking everyone to help make the Society the best regional association possible. Western Apicultural Society membership has been more or less static for many years, with an increasingly senior group. To remain viable, WAS needs to modernize, offer better content, make itself more accessible, and diversify and flourish as an informational society.

What can you do? Tell us which benefits WAS provides to you. What makes membership worthwhile? Ask a fellow beekeeper who is not a member of WAS the reason to help us make changes and encourage him or her to join. Better yet, what would make WAS so helpful that 300 more western beekeepers, who care about their bees, eagerly sign up and become active participants in WAS? Ask your local bee association to join! Encourage family members, friends, and other beekeepers to join WAS, give someone a gift membership, become part of the solution.

The New Year finds WAS implementing a new dues

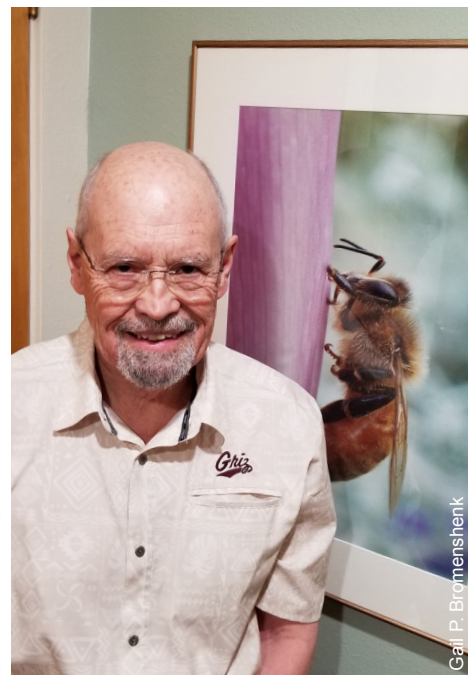
structure that was adopted by the Board last summer. This year's increase has resulted in several comments and inquiries from our members that deserve the Board's full attention. Therefore, at my direction, the entire Board will be re-evaluating this decision and providing a compelling rationale, clearly identifying

the advantages of being a WAS member and the costs necessary to ensure that level of benefits. To all the members who have expressed their thoughts on this so far, thanks for speaking out, as we need to hear from you.

In this new year (and new decade!), WAS is embarking on a concerted effort to reach out to more people with items of broad interest across the beekeeping world. Our objective is to make our July conference one that draws beekeepers from far and wide to an exciting and innovative gathering in one of the most desirable locations in the western states. The 2020 WAS Conference will continue as a part of a broader set of activities aimed at expanding offerings to our members, in particular, and the beekeeping industry as a whole. In summary, we are reaching out to our valued members, enthusiastic sponsors, and the entire beekeeping community with what will amount to a "Beekeeping Summit" cradled in beautiful Missoula, Montana. We will see you there!

43rd Annual WAS Conference

The 43rd Annual WAS Conference will begin with a reception Thursday evening, July 9, held at the atrium of the Payne Family Native American Center (PFNAC) on the nearby University of Montana (UM) campus. Also, Jaylene Naylor will open UM's planetarium in the beautiful Gazing Room in the Garden Level of the PFNAC. The conference itself will be held Friday and Saturday, July 10 and 11, at the atrium area of the Holiday Inn Missoula



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Bringing Students to Missoula

An example of what a small association can do, when asked, occurred in early January this year when Beekeepers of the Bitterroot, an association comprising hobbyist and commercial beekeepers south of Missoula, Montana, voted to donate \$500 to the Student Travel Fund. The generosity of that association was immediately doubled when Pastor Jim Smith of the Mosaic Church, where the association meets each month, announced that the church would match the association donation!

We trust that additional associations and organizations will continue the generosity and look forward to having a good number of students attend the Montana Honey Bee Summit.

Loren Stormo,
Scholarship Committee Chair

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Downtown. A Student Poster Session and Reception will precede the Conference Banquet on Friday. Our goal is to profile contemporary research relative to honey bee health and nutrition, highlighting some heretofore less recognized areas of research and western researchers conducting this vital work.

2020 Conference Speakers: We have a diverse group of speakers—some familiar to everyone, some new to the scene—as well as an international speaker. We have confirmed that at least a dozen speakers plan to be in Missoula for the WAS Conference. To mix things up, we will have talks by individuals, a couple of panels, and a moderated interview session with some of our well-known speakers like Dewey Caron, Kim Flottum, Jim Tew, and Malcolm Sanford. Some of these experts will be present for the interview; others will participate via Zoom video-conferencing.

The speakers table (pages 12–13) lists the names, titles, affiliations, and expertise of our expected July speakers. The theme of the WAS Conference is *Honey Bee Health and Nutrition*. We have begun monthly posts of profiles and updates for our speakers on our Facebook and Web pages. Bee researchers spend long hours in the summer collecting data, then processing it over the winter. As such, most of us do not know now what we will have to talk about in July. We will post talk titles and schedules in the May issue of the *WAS Journal*.

Our keynote speaker will be Jenifer Walke of Eastern Washington University. She and her students are working on the honey bee gut microbiome. They are asking such questions as to whether or not a healthy gut can mitigate the impact of *Nosema* or pesticides. Our featured speaker is Sandra Hope of Brigham Young University. She and her team have developed and commercialized a bacteriophage that can be fed to bees to fight American foulbrood. Michelle Flenniken of Montana State University will address honey bees and antiviral defenses. Dave Wick, of BioID, Inc and BVS, Inc, will describe his new analytical capabilities for the detection of microbial disease organisms.

Our international guest speaker is Frank Lindsay of Lindsay's Apiaries in New Zealand. Frank has a wealth of practical experience, and he has agreed to talk about the Manuka Gold Rush. Did you know that they have used helicopters to place hives amidst the scrub-type, evergreen *Leptospermum scoparium*, commonly called *manuka*, *myrtle*, or *tea tree*? Many of the other speakers may be well known to you.

2020 Conference Student Poster Session: The WAS Executive Committee feels strongly that research by established scientists and students holds many of the keys to overcoming the current challenges to honey bee health. The Executive Committee wishes to encourage students to come to the Montana Honey Bee Summit to present their research and learn from other student presentations, as well as to discuss their interests and approaches with many of today's leading honey bee scientists. The Executive Committee asked Loren Stormo to establish a Student Research and Creative Activities Scholarship Committee to coordinate the fundraising effort and student recruitment. The Scholarship Committee has begun reaching out to the WAS Directors to help find travel support for bringing students to Missoula. Already, bee associations in three states have each donated \$1,000 for the travel costs of their students. Some researchers are organizing vans to bring their students to Missoula. A WAS member in one state has pledged \$1,000.

Finding sponsors, locating colleges and universities with students interested in bees, and searching for bee associations constitute a daunting task for one person. Please contact your state or provincial director and offer to help. Minimally, recruit your local associations and bee equipment suppliers and tell them about this opportunity to support students in your state or province. Small associations may not be able to donate \$1,000, but combined with other associations; each state should be able to raise sufficient funds to sponsor at least one student, preferably more.

Students awarded travel funds will present their existing research projects and interests during a Student Poster Session and Reception immediately before the WAS Conference Banquet. We are keeping this session informal in hopes of encouraging a free transfer of ideas and concerns among the students, beekeepers, and current scientists.

Technology Demonstration Field Camp | 4th International Bee and Hive Monitoring Conference

Along with the 43rd Annual WAS Conference, we are pleased to announce a Technology Demonstration Field Camp on Sunday, July 12, and the 4th International Conference on Bee and Hive Monitoring on Monday and Tuesday, July 13–14, at our Montana Honey Bee Summit. Our goal is to have the investigators and inventors not only talk about their technologies at the Monitoring Conference but also show what the technologies look like and how they work during the Field Camp.

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For the Montana Honey Bee Summit, the Monitoring Conference is a stand-alone conference and tradeshow, following the WAS Conference. The Field Camp serves as a bridge between the two meetings.

The Field Camp is open to attendees from both the WAS and the Monitoring conferences, as well as any hobby, sideline, or commercial beekeeper. The outdoor camp presents an opportunity to exhibit technology solutions with both an exhibitor and a vendor area. Allowing presenters to demonstrate and market their technologies addresses a growing interest in the US and Canada. In the past two years, everywhere we go, beekeepers are asking to see application demonstrations.

The theme of the Monitoring Conference is *Technology Solutions for Today's Beekeepers*. The objective is to bring together academic, business, and other experts to share technology advancements of value to bees and beekeepers. The Monitoring Conference provides anyone with a market-ready technology an opportunity to: (1) show it at the Field Camp, and (2) deliver a presentation about its capabilities and performance at the Monitoring Conference. Also, we are inviting Monitoring Conference speakers to (3) present their new and innovative research as well as updates about ongoing studies. The 2020 colony monitoring event is being widely advertised and differs from previous conferences in that it is:

1. Being extended from one to three days (Field Camp and Monitoring Conference) to provide ample opportunities for networking among speakers and the audience,
2. Adding a call for Abstracts with the option of publishing them in the October issue of *Bee Culture*, one of two national beekeeping trade journals in the US,
3. Facilitating technology transfer to a broad audience by providing studios for recording webinars, podcasts, and speaker interviews by (a) *Bee Culture's* Kim and Jim Show (Kim Flottum and Jim Tew) and Beekeeping Today Podcast (Kim Flottum and Jeff Ott), and (b) the University of Florida's Inside the Hive.TV (Humberto Boncristiani),
4. Providing an opportunity for a select group of technology experts from the Monitoring Conference to also serve on a Hive Monitoring Overview Panel at the WAS Conference on Saturday, July 11, and
5. Allowing direct marketing to beekeepers.

Montana borders three Canadian provinces that have over 475 thousand colonies of bees. The five bordering US states are home to 35–40 percent of all of the nation's 2.5–2.9 million colonies of bees. That's a vast and influential customer base! Most commercial operations in this region manage thousands of colonies, dispersed over extensive areas. Since 2012, the international colony monitoring workshops have alternated between the Eastern (EAS) and Western (WAS) Apicultural Societies, whose mission is education. As evidenced at the 2018 Virginia meeting of EAS, colony monitoring has outgrown a one-day conference and is as well primarily marketing to researchers and small-scale beekeepers. The 2020 Summit has three days for highlighting new technologies and is inviting hobby, small-scale, and commercial beekeepers to the Technology Demonstration Field Camp.

We have already sent out invitations to over 40 firms and individuals. This notification is a query to others interested in giving a presentation. Please send an email to beereseach@aol.com and place "Hive Monitoring" in the Subject Line.

Today, there are even more firms and new monitoring advancements, some of which are molecular based. An example is the Vita Diagnostic kits for American and European foulbrood. Smartphone apps now count mites, diagnose bee pests and diseases, help select pesticides that present lower hazard risks to bees, and provide infrared hive imaging as well as several types of acoustic colony monitoring. There are advanced sensors for geomagnetic and storm monitoring and established networked hive monitoring systems that cover large geographical areas across commercial beekeeping operations. Also, more than a dozen software companies sell software programs for hive management. Colony protection and anti-theft systems using cellular or satellite communications are in high demand. A couple of firms are working on laser systems to zap mites on bees! Other companies are marketing methods for controlling Varroa with heat.

Again, WAS members could help the Monitoring Conference presenters by encouraging local bee associations, local equipment suppliers, and any specialty (technology) firm from your state or province about the opportunity to show and see new technologies for bee management and research at the Field Camp. These new technologies represent a rapidly expanding field.

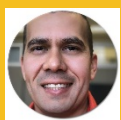
Jerry Bromenshenk and Frank Linton,
Monitoring Conference Co-Chairs
with contributions from *Jaylene Naylor,*
Loren Stormo, and *Steve Sweet*

2020 WAS Conference Presenters

July 9–11, 2020 | Missoula, Montana

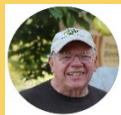
Speakers, affiliations, and fields of interest/experience are presented here. Presentation titles, abstracts, and a tentative agenda will be provided at westernapiculturalsociety.org as information becomes available.

	Jenifer Walke Assistant Professor Eastern Washington University, WA	Bee Gut Microbiome, Pesticides & Nosema, Molecular & Population Ecology, Keynote Speaker
	Sandra Hope Professor/Director Research Instrument Core, Brigham Young University, UT	Bacteriophage Biotechnology, Immunology, Biotechnology, Virology, Featured Speaker
	Randy Oliver Professional Beekeeper/Researcher/Writer Scientific Beekeeping, scientificbeekeeping.com	Commercial Beekeeper, Bee Biologist, Researcher, Scientific Beekeeping, <i>ABJ</i> Columnist
	Steve Sheppard Professor/Entomology Department Chair Washington State University, WA	Insect Introductions & Genetic Differentiation, Apiculture, Pesticides
	Michelle Flenniken Assistant Professor Montana State University, MT	Microbiology, Virology, Innate Immunity, RNAi, Honey Bees, Molecular & Population Ecology
	Ramesh Sagili Associate Professor Apiculture Oregon State University, OR	Sustainable Apiculture, Honey Bee Health, Honey Bee Nutrition, Pollination
	Frank Lindsay Professional Beekeeper/Educator Lindsay's Apiaries, New Zealand (NZ)	Commercial Beekeeper, NZ Bee Industry Leader, Educator, Writer & Columnist, Guest Speaker
	Dave Wick President/CEO BioID, Inc & BVS, Inc, MT	Advanced Analytics, Honey Bee Health, Virus Detection, Proteomics, Nutrition
	Scott Debnam PhD Candidate/Online Instructor University of Montana, UMass Amherst	Honey & Native Bee Pollination, Metabolics & Thermoregulation in Colony Brood Nest, IR Technology
	Jerry Bromenshenk Professor & Online Instructor/CEO University of Montana, Bee Alert Tech., MT	Bee Ethology & Ecology, Bee Diseases, Pesticides & Toxic Chemicals, Technology Solutions
	Alyssa Piccolomini Montana State Entomologist Montana Department of Agriculture, MT	Agricultural Entomology, Honey Bees & Alfalfa Leafcutting Bees, Insect Ecology & Taxonomy
	Malcolm Sanford Professor Emeritus, University of Florida Apis Information Resource Center, beekeep.info	International Beekeeping Specialist, Author, Multiple Service Awards Winner, Actor, Columnist



Humberto Boncristiani
Research Associate
University of Florida, FL

Molecular Biology, Virology,
Pollination Ecology, Honey Bee
Husbandry, Inside the Hive.TV



Dewey Caron
Professor/Extension Apiculture Emeritus
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James Tew
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Kim Flottum
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Jerry Hayes
Editor-in-Chief
Bee Culture, OH

Florida Apiculturist, Industry
Scientist, Vita Bee Health, PAm,
HBHC, *Bee Culture*

Note: As stated in the President's Message, the 2020 WAS Conference will include a moderated interview session with such speakers as Dewey Caron, Kim Flottum, Malcolm Sanford, and Jim Tew. Some of these experts will be present for the interview; others will participate via Zoom video-conferencing.

2020 WAS Conference Registration

July 9–11, 2020 | Missoula, Montana

To Register for the 2020 WAS Conference (Online Only), Go To:

tinyurl.com/honeybeesummit

Options for registration include each of the following events (and their various combinations):

July 9–11: 43rd Annual Western Apicultural Society Conference

Conference opens July 9 with the Bee Buzz Social (5–7 PM). Lunch is included Friday/Saturday.

July 12: Technology Demonstration Field Camp

July 13–14: International Conference on Bee and Hive Monitoring

Early bird registration pricing applies. Registration will be available on site, though at increased cost.

2020 Add-Ons:



WAS Conference Banquet



WAS Conference T-Shirt with this lovely water color →

Updates: **westernapiculturalsociety.org**



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Hiking and Sightseeing in Western Montana

Jaylene Naylor—WAS Vice President and Conference Chair, Stevensville, Montana

By the time you read this, registration will be open for all three events comprising the Montana Honey Bee Summit, July 9–14, 2020, in Missoula, Montana. Here's a 360 degree sneak peek of Missoula from a drone's view at 300 feet:



When making your plans, consider spending some extra time to visit some of the wonderful places in and around Missoula. I've been living in western Montana for 30 years now, and these are a few of my all-time favorite spots for hiking and sightseeing:

Hiking in the Bitterroot Valley

Kootenai Creek, 29.2 miles from conference venue

Of my four favorite places I've been to in the Bitterroot, this is the best creekside hike. The trail is of moderate difficulty. It's 2.4 miles in to the Selway-Bitterroot Wilderness boundary, and 9.5 miles to the end of the trail at South Kootenai Lake. If you make it up about 1.5 miles, you'll likely run into some delicious huckleberries!



Bass Creek, 27 miles from conference venue



I hike Bass Creek frequently during the winter up to the beaver pond, which is about 1.9 miles. The trail is of moderate difficulty.

Skookum Butte, 46.5 miles from conference venue

If you're looking for a hike that gets you gorgeous views, this is one of the best shorter hikes. From the trailhead, you're a

little over a mile from an old Forest Service lookout. I hiked there this summer to do some drone photography with a work colleague. The hike was tough for me, but the views were worth it!

Flathead Valley Sightseeing St. Ignatius, 43 miles

from conference venue

You won't regret taking the time to

drive north up the Flathead Valley to see the Mission Mountains. Take Highway 93 north through Arlee, Ravalli, and up over the hill to get your first breathtaking views of the Missions. St. Ignatius is home to the historic St. Ignatius Mission, built in the early 1890s.

Polson and Flathead Lake, 71 miles from conference venue

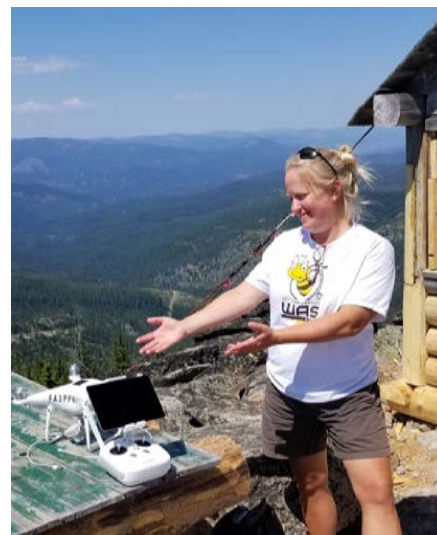
Here's your chance to see the largest freshwater lake west of the Mississippi. Flathead Lake is nearly 28 miles long and 15 miles wide. Polson, the town on the southern shores, is also home to Western Bee, one of the largest woodenware providers in the US. Stop on in and say hi! If you're getting hungry, one of my top restaurants in Polson is the Hot Spot Thai Café for my personal favorite, Pad Woon Sin; if you're in the mood for Mexican food and dining on a deck next to the lake, try Fiesta en Jalisco.

Bigfork, 34 miles from Polson

Now that you've made it to Polson, take the more scenic Highway 35 up the east side of the lake and head to Bigfork to visit its waterfront downtown. Two of my favorite restaurants here are When in Rome (reservations recommended) and Flathead Lake Brewing Company.

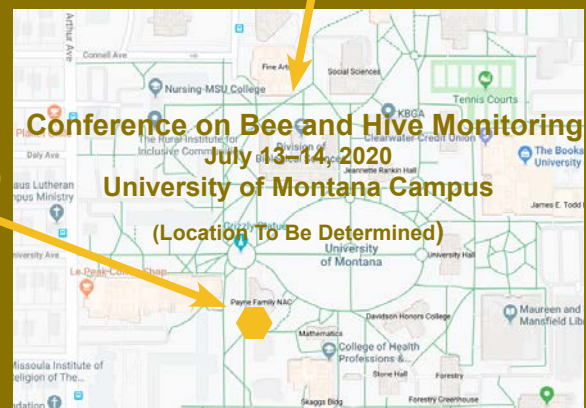
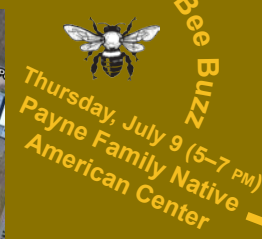
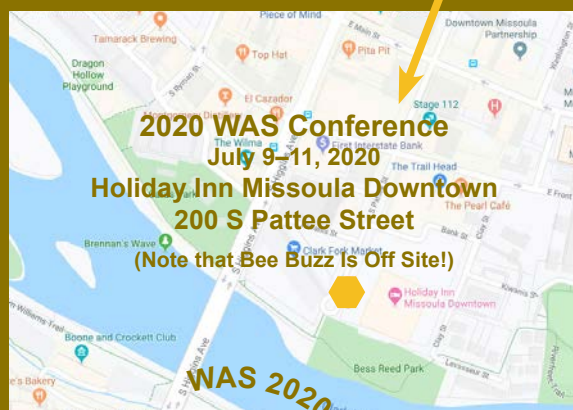
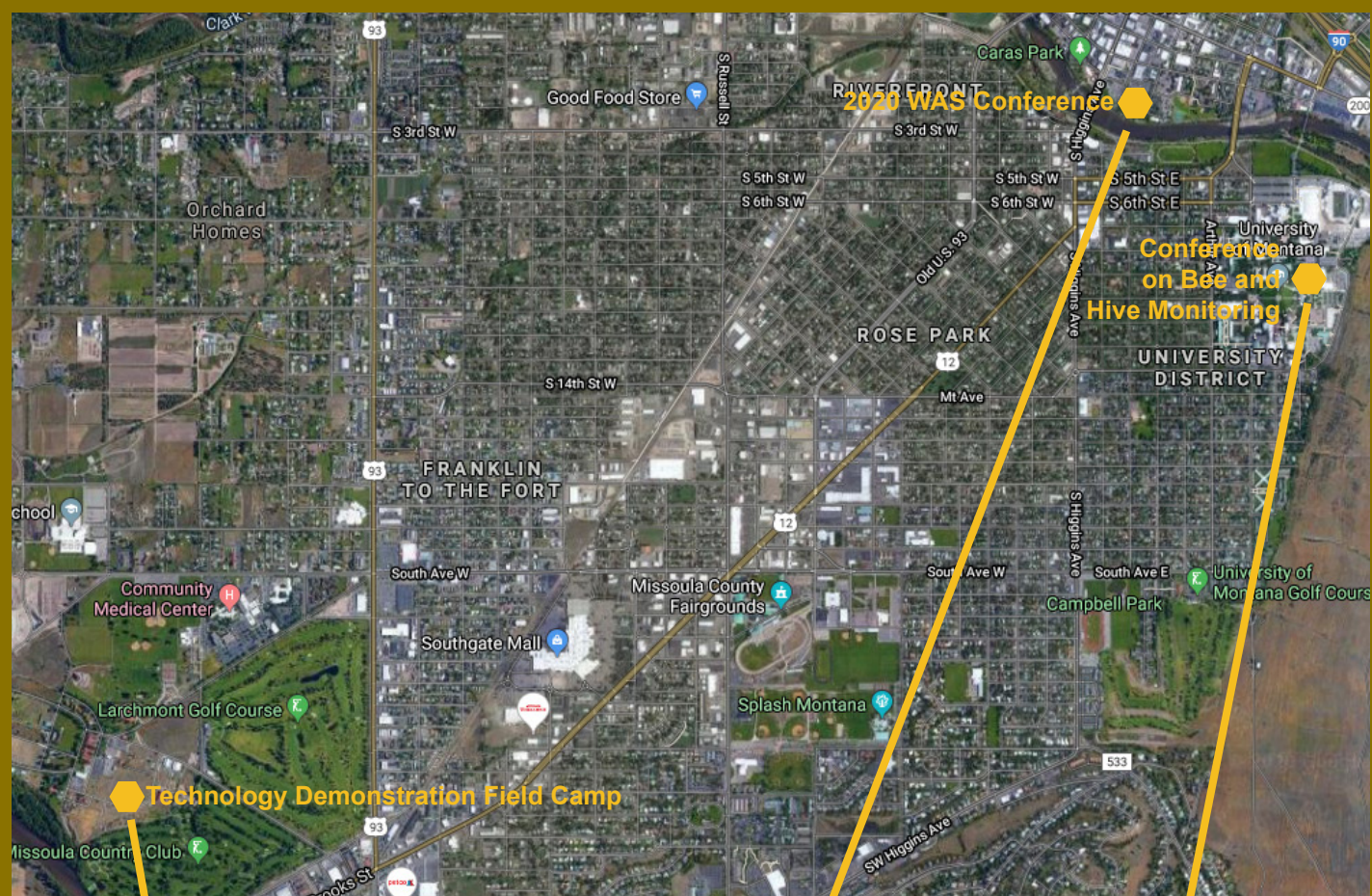
If you've come this far, don't stop now! Head to **Glacier National Park** and/or **Hungry Horse Reservoir**. Glacier is quite busy during the summer, so you'll definitely want to plan your trip well in advance.

Looking forward to seeing you in Missoula this summer!



Jaylene Naylor at Skookum Butte "doing drone work." Clearly, she has taken her drone to new heights.

Honey Bee Summit in Missoula



Staying in Missoula

Missoula is a very popular destination during the summer and rooms can fill up fast. Avoid any delay in booking your stay! Some options for lodging are provided here. Please be aware that the room rates provided are estimates based on searches conducted during January and do not include tax. If you have any questions, please don't hesitate to contact was2020conference@gmail.com; we'll do our best to help.

Holiday Inn Missoula Downtown

200 S Pattee Street, Missoula

The conference hotel is the Holiday Inn Missoula Downtown, which is offering a special rate of \$179/night for conference attendees. Book at: tinyurl.com/honeybeesummit-hotel, or phone 877.666.3243 and let them know you are attending the Western Apicultural Society conference. Rooms are available for those attending the Field Camp and Monitoring Conference also.

Residence Inn by Marriott Missoula Downtown

125 N Pattee Street, Missoula

Just two blocks from the conference venue, this is one of Missoula's newest and swankiest hotels. Room rates are about \$250/night during the busy summer.

Campus Inn

744 E Broadway Street, Missoula

The Campus Inn is near the University of Montana and a 0.5 mile walk from our conference venue. Room rates look to be about \$120/night.

DoubleTree by Hilton

100 Madison Street, Missoula

The DoubleTree is on the banks of the Clark Fork River and is a 0.5 mile walk down the river path from the Holiday Inn. Room rates will run about \$215/night.

Comfort Inn University

1021 E Broadway Street, Missoula

Comfort Inn is located about a mile east of the conference venue. Rooms are about \$156/night.

Motel 6 University

630 E Broadway Street, Missoula

Motel 6 is 0.6 miles from the Holiday Inn, and rooms will run you about \$110/night.

North Reserve and Reserve Street Exit area

If you are able to travel a bit farther, this area is about 5 miles from the conference venue and has many hotels including:

Hampton Inn (\$173), **Motel 6** (\$106), **La Quinta** (\$142), **Econo Lodge** (\$111), **Hilton Garden Inn** (\$157), and **MyPlace Hotel** (\$115).

Days Inn

The Days Inn in Lolo, just south of Missoula, is a 20-minute drive from the hotel. This is a great location if you're thinking of venturing down our beautiful Bitterroot Valley before or after the conference. Rooms run about \$89/night.

Airbnb

Rates run from \$40/night. Search for *Airbnb in Missoula*—or if you want to experience some other nearby areas try:

Arlee – about 30 minutes north of Missoula in the amazing Flathead Valley

Clinton – about 20 minutes east of Missoula

Florence – about 30 minutes from the conference venue, south of Missoula in the beautiful Bitterroot Valley

Stevensville – about 45 minutes from the venue, south of Missoula in the Bitterroot Valley

Camping

For the ultimate (and most budget-friendly!) Montana experience, you may want to consider camping. Here are a few possibilities nearby:

Lolo Creek Campground – roughly 37 minutes from the conference venue. \$10/night, first come first served.

Chief Looking Glass – about 30 minutes from the conference venue. Probably \$10/night.

Bass Creek (Charles Waters) Campground – about 40 minutes from the venue \$10/night.

There are also a few RV parks within 20-25 minutes of the venue including: **Jellystone Park** and **KOA**



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Welcome, New Members of the Board!

Open director positions continue to fill, most recently with Liz Goldie and Ron Miksha for Alberta, Margo Buckles for Washington, and Etienne Tardif for Yukon. In addition, Shelley Mills has signed on for Montana, thereby freeing Jaylene Naylor to focus on other work at hand. Many thanks to ALL Directors for your contributions!

ALBERTA DIRECTORS—Liz Goldie & Ron Miksha

This year, Liz Goldie and Ron Miksha are sharing the responsibility of representing Alberta as WAS Co-Directors.

Liz grew up on a farm in Ontario and attended University of Waterloo, where she obtained an Earth Science degree. She practiced in Alberta as an environmental geologist and is now semi-retired. Liz has kept bees



for nine years in the Calgary and Pincher Creek areas and currently has apiaries at local restaurants in Calgary. She began serving on the board of Calgary and District Beekeepers Association (CDBA) in 2012, was secretary for two years, and served as a director for the association for five years. She is currently responsible for the mentoring programs and is an instructor for beekeeping courses offered by CDBA. As the Community Outreach Officer for CDBA, she responds to beekeeping concerns within the City of Calgary and surrounding areas and helps coordinate the Calgary Stampede Exhibition and other community exhibitions on behalf of the association. Liz is active as a founding member of the United Beekeepers of Alberta Council.



Ron is from

a commercial beekeeping family and learned the trade from his father and older brothers. He has produced thousands of queens in Florida and semi-loads of honey in Saskatchewan. Ron conducts bee ecology research at the University of Calgary, is a frequent contributor to *American Bee Journal*, blogs at badbeekeepingblog.com, and is a past president of the Calgary and District Beekeepers Association and a current director of the United Beekeepers of Alberta Council.

MONTANA DIRECTOR—Shelley Mills

Shelley Mills lives in Northeastern Montana, in the official “middle of nowhere”—Glasgow. It’s true! A study by Oxford University found that Glasgow, Montana, is the official “middle of nowhere.”

Shelley is the Montana State University Agricultural Extension Educator in Valley County. She has an undergraduate degree in Botany and a master’s degree in Land Resource and Environmental Sciences, both from Montana State University. She provides outreach



and education in crop production, livestock production, horticulture, and youth development. Her areas of expertise include pulse crop production, invasive weed management, pesticide use and misuse, beekeeping and pollinator protection, and pest and plant identification. Shelley became interested in honey bees when numerous requests came into the Extension office for honey bee and pollinator education. She held an introduction to honey bee keeping workshop in the early spring of 2017 and got hooked. Shelley had no experience with honey bees and felt that she needed to become a better more educated resource for her clients, so she purchased her first hive and began the University of Montana Master Beekeeper program in 2018. She completed the Master’s level in March of 2019. Shelley continues to provide



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- * **Home & Farm Insurance**

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- * **American Beekeeping Federation**
- * **California State Beekeepers Association**
- * **Michigan Commercial Beekeepers Association**
- * **Montana State Beekeepers Association**
- * **South Dakota Beekeepers Association**
- * **Tennessee State Beekeepers Association**
- * **Wisconsin Honey Producers Association, Inc.**
- * **American Honey Producers Association**
- * **Florida State Beekeepers Association**
- * **Minnesota Honey Producers Association**
- * **North Dakota Beekeepers Association**
- * **Texas Beekeepers Association**
- * **Washington State Beekeepers Association**

Kevin Rader: Buzzus@beekeepingins.com
www.beekeepingins.com
888-537-7088

outreach and education on honey bees and pollinators in the northeastern region of Montana and keeps three colonies of bees. She also maintains the Northeast Montana Beekeepers Facebook page.

WASHINGTON DIRECTOR—Margo Buckles

Margo Buckles, a Washington State Beekeepers Association-certified Journeyman Beekeeper, lives in Spokane, Washington, where she has been keeping bees for the last eight years. She and her husband are hobbyist beekeepers, managing from two to 30 hives in a season. She has been active in her local beekeeping association, West Plains Beekeepers, for seven years and has served in the role of Vice President, Education, for four of those years.

Margo has arranged and presented education programs



for her association, including “The History of Beekeeping,” “What Bees See,” and “Keeping Africanized Bees in Panama.” She is dedicated to educating the public about bees and has organized WASBA Beginning and Apprentice Beekeeper classes. In addition,

she has taught association classes and promoted bees and bee health at numerous community events and to many community groups, including Girl Scouts, Camp Fire, Medical Lake High School, and several local elementary schools. Last year, she worked with Ellen Miller, WASBA’s Education Chair, to revamp the Beginning, Apprentice, and Journeyman Beekeeper manuals. In 2018, she served on the WASBA conference committee, and currently she and her husband work with Eastern Washington University to keep bees on campus. In her spare time, Margo is involved in Girl Scouts and Spokane’s Sister Cities program, and she likes to travel, do yoga, knit, and bicycle.

YUKON DIRECTOR—Etienne Tardif

Etienne is originally from Central Ontario and received his engineering degree from Carleton University in Ottawa. He got his start in beekeeping with a geologist friend as

part of mine reclamation project. The beekeeping was done after work hours. It was a learn-as-they-go operation as they were the only beekeepers in the area and *Beekeeping for Dummies* was their primary source of information. He



then took a ten-year break as he moved to Yellowknife to work in the diamond industry and then spent another three years in Western Australia.

Etienne now lives in the Yukon Territory, where he works in the winter as a mining consultant and spends his summers with his wife keeping bees and chickens, tending large gardens, hiking, and canoeing. He has now kept bees for the last six years north of 60, where he has taken a data-driven approach to keeping his bees. The Yukon has no beekeeping regulation or existing support structure for beekeeping. Over the six years, he has organized a beekeeping course given by a BC Master Beekeeper, has created a Facebook group dedicated to Northern Beekeeping in Yukon, NWT, and Alaska, has attended and presented at Alaskan Beekeeping. He has written for the *BC BeesCene*. In 2019, he had the opportunity of presenting on his Adaptive Far North Beekeeping approach in the Yukon at Apimondia.

Since 2016, he has started running a two-day Intro to Beekeeping course using his Northern Beekeeping Guide. Using the money from his course, he has purchased a microscope which he uses to identify *Nosema* infections in his hives, identify pollen sources, and analyze his honey for honeydew trace elements. He loves everything to do with bees/native pollinators and continuously seeks to expand northern best practice beekeeping. He is currently organizing a Yukon Beekeeping Club to allow for better networking, raise awareness on beekeeping and/or other native pollinators, and raise funds for more local bee research. His current focus is on single hive management, northern queen rearing/splits, and improving hive wintering setups using several hive monitoring sensors. He shares all his findings through the www.northof60beekeeping.com and his Beekeeping North of 60 Facebook group.



Update on Varroa Research Projects at Oregon State University

Ramesh Sagili, PhD—Oregon State University, Corvallis, Oregon

(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 the 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,

Figure 1



Figure 2



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).

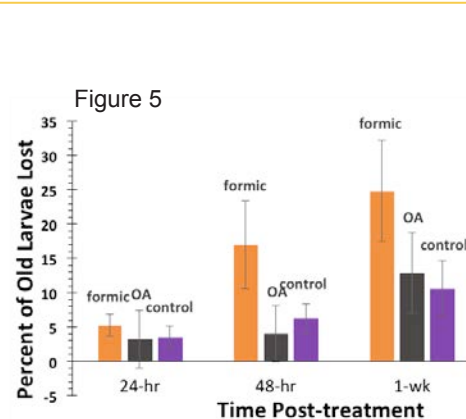
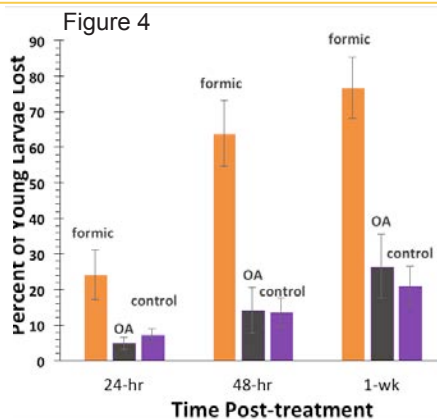
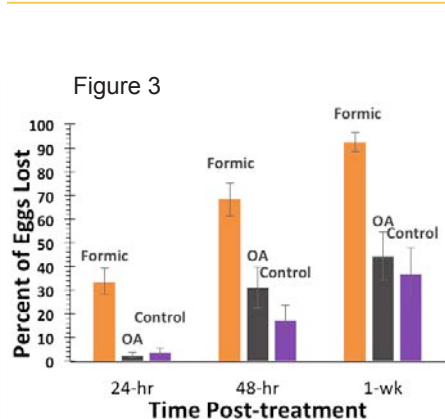
Formic Pro was used as a positive control, and each of the formic acid treatment colonies received two pads of Formic Pro. Each oxalic acid treatment colony received a

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 the formic acid treatment group when compared to the oxalic acid and control groups (please see Figures 3, 4, and 5).

(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, US, 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 fluvalinate, 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 shaken out from the jars and mite mortality was recorded. Next, the bees in the jars were washed in 75 percent ethanol to release any remaining mites, which we presume to be resistant to Apivar™. Preliminary results indicate that there was no significant difference in Varroa mite mortality between Oregon (US) and Alberta (Canada), with average mite mortality of 91.3 percent (US) and 92.5 percent (Canada). We plan to continue this study to get deeper insights regarding Varroa resistance to amitraz, as amitraz is an extremely important tool available to beekeepers and it would be devastating to lose this valuable option.

Relevancy for Beekeeping Associations & Younger Generations

Melinda Jean Stafford—Boise State University, Boise, Idaho

Our beekeeping associations must appeal to younger generations if we wish to exist in the future. Many of our members don't identify themselves as *young professionals*, *college-aged*, or *K-12*. These are the demographics missing from many of our associations. But, why? We first must ask what barriers, or perceived barriers, exist for these groups.

Let's start with the youngest group: **K-12**. This age group requires parental support. They can't participate in our associations' activities without their parent's permission and buy-in. Most can't drive, so transportation can be a barrier. Further, they don't yet have their own disposable incomes, so associations with fees might not be feasible for this age group. Strategies for success for the K-12 group revolve around getting their parents involved. This means thinking about more than just the kids. It's got to be a whole family affair. Keeping membership creates access,



so consider adding a flat-rate family membership price. The content of your meetings and publications should also keep this audience in mind. Don't try to make everything you do appeal to both kids and experienced beekeepers, but rather think of it in smaller pieces. Is there a part of your meeting, or a part of your newsletter, that touches this audience?



Melinda Jean Stafford (front, center) with the Bee Team. She presented "Relevancy: Local Associations and the Next Generation" during the 2018 WAS Conference in Boise, Idaho.

College-age students have a very different set of barriers for membership. Their schedules change three+ times per year between semester schedules and summer schedules. Often this includes housing changes. They are a transient population, making the investment in beekeeping seem completely unfeasible. Their schedules are demanding and stressful – balancing school, work, life, all while being on their own for the first time. Adding an additional responsibility can feel like too much. College-age students are the hardest to reach, in my experience. It's not best practice to try and convince college students to get bee hives. It's not good animal husbandry to get a pet and move around multiple times a year. But college students can still benefit from our associations if we, for example, offer

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Charistos, L, Parashos, N & Hatjina, F (2015) Long term effects of a food supplement HiveAlive™ on honey bee colony strength and Nosema ceranae spore counts, Journal of Apicultural Research

“The colonies we fed with HiveAlive last year had only 15% loss so far compared to the 25% for the rest. They appeared to build up very well. There were 75 that we started from packages on 4/7 and split into 300 on 6/10. My close beekeeper friend who runs about 300 colonies bought the same packages of bees on 4/7. He did split them, although not the same buildup. He did not use HiveAlive. He has about 35% loss on those so far. He plans to buy some this week.

Nick S. (1,000 colonies, New York)



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community hive management programs—something that the students can come and help with, but not have to own. This requires a lot of work on the association, but can be incredibly beneficial for community education. Another tip is to ensure your association has social activities. College students are learning how to balance a lot of work and due dates. They don't find value in adding another responsibility, but do find value in building community, friendships, and educational opportunities. As with the kids group, it's important to make membership financially feasible for college students. Consider free membership with a student ID. A special note with this group—you must measure success differently. These students may be gone during summers, may leave after graduation, or may have a semester that conflicts with your events. Therefore, they may not become forever-members of your association. Engaging them during their time in your area sends them off into the world with knowledge that will further best practices in beekeeping.

Young professionals (25–35 years old, working in a career-oriented field, possibly with a young family) can make great members. They have more stable lives than the other groups, but they lack knowledge and skills in beekeeping. They are novices. Further, this age group has what I call the *millennial mentality*. It's easy to lose their attention because they were raised with constant stimulation. Keeping them engaged is key. Focusing on this target audience is a great place to start! An ideal first step is to simply be friendly. Seems easy, but it takes some thought and time. Greet them at the door, ask their name, see what questions they have and what challenges they have faced. If they don't feel welcomed early on, they won't keep engaged. Another great way to reach this audience is a mentorship program. It allows them to get connected with more experienced members in your association and build relationships. It's not just the initial outreach that matters. It's the relationships through time. Follow up on their successes and failures. Affirmation can prevent them from quitting. Beekeeping isn't easy, and we know that. This target audience didn't start beekeeping in the pre-Varroa America. They started recently, and there's a lot working against us. They need encouragement to stick with it. Finally, unlike college-age students, this audience is looking for responsibility. Focus on utilizing them as volunteers for your programs. It's a win-win for them and your association.

Identifying strategies for successful engagement of these

audiences should be done individually. Trying to reach all three of these audiences with the same strategy will not necessarily be successful. Further, it's not always best practice to try and reach all three. I suggest associations identify one of the target audiences that they want to better reach.

There are some **broader considerations** all associations should consider for overall

success. These tips are good practices in any association. *First, track your association's demographics with membership registration.* You don't know who is currently in your association if you don't ask. Ask for age, what grade/year they are in school, and other data points that allow you to create sub-groups for your association when needed. You might be surprised to find that you have a handful of college-age students in your association, and you can reach out to them directly to help build up that population, if you've identified that as a goal. Another benefit is this allows you to reach out to sub-groups specifically with opportunities that might be of interest to them, rather than sending out everything to everyone. Target your content to groups that find it relevant.

A second tip is to gather contact info for those who attend your meetings but are not yet members. You may have benefits that only extend to dues-paying members, but collecting info from everyone gives you the opportunity to follow up with more info on how to join, for example. If they come to one meeting, never hear anything about the association again, you've possibly lost them from day one. Have their entrance in the door be a ticket for follow-up.

Consider name tags for all or many meetings and events. It can be intimidating walking into a room of people who all seem to know one another except for you. Name tags are an easy ice breaker. And heck, even the veteran members can't remember names!

Maintain accurate information on your websites. This is where young people go first to find information. Websites need to steer them in the right direction the first time for them to stay engaged.

Creating an accessible environment for these younger generations isn't just an idea worth considering. It's necessary to stay relevant in the years to come. These incoming generations have a lot to offer to us as well—new ideas, connections to the community, and vibrant energy. Our associations can and will be more successful if we take the time to connect with them.



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- 1978 **Norman Gary** (California)
- 1979 **Lucien Alexander** (Oregon)
- 1980 **Randy Barker** (British Columbia)
- 1981 **Charles Duncan** (California)
- 1982 **William P Nye** (Utah)
- 1983 **John Edwards** (Washington)
- 1984 **Eric Mussen** (California)
- 1985 **Mike Burgett** (Oregon)
- 1986 **Doug McCutcheon** (British Columbia)
- 1987 **Tom Muncey** (Nevada)
- 1988 **Dan Mayer** (Washington)
- 1989 **Stan Williams** (California)
- 1990 **Mark Shelton** (California)
- 1991 **William P Nye** (Utah)
- 1992 **Mike Burgett** (Oregon)
- 1993 **Mark Winston** (British Columbia)
- 1994 **James Bach** (Washington)
- 1995 **Eric Mussen** (California)
- 1996 **Russell Messing** (Hawaii)
- 1997 **Eric Erickson** (Arizona)
- 1998 **Steve Sheppard** (Idaho)
- 1999 **Leonard Joy** (Nevada)
- 2000 **Fletcher Miller** (Alaska)
- 2001 **Mike Burgett** (Oregon)
- 2002 **Eric Mussen** (California)
- 2003 **Jaquie Bunse** (British Columbia)
- 2004 **Jerry Bromenshenk** (Montana)
- 2005 **Steve Sheppard** (Washington)
- 2006 **Adrian Wenner** (California)
- 2007 **Diana Sammataro** (Arizona)
- 2008 **Mark Pitcher** (British Columbia)
- 2009 **Eric Mussen** (California)
- 2010 **Dewey Caron** (Oregon)
- 2011 **Jenny Bach** (Hawaii)
- 2012 **James K Smith** (Washington)
- 2013 **Melanie Kirby** (New Mexico)
- 2014 **Jerry Bromenshenk** (Montana)
- 2015 **Beth Conrey** (Colorado)
- 2016 **Ethel Villalobos** (Hawaii)
- 2017 **Eric Mussen** (California)
- 2018 **Steve Sweet** (Idaho)
- 2019 **Sarah Red-Laird** (Oregon)
- 2020 **Jerry Bromenshenk** (Montana)

Request: Honey for Research

Hello. My name is Mia Foster. I'm currently working to determine if early detection of Varroa mite infestations in hives is possible using a technique called *environmental DNA* (eDNA) *sampling*.

eDNA is discarded DNA that's been shed through a natural process such as the sloughing of skin cells. Scientists can take a sample of any sort of medium—including honey—and determine species that are present in an area, or even in a hive, from the DNA present in the sample.

In addition to its applicability, the eDNA method of detection is incredibly sensitive: A species can be detected even if the sample only contains two strands of the species DNA.

eDNA has successfully detected floral compositions in honey and even insect biodiversity, but hasn't been evaluated for its potential to detect Varroa mites at low densities. To determine if eDNA is a viable approach for early detection, I need your help!

I'm asking for 45 g (three tablespoon) samples of honey from your hives—especially if you know if your hive has recently been treated, is infested, or is presumed clean. Clean sample tubes for honey and a small protocol for sampling your honey will be provided.

To help me, please email **20fosmia@student.mcpsmt.org** for more information.

Mia Foster

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Creating Pollinator Habitat in Five Steps

Kathryn Prince—The Xerces Society for Invertebrate Conservation

If you want to create some of your own pollinator habitat but aren't sure where to start, you can follow these five steps to design and install habitat that honey bees and wild pollinators will both enjoy.

1. Walk the Site

Before you make a plan for what you'd like to plant, it's important to figure out what you already have. Take some time to look up your local soil type, and even soil pH and salinity—this information can all be found for free online and can help you to determine which plants you'll be able to successfully grow. Print off a map of the site (you can use aerial photos from Google Maps) to take along with you on your walk so you can orient yourself. Then, it's time to head outside.



While you're walking the site, try to view the area the way a pollinator would. Are there any plants in bloom that you notice bees are visiting? Do you recognize plants that you know bees or butterflies will use? If so, which time of year are they in bloom? Are there habitat features like bare soil and dead wood that wild bees can use for nesting? Are you already planning to plant something else that you could make better for bees by adding a few pollinator plants to?

Also make a note of things that could be harmful to pollinators. Do you notice that you're downwind of an area that sprays a lot of pesticide? Are you yourself using compounds that could have harmful effects on pollinators or flowers? Take note of where pesticide risks occur, and aim to keep your pollinator habitat at least 30 feet removed.

2. Make a Plan

Now it's time to make a plan. Reference your map and your notes, and think of ways you can add pollinator

habitat to your site. If you have a long narrow space you'd like to plant, a hedgerow of flowering shrubs could be a good fit. If your site has a creek or pond, consider a riparian planting of moisture-loving plants that can also provide forage and nesting habitat for pollinators. You can plant a meadow of wildflower seeds or a few flowering trees. Whichever habitat you choose, aim to have several different kinds of plants in bloom during each season. Choosing plant species that are native to your area will have the most benefit for native pollinators and other wildlife. Plus, native plants are the most likely to thrive at your site since they've already adapted to life in your region.



Kathryn Prince presented "Designing Native Bee Habitat on Farms" during the 2019 WAS Conference in Ashland, Oregon.



Sometimes making a site more pollinator friendly isn't done with habitat planting, but by tweaking your current management. This can include reducing the use of broad-spectrum pesticides (if you use any), pruning back or removing weedy species so your resident native pollinator plants can thrive, or reducing soil disturbance and compaction from equipment or foot traffic. The latter will make the soil more suitable for attracting ground-nesting bees. Most native bees nest in the soil, not in hives.

3. Prepare

Site preparation tends to be the least glamorous step of



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installing habitat. After all, killing weeds is few people's idea of a good time! However, site preparation is also the most critical step of installing a planting. If preparation is rushed, or skipped altogether, it is much more likely that the habitat being installed will fail.

Proper weed control can take a long time. Sometimes, if weedy species are particularly oppressive, site preparation needs to be done over the course of a year before the site is ready to be planted. Exercise patience, and stay on top of removing the weeds in your planting area before they set seed for the best results once it's time to plant. Avoid ripping up the soil as part of your weeding strategy—dredging up deep soil also brings new weed seeds to the surface and damages soil structure.



While you work on reducing weed pressure at your site, you can also make other preparations. Order your plants or seeds well in advance if you're doing a large project, because nurseries have been known to run out of popular items during planting season. It may also behoove you to check in with any necessary authorities to make sure your habitat area will not be sprayed or damaged after it is planted. For example, if you're planting underneath power poles, make sure to contact your electric company. If you're planting near a roadside, you may need to check in with your county to make sure county road crews don't come by and spray your planting. And it never hurts to put up "no spray" or "no mow" signs.

4. Plant!

Your site is prepared, your plants are ordered, and now planting season is upon you. It's time for the fun part—planting! If your habitat area is small, you can plant it yourself or recruit a few friends. For larger habitat projects, you may wish to hire a contractor from a landscaping or restoration company to plant it for you. Regardless of how you choose to plant, remember to budget extra time; planting often takes longer than you think it will, and unexpected delays can occur.



5. Manage

Once your pollinator habitat is planted, you will still need to do some work to maintain it. Stay on top of weed control as your plants become established. It's normal for some plants to die in the first year or two. If this occurs, take note of which plants do well at your site and which don't. When you replace dead plants later on, replace them with the species that are thriving rather than the species that are struggling.



Managing your habitat is an ongoing process that can be very gratifying. As your pollinator habitat matures and establishes, you can observe your bees and the local wildlife there. The more attention you devote to it, the more you'll learn about the world of bees.

For region-specific plant suggestions and planting tips, visit www.xerces.org. Your new pollinator habitat will provide benefits for bees and other creatures for years to come!

Handle a book as a bee does a flower,
extract its sweetness but do not damage it.

— John Muir

Beekeepers' Calendar

2020

February 21–22: **Nevada State Beekeepers Conference.** *Information:* www.nevadastatebeekeepers.org.

March 7–8: **10th Social Insects of the Northeast Region** meeting, or SINNERS, PioneerWorks, Brooklyn New York City. *Information:* sinnersconference@gmail.com.

March 20–21: **HONEY Convention.** *Information:* honeyconvention.com.

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

July 6–8: **2020 Heartland Apicultural Society Conference.** Southern Indiana University. Evansville, Indiana. *Information:* heartlandbees.org.

July 9–11: **43rd Annual WAS Conference.** Missoula, Montana. See pages 7–17; presenters, pages 12–13. *Information and updates:* www.westernapiculturalsociety.org.

July 12: **Technology Demonstration Field Camp.** Missoula, Montana. See above and President's Message, pages 9–11.

July 13–14: **4th International Conference on Bee and Hive Monitoring.** See above.

July 19–24: **International Congress of Entomology 2020.** Entomological Society of America. *Information:* entsoc.org. Finlandia Hall. Helsinki, Finland.

August 3–7: **Eastern Apicultural Society 65th Short Course and Conference.** University of Maine, Orono. *Information:* www.easternapiculture.org. See page 4.

August 24–26: European meeting of the **International Union for the Study of Social Insects.** University Paul Sabatier. Toulouse, France.

September 12: **BG Bees Conference,** Game Changer. Hood River, Oregon. See page 36.

October 3–4: **Washington State Beekeepers Association 2020 Conference.** Central Washington University. Ellensburg, Washington.

October 23–25: **Oregon State Beekeepers Association 2020 Fall Conference.** Florence, Oregon. *Information as it becomes available:* orsba.org.

November 17–19: **California State Beekeepers Association Convention.** *Information:* www.californiastatebeekeepers.com/annual-convention.

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State of WAS Bees | Winter 2020

The WAS region is extensive and wonderfully diverse. So, too, are the conditions for the bees and the options for those who care for them. Here we find Director Reports of some of the conditions this season. See upcoming area events in the Beekeepers' Calendar (page 30) and/or posted at: westernapiculturalsociety.org.

ALBERTA—Liz Goldie and Ron Miksha

Along the 1,200 kilometre transect from the dry cattle country of southeast Alberta, through the fertile parklands, and north toward the Peace River, Alberta's 1,500 beekeepers had a year of mostly poor results. The province's 300,000 colonies usually produce over 40 million pounds of honey. This year, it was 35 percent less—the smallest crop in 20 years. The usual culprit can be blamed—weather. A large operator in central Alberta told Ron that he had almost constant rain in June and July. He produced almost nothing. In south Alberta's arid grasslands, summer rains were welcome, but when the skies finally cleared, a good crop didn't materialize. In Calgary, July fifth reached just 12°C (47°F) with a heavy rain that soaked Ron and his team to the bone! Nevertheless, around Calgary (home to 300 beekeepers), the crop was about average—though with lots of rain, we expected more honey than we got.

Wholesale prices were lower than last year, but we have been hearing that packers are willing to pay a bit more now. Retail prices have been stable, but big grocers are still selling 500 grams of high-quality Alberta honey too cheaply, at \$8–\$10 CAD, which is \$5.50–\$7.00 per pound in US currency.

Alberta's 170 commercial beekeepers produce 98 percent of the province's honey. The small crop and low prices have some big producers struggling. Hopefully, prices will rise and next year's crop will be good. Our urban beekeepers don't need big crops and high prices to enjoy their hobby. In 2019, the number of hobby beekeepers in Alberta grew 5 percent with 74 new urban beekeepers joining the roster. City beekeeping has expanded phenomenally, from 120 hives kept in Calgary ten years ago to over 1,400 today. This has resulted in several new bee suppliers and queen and nuc operations supporting these new beekeepers.

For decades, Alberta was home to the only manufacturers of Fumagillin in the western world. The company, Medivet, closed in 2018, after supplying an important product at a reasonable price. Since then, a

British outfit, Vita Bee Health, has begun to supply the Canadian market. Ron was quite surprised to meet the CEO of the new company, Max Watkins, at Apimondia in September. Watkins said that he intends to provide the same high-quality product, manufactured at a plant in Ontario. In the spring, there will be 454-gram, 96-gram, and 24-gram containers available. In the US, Fumagillin will be available through Mann Lake Ltd. Not everyone uses Fumagillin to treat Nosema, but many who do claim that it reduces winter and spring losses by 50 percent.

Alberta has several fine beekeeping organizations. A new group, United Beekeepers of Alberta, will hold its second annual conference and AGM on March 14, in Spruce Grove, Alberta. This group, which focuses on training and outreach, hosted a very successful "Queen Day" on Mother's Day with Alberta queen breeders as key speakers. The March conference will feature a mix of practical and scientific presentations, honey competition, and events. In the city of Grande Prairie, near the north end of agriculture, the local bee association has a very active 40 members with an association demonstration hive and frequent presentations by bee research scientists. The Edmonton and District Beekeepers has reached 168 busy members and Red Deer Beekeepers comprises about 40. Meanwhile, Calgary and District Beekeepers (with 475 members!) hosted over 40,000 visitors at its popular Calgary Stampede exhibit. In 2019, the Calgary bee association held banquets, bar-b-ques, backyard hive demos, beekeeping courses, honey competitions, school presentations, and numerous other activities. Alberta is known for its deep volunteer culture, as shown by these associations as well as the Alberta Beekeepers Commission (which represents commercial beekeepers) and regional groups like the Southern Alberta Beekeepers.

We are into the coldest part of winter now in Alberta. Highs are around minus 20°C (-5°F) and the sun is barely edging above the horizon. Beekeepers are getting anxious for the March thaw so that they can count winter losses and prepare to order packages or nucs for replacements. Commercial beekeepers winter their hives in climate-controlled warehouses or wrapped with insulation in 4-packs in sheltered outyards. But some hobby beekeepers, such as Ron, are finding great success with polystyrene hive bodies. Regardless the system, we all tend to be anxious, yet cautiously optimistic—as we are every winter!

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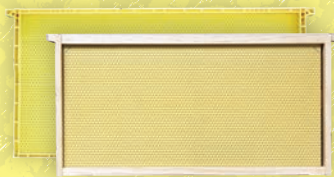
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MONTANA—Shelley Mills

Winter is generally a slow time for Montana beekeeping—particularly in the northeastern part of the state where temperatures and wind chills can get extremely low. Wind is likely one of our greatest concerns on the prairies because it can steal the heat right out of the hive. We follow the Canadian recommendation of wrapping our hives with an insulated material such as the “Easy-on Hive Cover” offered through Western Bee Supplies and other merchants. These materials provide additional protection from wind chills that can range as low as -70°F here on the high plains. We also provide windbreaks or move our colonies to sheltered areas.

Beekeepers here attended a workshop in September sponsored by Montana State University Extension and the US Army Corps of Engineers to learn strategies to overwinter colonies and tools and methods of extracting honey. Topics included fall pest management options, pest management to improve winter survival, placement and amount of honey stores for overwintering, hive placement, winter protection and covers, supplemental feeding for winter, winter bees versus summer bees, and an update on the laws and regulations in Montana. The afternoon was spent extracting honey for those beekeepers who lacked their own equipment.



Wendy Becker (left) experiences the struggle of extracting honey from burr comb, while Patricia Gilbert-Ball (right) demonstrates how to remove cappings from honey frames.



Late fall pest management options taught at the workshop included the recently federally registered dribble method of applying oxalic acid for Varroa mite control. One suggested improvement on the technique I have is to use a 5-ml or 10-ml plastic pipette to

administer the fluid. It is much easier to control the flow with a disposal pipette than with a syringe. They are inexpensive and are available for purchase in numerous places.



Montana has recently updated their apiary laws to include mandatory registering of all beekeepers, including hobbyists, landowners, and commercial beekeepers. There are advantages to registering your apiary with the Montana Department of Agriculture, such as free testing for Nosema and Varroa mites, placement in the database so you can be contacted by an applicator in the event that they need to schedule a pesticide application near your site, free advice from the state apiary program, and routine updates and access to information about bee health and diseases in our area.

Under Montana Law, a hobbyist beekeeper has under ten hives on property not owned by them and can have no more than two sites. Landowner beekeepers must own the land, bees, and hives that the apiary will be placed on and are not limited to any specific number of hives on their property. Commercial beekeepers must maintain a minimum of three miles from another commercial apiary operated by a different beekeeper and must have at least 10 hives registered on locations for ten consecutive days April 15–October 15 of a registration year.

There is a one-time fee of \$10 for any new registration of landowner and hobbyist beekeepers, plus an additional fee for each site that an apiary is located on. So, if you are a landowner beekeeper and have property that is contiguous, the fee would be only \$10 for the initial registration and \$10 more for the location for a total of \$20 no matter how many colonies you had on the property. If two or more properties are separated by more than three miles, you will need to pay an additional \$10 for each location that you have bees on. If you have questions about the new changes, please contact Alyssa Piccolomini with the Montana Department of Agriculture at 406.444.3790 or email her at: apiccolomini@mt.gov.

I am currently working on the next beekeeping workshop, which will be held on March 14, 2020, at the Fort Peck Interpretive Center in Fort Peck, Montana. This will be an Introduction to Beekeeping seminar and will cover topics such as bee biology, hiving packages and nucs, equipment needs, laws and regulations, and spring feeding and management of your colonies.

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NEVADA—Del Barber

With the cooler Nevada weather, the bees are clustered in their hives but take advantage of above 50°F days for cleansing flights. Most of our members are feeding their bees with dry pollen packets and fondant.

Great Basin Beekeepers of Nevada 2020 elected leadership that will reflect that of Nevada as the nation's first majority-female legislature with an all-female slate of officers leading the organization. Crystal, Lisa, Debra, and Myrna are looking forward to a productive 2020.



Great Basin Beekeepers of Nevada 2020 Leadership: Treasurer Myrna Barber, Vice President Lisa Fisher, President Crystal Metzenheim, and Secretary Debra Tracey.

Neither the Northern Nevada Beekeepers Association nor the Mason Valley Beekeepers meet in December and January. However, Mason Valley did report earlier that, "The Mason Valley Beekeepers (MVB) are gearing up for the 10th Annual Nevada State Beekeepers Conference to be held February 21 and 22, 2020, in Yerington, Nevada. Confirmed for this conference include top-notch bee researchers giving presentations on the latest research-based information for all beekeepers; authors; horticulturists; and apitherapist[s]. The conference includes a series of workshops, hive decorating contests, honey tasting, silent auction and raffle."

Great Basin Beekeepers of Nevada partnered with the Carson City Leadership Program to offer 75+ members of the Daughters of American Revolution a tour and educational information presentation regarding the Bee Hotel at their October meeting. The Bee Hotel is a nesting station for leafcutter bees built as a leadership project. The December GBBN full day workshop "Getting Ready to Keep Bees" offered an overview of equipment, hive choices, and bee breeds for GBBN Newbees. Member Jon presented at the

November meeting regarding his communication with Jeff Knight, State Entomologist, Nevada Department of Agriculture: "Jeff Knight is moving forward to have sponsored new regulations that appear to not be in the best interest of bee keepers. Once again, the proposed legislation appears to effectively eliminate citizen bee keepers from the State of Nevada. The only apiaries that would continue to operate without public hearing to gain approval from your neighbors would be apiaries where the beekeeper lived on five (5) or more acres of land. The practice of beekeeping hives on the property of others would also be regulated, making many of those arrangements not possible."

SASKATCHEWAN—Doreen Bradshaw

The 2019 honey season was a tough one for Saskatchewan beekeepers. The average reported honey production was 80 kg per colony, which beekeepers reported was 83 percent of their average crop. Many factors impacting production included weather, bee health, and canola availability. (Farmers planted less canola this year, and we had poor bee foraging conditions during canola bloom.) Beekeepers appear to be continuing to plan for the future by ensuring there are many nucleus colonies available for the 2020 season.

Canadian Western Agribition

From November 25 to 30, 2019, the Regina and District Bee Club was pleased to host a display in the Family Agriculture area once again. A record 10,000 students, beginning Monday through to Friday, attended the event. Not only were elementary school groups present, newcomer groups were also inquisitive visitors to our location. Saturday saw many families and other Agribition participants attend our show area. Attendance to Agribition was 140,000 visitors, including 1,200 visitors from 70 countries.

The main attraction to our booth was the live hive, supplied by Andrew Hamilton of Hamilton Apiaries. Adults and children alike, as well as neighbouring vendors, were instantly drawn to the thousands of bees that called Agribition home for the week. People were thrilled when they could spot the queen bee, which was rapidly spotted by volunteers at the booth. An additional education hive, temporary tattoos, microscopes to view parts of a bee, and several new educational books helped to pique the interest of many visitors. It was great to hear many visitors express their

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interest in the possibility of starting their own hives.

Canadian Western Agribition, 2020 show, is slated for November 30 to December 5, 2020, and will be celebrating its 50th anniversary of this world-class agricultural event.

Apimondia 2019



Last, I will mention Apimondia 2019, as the Saskatchewan Beekeepers entered a Booth (one of the best) at the event. In addition, Pierre the Bear (Mascot) was there to greet visitors and hand out honey samples at the booth. Pierre, of course, was a hit with visitors having his picture taken

many many times. We are also proud to inform everyone that a former president of the Saskatchewan Beekeepers Association, Tim Wendell, won Gold for his honey at the World Congress.

YUKON—Etienne Tardif

As this is my first quarterly update, I will take some time to introduce you to the Yukon. We have a population of about 70,000 moose and just over 40,000 people. Our cold hardiness is Zone 1 to 2.

We are a very small beekeeping community up here, currently self-regulated with no laws or rules around beekeeping activities. We have about 30–40 beekeepers with only five with more than ten hives, with our largest managing between 30 and 50 hives. They are focused on the post-forest fire fireweed honey (typical yields of 100–150 pounds/hive). Most beekeeping areas of the Yukon can sustain no more than ten hives (30–75 pounds/hive). We have at most 200 hives spread across the territory from Watson Lake in the south to Dawson City in the central part of the Yukon. By my estimate, we produce about 4,000 pounds of honey per year. I have spent some time networking with other beekeepers from Alaska and the Northwest Territories to broaden our knowledge base (Figure 1). Last month we held our first Yukon Bee Club meeting. The group will help us develop a more structured approach to beekeeping in the Yukon, join our voices together and advocate for

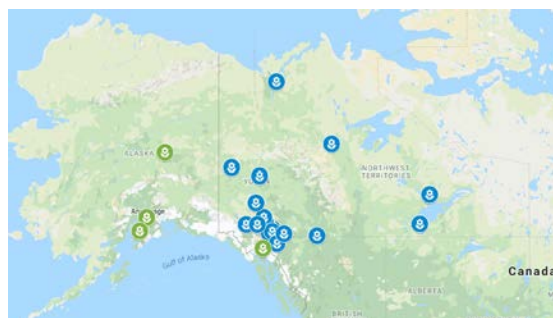


Figure 1. Northern Beekeeping Networking Group.

our needs with government (regulation and research grants), and give us regularly scheduled meetings to talk beekeeping as a group in person.

At the time of writing this, Dawson is at -40°C , my location near Whitehorse is in the -30s . We are only halfway through the winter with our coldest temperatures still to come. We don't get any cleansing flights from October to mid-March, so many won't know their wintering success until March. The challenge up north is the length of the winter, but a good-size cluster of healthy bees with 100 pounds of "honey" and a good winter setup will come out in spring ready to roll.

Our beekeeping season runs from April to August. Experienced beekeepers will feed pollen supplements and hard sugar (candy/fondant) during the first warm spell in March, if we get one and if it is determined the hive has enough stores left in case of a another extreme cold snap. We start feeding sugar syrup mid-April. Hive insulation stays on into early May, but some will have to remove some to ensure adequate ventilation. Our first pollen comes mid-April. We get a mid-June Yukon native wildflower nectar flow that most hives will miss as they are still getting up to strength.

Our main flow comes in the middle of July and typically lasts 2–4 weeks. This one is mostly fireweed and patches of sweet clover in more urban/developed areas. We also get a nice honeydew flow in August, but it comes with the risk of being caught out if your honey supers aren't taken off early enough to start winter preparations. Our prep typically starts in early to middle of August and requires both pollen supplements and heavy sugar syrup. Our first frost typically comes in August, at which point all pollen stops coming in if the weather doesn't warm up again. We often get a late-July pollen dearth that will seriously affect overwintering success as the winter bees will be too skinny. As for disease and pests up here, Varroa can be a problem, but is easily mitigated with IPM and some type of treatment. Oxalic acid vaporization is the preferred treatment, as many of our hives will be broodless from mid-August



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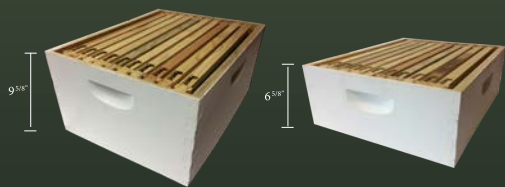
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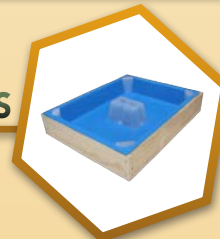


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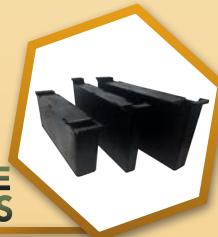


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to mid-September. If nucleus hives are treated when first received, mites will typically no longer be a problem due to our very low hive densities and very long brood breaks (Figure 2).

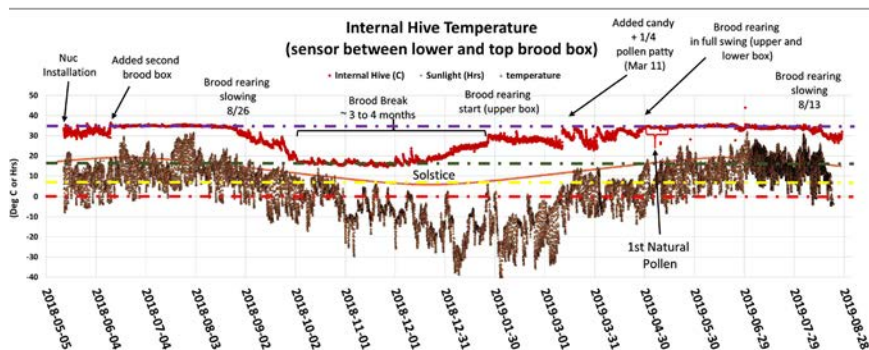


Figure 2. 2019 Annual Brood Cycle. Data from one temperature sensor placed between lower and upper brood boxes, local weather, and hours of sunlight.

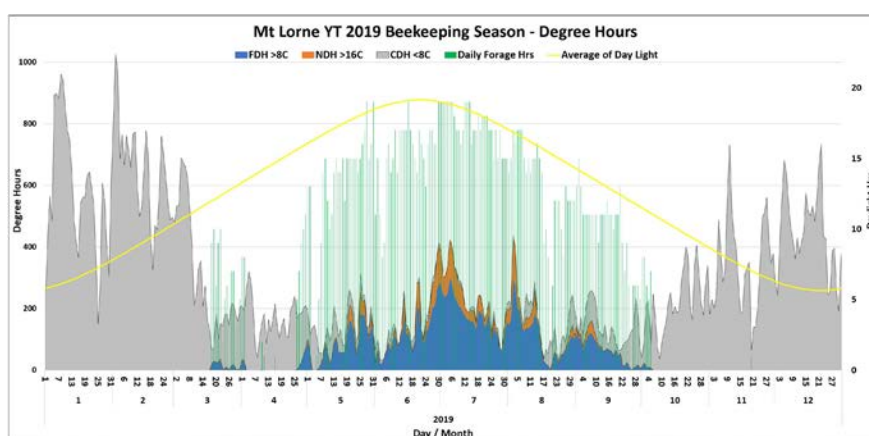


Figure 3. Analyzing weather from a bee's perspective: Visual representation of a local bee yard bee weather (Hourly Temperature Data). A calculation similar to GDD/HDD (Growing Degree Days/Heating Degree Days) is used to measure and portray information. Forage Degree Hours (FDH) >8°C; Nectar Degree Hours (NDH) >16°C; Cluster Degree Hours (CDH) <8°C.

Nosema ceranae seems to affect certain beekeepers more than others, so more research is required to better understand what drives this. It is likely due to poor late-summer natural nutrition when winter bees are being raised. Our winter losses were 38 percent (n=79

hives) last year, which was an improvement on the previous year's 54 percent (n=108)—which was also one of the coldest in a very long time.

This has been my focus area for the last 4 years: To develop a Yukon northern beekeeping education program, analyse our weather from a bee's perspective (Figure 3), understand our local forage cycles using weight scales and by mapping out our bloom dates, develop a disease and pest management approach with some basic monitoring (home-based microscopy), collect data on our hive management approaches (Winter Surveys), and develop better wintering setups through hive monitoring of vital measurements (temperature, humidity, and pre-winter hive weights). An important aspect of making beekeeping up here more sustainable will be to produce our own nucs and even breed our survivors. Last year I started collecting data on splits/queen mating approach and successes. In my area, I know of eight attempts at rearing queens from swarm cells, and all resulted in successful mated queens (very nice brood patterns and fair to very good summer expansion). I myself created two splits from swarm cells taken from my best overwintered hive. Next time, I will discuss one approach being used up here to help us increase our honey yields, which forces us to make early June splits by using single brood chamber hives.

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Remembering Life Member Lois Zahler (1927–2019)

Lois Zahler (Houser), passed away peacefully in her sleep August 29, 2019 at the age of 92. Born and raised in Everett, Washington on March 4, 1927, she attended Rosehill School in Mukilteo and graduated from Everett High School. She married Robert (Bob) Zahler in 1949 and they were happily married for 62 years until Bob's passing in 2011. Lois and Bob moved to Edmonds, WA, in the early 1950s and raised their three children, Tony, Robin and Diana. Lois taught swimming for both the Edmond's School District and the YMCA, and was a long time member of Puget Sound Beekeepers Association and the Western Apicultural

Society. Lois was preceded in death by her husband, Robert Zahler and grand-daughter, Emily Katherine Zahler. She is survived by her sister, Doris Houser, and her children, Tony, Robin and Diana (Tom). Lois lived a long and adventurous life, and during the last few years she was blessed with the care of many wonderful caregivers. A private family service will be held at a later date. In lieu of flowers, please donate to the Alzheimer's Foundation.

Source: www.legacy.com/obituaries/heraldnet/obituary.aspx?n=lois-genevieve-zahler&pid=193847753

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2019 WAS Conference Experience

Veronica Cuppy—Boise State University, Boise, Idaho

We were so excited to attend the 2019 Western Apicultural Society Conference. It was a beautiful grand adventure from Boise, Idaho, to travel, learn, and explore. Oregon is so beautiful! It was so inspiring to be surrounded by so many other people excited about bees. My husband and I have been beekeeping for three years now. It is a passion that we share as a couple. He had always wanted to keep bees. I am an avid gardener. It was a natural fit. We love beekeeping so much that we sold our house in a subdivision to start a farm (Verley Farms) last year.

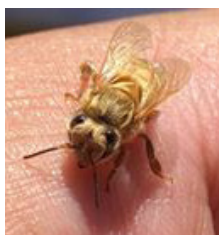
I was so inspired to meet female researchers, entrepreneurs, artists, beekeepers, and community organizers. The conference was very welcoming and designed with intention. I filled up my notebook with data, ideas, future things to do, people to reach out to, and presentation notes.

My biggest highlights of the trip: “Making Sense of Bee Research and What it Means for me” by Dr. Judy Wu-Smart from the University of Nebraska-Lincoln. Science can often provide overwhelming amounts of information. How can we relate how this information can be utilized in our apiaries and management practices? I also did a hands-on workshop with Dr. Wu-Smart, and it was magical. She handles the bees with such grace, confidence, and kindness. It opened my eyes to a completely different approach to bee husbandry. She helped me build my confidence and understand how to look deeper at clues in a hive.



I had always totally suited up in my bee suit (head to toe covered) with gloves and all. At the conference, I used my hands and it is another evolution of our beekeeping journey. The girls were so gentle and kind.

And we met baby bees! They are fluffy with hair all over—kinda silverish tint. Sooooo cute! It looks like they are wearing glasses.



I am a doctoral student at Boise State University in the Public Policy Administration program. I had been entertaining several research areas. The

topic of pollinators holds a special place in my heart, and this conference allowed me to open my eyes to all the possibilities for future research. Thank you for the opportunity to attend, learn, and grow. I'd love to do more outreach and education on the importance of our pollinators.

It is amazing to see what amazing collaboration occurs when we have a hive mind for the greater good and work together. Thank you!

Note: Veronica attended the 2019 WAS Conference on a scholarship from the James Smith Memorial Scholarship Fund.

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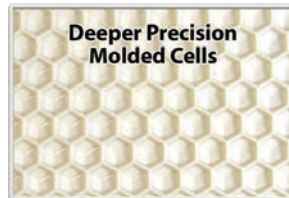
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