# BeesCene

WINTER 2019/2020 | Volume 35 #4

BC Honey Producers' Association

*Promoting and Encouraging Beekeeping in British Columbia since 1920*

*To:*

# Letter from the editors . . .

The trip home from our meetings, though often a long one, is a good time to think about the topics discussed but returning from Prince George had me thinking more about the people in our beekeeping community. What a great group of people who make up the PG club, and it was obvious how hard they worked to host the meeting. It was nice to see more beekeepers attending from the northern parts of the province, including a good friend from Hudson's Hope that I hadn't seen in too long. I was also fortunate to sit with one of our guest speakers at the banquet. We didn't talk much about bees but instead shared stories about our lives, and she revealed depths of character I didn't expect. Unfortunately the speakers haven't participated in this issue, but we'll follow up with them for the next one.

Also during the banquet, a few long time members shared memories about Blaine Hardie, who passed away in August. It was perhaps the most interesting and moving part of the weekend. Blaine and his wife Jan have been an important part of the association for many years, and he will be greatly missed. Blaine had a powerful presence at the meetings, and I admit that for a long time I was a little intimidated by him. However, at our semi-annual meeting this year I shared a meal with him, Jan and some other friends, and got a quick glimpse under the surface. Once again first impressions came up short. I spoke mainly to Jan that night but got a sense of the closeness and loyalty in their family, and learned that under his gruff demeanor was something rare that held their friends and family together. Recently Jan shared the eulogy she wrote for him, including his history of strong family ties as well as tales from his childhood in northern Saskatchewan. Two of the latter that stood out: when he and his brothers were still small, all three rode their horse to school with honey pails as lunch buckets. And according to one of his aunts, as a young child Blaine was very shy and often cried until he was returned home; as Jan noted in her eulogy, it's hard to believe.

Blaine Hardie *photo by Paul van Westendorp*

Since the AGM we've lost several other members of our beekeeping community, and memories about them are also in this issue. Smiley Nelson from the North Okanagan Club was clearly one of a kind. I had been in touch with him for a club profile a little while back, and it was easy to tell that he had a generous and good-natured disposition and that he was an important part of their local group. As his friend Richard Plantinga told me, "Smiley somehow managed to use the qualities of honey bees, as seen in the way he lived his life - getting along with others and getting things done." His friend Carol Harvey said about him, "Smiley was truly the go-to guy for our club. Whenever I would phone him about a problem with one of my hives, his answer was always the same – 'I'll be right there.'"

Like Blaine, Lew Truscott will be remembered as another who wasn't afraid to speak his mind. He was involved in beekeeping since the 1950s and was his life was defined by hard work and honesty. Lew sent a letter to us a few years ago which listed things he 'thought he knew' about bees, and was an example of his independent thinking, humility and pioneering spirit. At the end of the letter he talked about how some beekeepers from around the province were beginning to become successful in overwintering their bees, and that the broader beekeeping community should pay attention to the ingenuity of individual beekeepers in overcoming obstacles. Lew's dedication to beekeeping is summed up by his daughter Susan: "Beekeeping was definitely his life and all of ours as well. The only holidays we had when I was little were going to look at new bee yards in out of town places. And summers were spent selling honey and fruit. But looking back, I wouldn't have wanted it any other way."

A tribute is also made to Margriet Dogterom in these pages, who began her journey with bees decades ago. She spent some time as an Apiary Inspector in BC and also over 10 years in Mark Winston's lab. She is well known in bee-related circles, more recently for her work promoting mason bees. I have also been interested to learn that among her other achievements, she took over the BCHPA newsletter in 1984 and the following year turned it into the BeesCene, creating the format that is still in use today. Our current archivist met with her this past summer as she was interested in donating an extensive library of beekeeping related publications to the BCHPA, including material that was passed down through several generations of beekeepers, a valuable addition to our archives. Margriet contributed a great deal to bee research and awareness and had a big impact on those who knew her.

Our condolences to the families and friends of these four unusually bright lights, we were blessed to have them. Best wishes also to everyone for the holiday season ahead. ❀

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Publisher: BC Honey Producers' Association www.bchoneyproducers.ca Publications Mail Sales Agreement No.40828130

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# BeesCene

BC Honey Producers' Association

WINTER 2019-2020 | VOLUME 35 #4


## In This Issue





**Cover Story:** Port Alberni beekeeper Joanne Callender showing off some late season brood, most of which have emerged to become long-lived winter bees. Joanne is an up-and-coming Market Gardener with a passion for relearning forgotten skills. Of beekeeping she says, "I still have so much learn, but I am captivated by bees; they way the live together and the myriad of ways they support all I do as a small scale farmer."
*Photo by Don Fowler*

# From the President

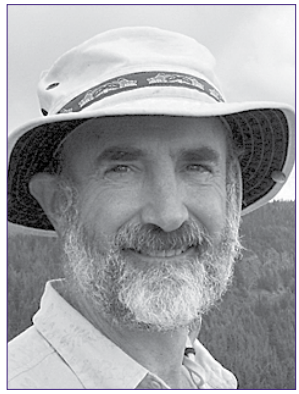
I'm very pleased to report that our annual convention in Prince George was another fine success: well attended and with a varied, well presented and appreciated selection of educational topics, and a good opportunity for renewing relationships among beekeepers from around the province.

The association continues to be in very good financial condition. Before our March meeting, I will probably write a focused article on a proposed adjustment to our bylaws that I feel is required to protect this position, in spite of our healthy finances.

Scientist Dr. Stephen Pernal from the Beaverlodge Research Station gave us a great review of the major bee event that BCHPA participated in this year, Apimondia in Montreal. His and other presentations will be available on our website in a few months, and I think many are worthy of viewing by any beekeeper who may have missed the convention.

A somewhat dramatic but brief event with a good ending, the discovery of Asian Giant hornets near Nanaimo, and the quick removal of the nest (hopefully the only one) was well described by Paul van Westendorp in his provincial report.

One feature of the BC meeting reflected the practice of many research gatherings, with the presentation of posters for attendees to browse at their convenience. These posters presented the results of some of the Bee BC projects throughout the province, enabled by funding independent of BCHPA, from the BC Ministry of Agriculture.



Kerry Clark
***BCHPA President***

An even greater capacity for enabling high priority research is the funding available to BCHPA to support research projects that we've identified as having high importance. The five projects supported since last year are all well underway and we can expect results in due time. We will be exploring the possibility of pursuing some sort of Technology Transfer program, enabled by another $25,000 from the provincial government this year to address priorities. We look forward to guidance on this from our Research Committee.

Our board of directors was renewed in elections that gave us Dan Mawson and Jeff Lee as Vice Presidents, and a new Secretary, Michalina Hunter. With Treasurer Irene Tiampo and CHC rep Stan Reist, I look forward to effective management of the association.

Our banquet was the opportunity to recognize some of our outstanding, long time members: Life Memberships were presented to Blaine and Jan Hardie, and also to Lance and Bobby Cuthill, while the President's Award was given to Dan Mawson. Well deserved, all!

As I write this, my plan is to travel to Bolivia on a beekeeping development assignment from mid-November to mid-December. You may have noticed that Bolivia is having some unrest after an election, the day before our Canadian federal vote. If all goes well I'll be back before Christmas with another perspective on world beekeeping.

We have remarkable opportunities ahead of us, and look forward to both the new year and our association's celebration of 100 years representing the beekeeping industry of BC.

Bees be with you. ❀

# Beelines

## News from the Ministry of Agriculture

PAUL VAN WESTENDORP, Manager, BCMA Apiculture Program
paul.vanwestendorp@gov.bc.ca.

**AGM - Prince George**

The recent AGM held at Prince George was a roaring success. The local beekeeping community put together an excellent program at a wonderful facility. The turnout was equally impressive. Thanks to all those who participated in the planning, organizing and presenting the event!

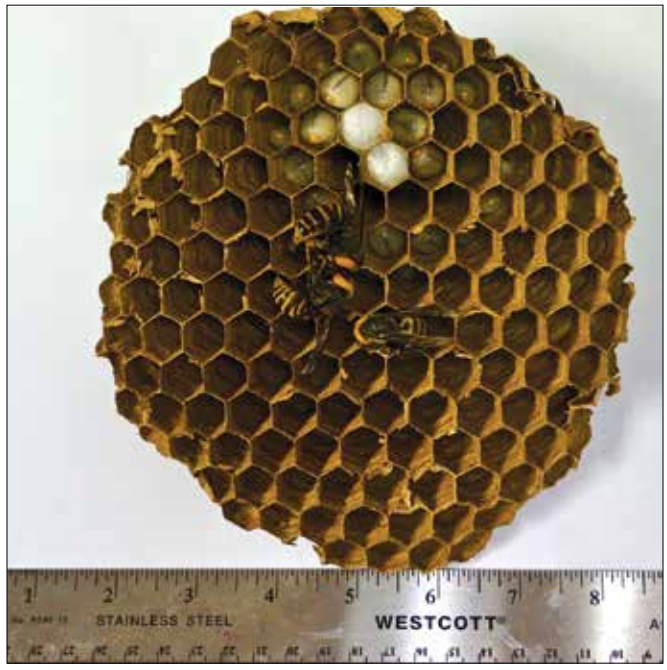
**Asian Giant Hornet - *Vespa mandarinia***

What an extraordinary set of events took place in late summer involving the Asian Giant Hornet. An observant Nanaimo beekeeper noticed two very large hornets predating on his bees in July. He managed to catch both specimens and sought advice about their identity. He took a number of pictures which he submitted and I requested the two specimens be couriered for identification. The two specimens were brought to the Biodiversity Research Centre at UBC for preservation and identification. With the assistance of CFIA - Ottawa and hornet experts in Japan, the specimens were identified as *Vespa mandarinia*.

*V. mandarinia* is widely distributed throughout Eastern Asia from southern China and Japan to Manchuria and Korea. It is a highly adaptable species that favours forested areas. Unlike many wasps and hornets, it is a ground nester that may expand to a couple of hundred adults in late summer. *V. mandarinia* is an apex predator of the insect world and feeds on a wide variety of insects. In the early season, workers will seek tree sap and catch incidental insect prey. It is not until the middle of summer when they start feeding on honey bees. After a scout hornet has located a suitable colony, it will return to its nest and recruit a number of nest mates. Honey bees will be attacked indiscriminately at the hive entrance creating mayhem and panic. The aim of the hornets is to gain access to the bee brood needed to support their own nest. The rapid protein intake triggers the production of sexually maturing offspring including drones and virgin queens. Drones will emerge first, followed by queens that will mate shortly thereafter. The mated queens will disperse and winter on their own with survivors starting their own nests next spring.

Asian Giant Hornet.

After *V. mandarinia* was confirmed in Nanaimo, a plan had to be developed to find and eradicate this potentially serious pubic health threat. This hornet species is responsible for several dozen human fatalities in Japan each year. To proceed with developing an eradication and control program, different ministries and agencies needed to be involved including the Invasive Species Council of BC and the City of Nanaimo. However, the development cycle of the hornets demanded prompt action because of the imminent emergence and dispersal of mated queens. As news spread, reports came in of other sightings of giant hornets in the same general area of Nanaimo. An appeal was made to Nanaimo beekeepers for their assistance. Detailed descriptions of the locations of hornet sightings proved critical in finding the nest. By plotting the different sighting locations, the Nanaimo beekeeper team managed to locate the hornets' nest quickly. Using $CO_2$ gas to subdue the population first, it allowed the beekeepers to dig out the nest quickly and collect virtually all of the adults by dropping them into isopropyl alcohol. While the process was carried out quickly and efficiently, a couple of team members were stung. The venom of *V. manadarinia* is classified as being among the most potent of the insect world in part because of the volume a hornet can deliver and its ability to sting repeatedly. Furthermore, its venom contains a polypeptide that causes necrosis of the tissue resulting in temporary bleeding and potential infection. While the nest had been eliminated, a few stragglers were sighted for several days but all appeared to have originated from the single nest.




Asian giant hornet nest: note diameter of brood cells.

**Monitoring for Asian Hornets**

Even though it is believed that this incident only involved a single nest, it is possible that a few mated queens had emerged and dispersed before the nest was destroyed. Further monitoring is being planned for 2020.

For public safety reasons, we don't encourage the general population to get involved in searching for Asian Hornets. Beekeepers are more suitable because of their familiarity with stinging insects and their behaviour. Also, as *V. mandarinia* starts to predate on honey bees in the middle of summer, beekeepers are most likely to notice these large insects.

Whether beekeeper or not, anyone is encouraged to report unusual insects. The best action is to take a close up photograph and email to paul.vanwestendorp@gov.bc.ca or to the BC Invasive Species Council - https://bcinvasives.ca/report. If you can catch the insect, use a jar or any container with a lid. Place in the fridge for 30 minutes to immobilize the insect. Then, take a few close-up pictures and submit for identification.

Ever since Asian Hornets had been reported in BC in 2019, a lot of submissions have been received. In addition to the common Yellowjackets and Bald-Faced Hornets, a few insects have caused confusion. These include the Elm Sawfly (left) and Horntail (below) which pose no threat to humans or bees.

**Apiary Inspectors - Vacancies**

**South Okanagan**

Long time Apiary Inspector Ray Levesque has decided to retire in 2020 after having served beekeepers of the South Okanagan for over 40 years. For those interested in this part-time, seasonal position, please send me an email expressing your interest and a description of your background and beekeeping experience.

**Bulkley-Nechako**

Phil Brienesse of Smithers decided to resign from his position as Apiary Inspector after two years of service because of new job obligations. The inspection area extends from Smithers to Prince Rupert with the majority of beekeepers in the Smithers area. For those interested in this part-time, seasonal position, please send me an email expressing your interest and a description of your background and beekeeping experience. We plan to fill the positions early in 2020 with the starting date of April 1, 2020.

**Annual Beekeeping Production Survey**

The annual beekeeping production survey is underway and many beekeepers have already submitted their production data through the online form. The purpose of the survey is to compile production information from the entire beekeeping community which provides an excellent overview of the success and challenges beekeepers faced during the last production year. By quantifying production levels and estimating economic performance indicators, the BC beekeeping industry can showcase its important role in BC's agricultural sector.

The survey is carried out according to the Personal Information Protection Act. Completed survey forms are handled confidentially, even though none of the forms show the origin, location or identity of the submitter. After the data has been compiled, all forms are deleted. The greater the participation, the greater the confidence we have in the data.

While the data processing has not been completed yet, preliminary results indicate that the average honey yield per colony was 32 kg (~70 lb./colony) with lowest average of 20 kg/col in the Bulkley-Nechako and the highest average yield of 105 kg/ col in the Peace. A detailed production report will be presented in the next issue of BeesCene, posted on the government website and BCHPA website.

**Improved Beekeeper Registration System**

For decades, we have administered the beekeeper and apiary registration system, as required by law. Much of the handling of the data was done manually through data entry. Sometime in 2020, a new and vastly improved registration system will be introduced under the so-called "Premises ID" system.

Instead of manual data entry, each beekeeper will have a confidential personal account. The data is entered automatically without any staff involvement. Apiary locations are instantly plotted on a map and accessible to the beekeeper. While the 2-year registration renewal cycle will remain in place, beekeepers can access their account and update at any time. More details will be made available in the spring issue of BeesCene.

**Availability of Fumagillin**

Since Medivet of Alberta closed its doors in 2016, fumagillin (~Fumadil B) was no longer available to beekeepers. While few beekeepers had access to remaining inventory, most beekeepers were no longer able to control *Nosema* through the use of fumagillin. While the incidence of *Nosema* increased in recent years, it did not result in widespread loss of colonies according to inspection reports and lab records. Some beekeepers applied 'dietary supplements' that reportedly reduced the bees' susceptibility to *Nosema*. These products enhance the gut microbiome and reduce *Nosema*'s ability to penetrate the epithelial wall of adult bees.

Ever since fumagillin was taken off the market, the Canadian Honey Council has tried to acquire the license of the product. Its efforts were successful and fumagillin has become available again in Canada through the Alberta Beekeepers' Cooperative.

**HopGuard Approved as Mite Control Product**

Health Canada's Pest Management Regulatory Agency (PMRA) recently approved the registration of HopGuard as a Varroa mite control product. As the name suggests, the active ingredients include extracts from the hop plant. It is expected that the product will be available in Canada in 2020.

**Ministry Courses**

***Webinar course***

The Ministry will offer its annual beekeeping course through a series of webinars. This course is free of charge and open to anyone with a computer and internet access. It consists of four live webinar sessions on Saturday mornings from 0900-1130 PST. Prior to each session, references and information materials will be distributed to course participants by email. Each session is recorded and available to registrants for about two months after the course has been completed.

If you are interested in the course or know someone who may be interested, please submit your name and email address to be included to the course's contact list. The course is expected to start in the second half of January.

***Bee Master 2020***

The biannual Bee Master course will be offered again at UBC from February 10-14, 2020. This advanced course is focused on apiculture research and science presented by invited scientists and researchers. The course does not involved beekeeping management issues. The course is limited to 40 registrants. For details and registration instructions, please visit www.gov.bc.ca/apiculture and select "courses" or email me directly at paul.vanwestendorp@gov.bc.ca

**EFB-like Phenomenon**

In the last few years, bee brood samples that had shown EFB-like symptoms were submitted for further diagnosis. In most cases, EFB couldn't be confirmed. In the Kootenays where most of the samples originated, beekeepers dubbed the phenomenon as the "mystery disease". A few more samples with similar symptoms originated in the Fraser Valley and Pemberton Valley.

While no large numbers of incidences were reported, the frequency of the phenomenon caused us to submit samples to the Animal Health Centre's Bacteriology lab for culturing and identification. No pathogenic microbe was identified. Most of the samples included *Providencia spp*, but these are common microbes of the adult bee's gut and not known to be pathogenic. *Providencia* is likely transferred by young nurse bees to the bee larvae.

Samples that couldn't be diagnosed were also submitted to the Centre's virology lab and tested using PCR (polymerase chain reaction) diagnostic techniques. The results were inconclusive which may have been due to the quality of the submitted samples.

At this point, there is no clear answer about the agent(s) involved in causing the EFB-like symptoms. More testing and diagnostics will be carried out next season, possibly in collaboration with the National Bee Diagnostic Centre (NBDC) at Beaverlodge, Alberta. ❀

*~ Paul van Westendorp*

# A Bright Future with Bees

*by Sylvia Dekker*

If you're like me, your world is about as big as your bee yard when you're elbow deep in a hive. Nothing matters beyond the latest varroa infestation or a new queen's beautiful brood pattern.

Turns out beekeeping is bigger than all that. Bees Abroad and the women of Kisoro, Uganda, should know.

World leaders in the practical relief of poverty through beekeeping, Bees Abroad is a UK charity made up of volunteer beekeepers who are taking their knowledge and skills beyond their own bee yards. From over 20 years of work worldwide, the folks at Bees Abroad realize that beekeeping has the power to change women's lives. The sweet profits can reverse poverty, improve food security and help with education costs. Often, bees are the gateway to a bright independent future they would have never imagined for themselves.

My dad told me when I was younger that beekeeping was the perfect way to farm. The capital required to begin beekeeping pales in comparison to land prices and beekeeping wouldn't require buying land. He also said that women make better beekeepers as they are more detail oriented and have more patience.

My Ugandan contact, Christine, agrees. She believes that in communities like hers, "beekeeping should be done majorly by women. [The] majority of agricultural work [in Uganda] is done by women. When women know the relationship between agriculture and beekeeping, they will appreciate it more and do both activities with more passion. [The] majority of women here are uneducated, unemployed and they don't own land. Beekeeping does not need a lot of land to be carried out. It does not need too much time since it can be done in the evenings or early in the mornings. Beekeeping is therefore the only venture through which they can be self-sustainable and financially independent."

Christine in her apiary; the hives are covered to keep out the rain.

In underprivileged families - if there is enough money for school - male children generally are chosen to attend. If a girl is lucky enough to be sent to school, domestic responsibilities such as fetching water and farm work prevent focus on schoolwork.

A typical top bar hive apiary in the area.

39 year old Christine Ryumugabe Kamanzi is one of the few people in her community who has a bachelor's degree. She studied Community Leadership and Development and has been a beekeeper for two years. As an educated woman in a society where women are marginalized, she feels strongly that beekeeping and women are a perfect match.

Kisoro district, located in southwestern Uganda, Africa, is a beautiful place with a bee friendly climate and is full of friendly people. But Christine says, "[the] majority of the people in Kisoro do not earn $8 a week yet they have families to feed, send to schools and to hospital when they are sick."

"The challenges faced by women are the same challenges shared [by the community]. However, women suffer more because they don't own land and therefore have no say even when the husbands want to sell the little available land. When it comes to local unskilled labor like working in gardens, employers prefer to hire men because they are stronger than women." She is convinced that "beekeeping helps [women] because it doesn't require much land and much time. Beekeeping in Uganda does not require artificial food for the bees. Bees take care of themselves."

In Kisoro, "beekeeping is dominated by men. Sometimes when women have lost their husbands, they have lost their bees too because they have no idea how beekeeping is done. It is therefore important to introduce women to beekeeping and expose them to advantages and benefits of beekeeping", says Christine.

So, she founded Jireh Women Beekeepers Uganda, which currently consists of 54 women. Besides learning and improving on their beekeeping and hive product processing skills, they coach a group of high school

Jireh Women Beekeeping group meeting when Richard visited them in February.

aged girls, hoping that the next generation of women in the community will be both educated and have the hands-on skills that will carry them beyond poverty.

She says, "Until recently I didn't know educated beekeepers. I thought that beekeeping was done by illiterate old men. I put it upon myself to introduce beekeeping to as many school girls as I can. I want to see a generation of educated female beekeepers in future. A future of women who know the importance of beekeeping and bees."

While doing some research, Christine stumbled on Bees Abroad's website and in 2018, Bees Abroad volunteers met and visited with Christine and her group, giving advice and assessing how they could help.

Bees Abroad provides training and resources. They work with the community and their current methods, teaching bee biology and helping the members to improve on their methods. Bees Abroad volunteers visit the project regularly and give workshops and lectures on beekeeping specifics such as swarm management, business skills, product development and marketing and so on. Each skill taught takes into account the local availability and market demand and is unique for each project Bees Abroad has.

Christine's project is not the first time Bees Abroad has realized the value of beekeeping particularly for women in poverty. In 2018 Bees Abroad chair Richard Ridler and his wife Jane visited another Ugandan organization, the Women's Resource Centre for Community Development, to talk about setting up a training and support project. Richard says, "the aim of the group is to improve the quality of life of the women members some of whom are child mothers, others are disabled, deprived of education etc. There is an acceptance and commitment by the leaders that the place of women in society in rural Uganda should improve."

"Bees Abroad has had a big impact on the lives of women," Christine says. "The women members of Jireh Women Beekeepers Uganda were given technical advice. Some women have joined beekeeping because of the stories from those who met Bees Abroad staff. So many women have realized that they can do beekeeping." Explaining, she told me that "through Bees Abroad's support, [the] majority of beekeepers have realized better harvests through use of better honey harvesting equipment like smokers, gloves, bee suits and gumboots. Before, they used to get little harvests because they would be getting stung. With [the] right protective gear, beekeepers are able to get more honey and more money out of this. Members have been able to support their families and send their children to school. This is made possible by Bees Abroad support."

Not able to speak more highly of the people of Bees Abroad, Christine said when a donation is made to Bees Abroad, "somewhere in the developing world, someone's life changes and a difference is made."

Told you beekeeping was a huge deal!

If you want to learn more about Bees Abroad or contribute to their worldwide beekeeping for poverty relief efforts, visit https://beesabroad.org.uk/ and follow them on Facebook. If you have any questions, feel free to send them to info@beesabroad.org.uk. ❀

Sylvia Dekker is a beekeeper in Merritt, BC, a hunter that shoots with a Canon, and a woodburning artist. See some of her work on Instagram @syl.dekker. She also writes about her experiences and volunteers those skills to support Bees Abroad.

# Bee Research Update from UBC

*by Mopelola Akinlaja*

**New People**
Abigail (Abbi) Chapman has joined Foster lab as an MSc student. Abbi started at the lab in 2016 as an undergraduate student and has already made several contributions to honey bee research.

**Project Updates**
For the BeeOMICS project, we are still in the midst of finalizing all the data and dealing with wrapping up that project. We'll be able to provide a digested summary for the next BeesCene issue.

Currently we are also working on a honey adulteration project. Fake honey has been in circulation in Canada for a long time and there have been constant attempts to detect adulterated honey in an accurate and timely manner. While this has been moderately successful, adulterators have also found new ways to fool the tests. In our lab, we are developing a mass spectrometry-based test that will be verified with another powerful analytical technique called Nuclear Magnetic Resonance (NMR). With these tools we hope to "fingerprint" pure honey and the typical adulterants. By knowing the structures of these molecules, it would be harder to "trick" a honey adulteration test with variations of commonly used contaminants. Preliminarily, we have been able to identify pure honey that was mixed with rice syrup. This work will continue throughout the winter, and hopefully we will have more exciting data to share during the spring.

**Article Summary: *Nosema* affects other tissues too?**
It is a popularly held thought that *Nosema spp*. infect the ventriculus (midgut) of honey bees but recent studies question this. The current understanding of the life cycles of *Nosema apis* and *Nosema ceranae* are based on this idea that the infection takes place in the gut. From what we know, *Nosema*'s lifecycle begins when the spores initially gain access to the midgut cells. Here, they go through their two main stages of growth: the proliferative stage known as merogony, where they repeatedly replicate their cells and the maturation stage known as sporogony, where the infective spores are formed. The spores eventually spread from the midgut to the rest of the gut and disrupt the bee's digestive system. But the scientists in this article hope to challenge this idea because symptomatically, *Nosema apis* infection looks different than *Nosema ceranae* infection, the former leading to dysentery in the bees but the latter not associated with dysentery.

**Mopelola Akinlaja**

In the experiment that this group designed, they wanted to see if they could identify stages of *Nosema*'s life cycle in other organs of the bee, not just the gut. To do this, they isolated and purified *Nosema apis* and *Nosema ceranae* spores from infected colonies. Then, they fed a high dose of these spores to 5 day old bees that were emerged in the lab to control for other sources of infection. They analyzed bees 7, 10 and 15 days after the initial infection. The organs that were analyzed from the bees included the brain, eyes and digestive organs as well as some other nerve structures and glands.

They used two types of microscopic techniques to look closely at these organs: light microscopy (LM) and a more powerful Transmission Electron Microscopy (TEM) that produces more detailed images of the organs being looked at. When these organs were looked at, they only observed spores in the midgut cells suggesting that as we believe, *Nosema* infection primarily occurs in the midgut. There was no evidence of spores in the other organs that they looked at, although they found DNA evidence of spores using polymerase chain reaction (PCR) which is a technique that helps us identify what organism a DNA sample belongs to.

Even though their study did not find *Nosema* in other

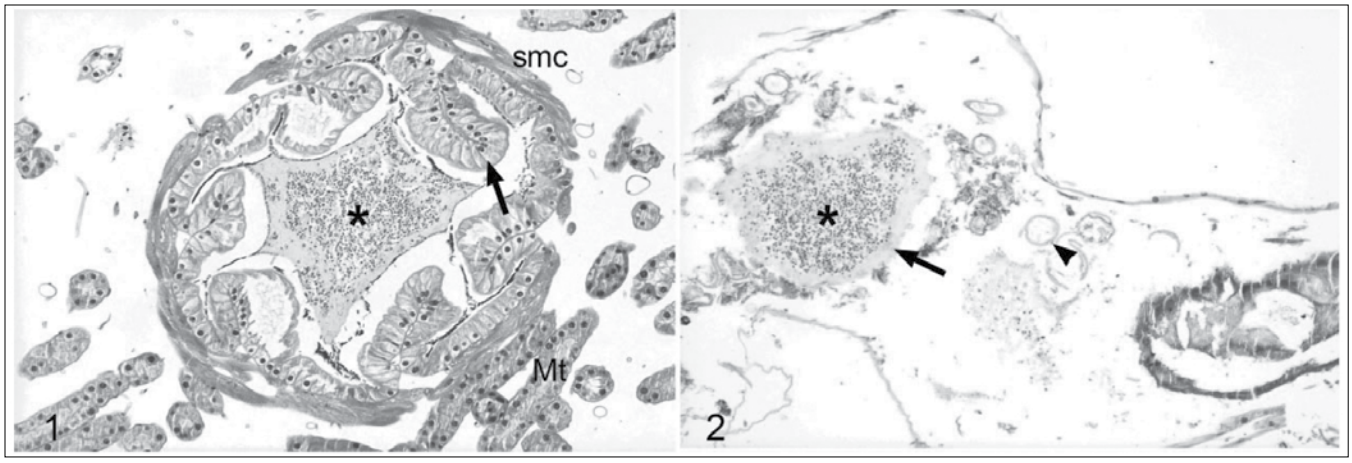



Figure showing a light microscope image of infected bee guts. * shows where spores were seen. 1: Infected with *N. ceranae* 2: Infected with *N. Apis*

organs apart from the midgut, these scientists still believe that there is more to the story of how the different *Nosema* species (*apis* and *ceranae*) complete their life cycles in the bee, because of how the resulting disease shows up with different symptoms depending on the species. As such, they are conducting further tests. We hope that soon, scientists will be able to better understand how *Nosema* infects honey bees so that we can get them improved treatments.

**Reference**

Higes, Mariano, et al. "*Nosema Apis and Nosema Ceranae Tissue Tropism in Worker Honey Bees (Apis Mellifera*)."Veterinary Pathology, 2019, pp. 30098581986430.

*Mopelola Akinlaja is a PhD candidate in the Foster lab and she's been with the lab for 3 years. She is studying how Nosema infects honey bee gut cells.*

# Research Review

*by Alexandra Nastasa*

Beekeepers are always looking for ways to make more informed decisions about their hives, and scientists are coming up with strategies to help them do just that. One of the scientists pushing the beekeeping industry toward more evidence-based management is Dr. Alison McAfee, a post-doctoral fellow at North Carolina State University in the Department of Entomology and Plant Pathology, who did her PhD in the Foster lab at UBC. One of her recent projects is exploring the relationship between stressed queens and their failed brood. She's looking for protein cues that could tell her what kind of stress causes particular queens to fail, and she's going to use those cues to uncover how the stresses hurt the queens and, eventually, even help beekeepers to understand their own queen losses.

This project started as an exploration of the biological process behind honey bee sperm death after heat shock. Previous research had established that heat shock killed sperm, but the queen's role in the process had not been established. Initially, McAfee wanted to understand the interactions between queen and sperm and learn how queens keep sperm alive, especially after stresses like heat shock. After some preliminary work, however, her goals became somewhat more specific.

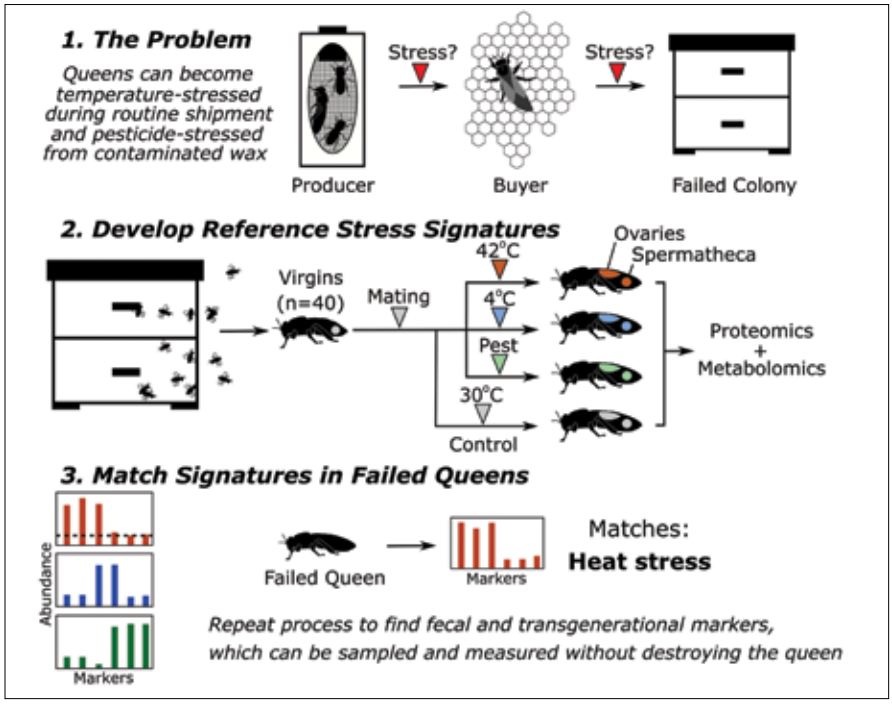



Figure 1. Procedure for identifying the cause of a queen's failure. Queen stress that leads to failure can come from multiple sources, and the experiment shown here is looking to use the protein markers found in queens stressed in the lab to identify why a queen failed in the field. To determine whether the failure was caused by temperature stress from shipping or pesticide stress from contaminated wax in the hive, queens are being exposed to these stressors in a controlled environment and then analyzed to find proteins that mark them as having been stressed in a particular way. The next step for the project is to find what made queens in the field fail using these protein marker patterns, and eventually to make the process more practical by eliminating the need to dissect the queen herself and repeating the experiment with queen feces and brood.

*Figure provided by Dr. McAfee.*

**Alexandra Nastasa**

Her new plan is to identify protein biomarkers that would pinpoint what kind of stress a failed queen has been exposed to and to use the identity of those proteins to predict what was actually happening to the queens and sperm on a biological level. Using bottom-up proteomics (a technique that involves digitally reassembling the proteins in a sample from fragments measured using a mass spectrometer), she began looking for proteins that had significantly higher levels in both virgin and mated queens that had been stressed. She has looked for different levels of expression in their ovaries, spermathecae (sperm-storing organs), and fat bodies (bee livers) and has eliminated proteins found in the sperm itself from consideration. The lab work is still ongoing, but McAfee now has some candidate proteins for heat shock and preliminary data for both cold shock and pesticide exposure (both to a neonicotinoid and a hive-realistic mixture suggested by Traynor et al. in 2016).

So what does the science so far tell us about the cause of sperm death? Some of the damage happens to the sperm directly, but protein changes in the spermatheca also appear to affect the extent of that damage. Certain proteins, called heat shock proteins, which are meant to reduce the damage caused by a heat shock, were considerably more abundant in the spermatheca of both virgin and mated queens two days after they were heat shocked. Unfortunately, there isn't a lot of information available about the functions of heat shock proteins in honey bees, but when the

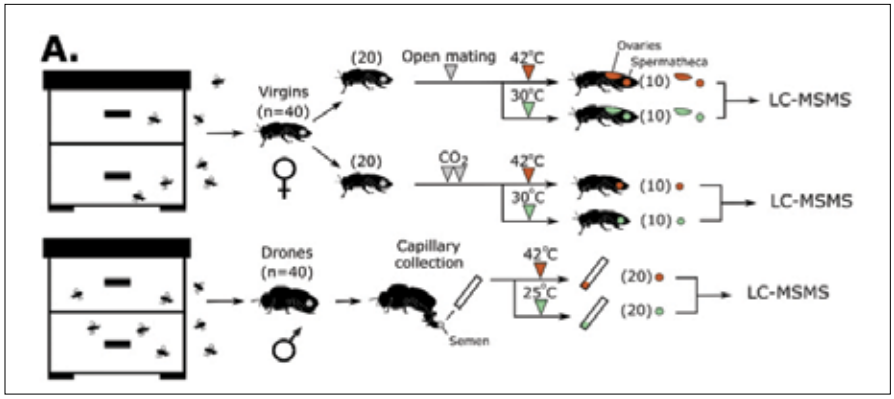



Figure 2. Heat shock experiment design. Heat stress has been investigated by Dr. McAfee already using the process shown above. Mated and virgin queens were both heat shocked (with some kept at room temperature as a control) and their ovaries and spermatheca were analyzed using mass spectrometry (LC-MSMS) for proteins that became much more abundant in the heat shocked queens. Drone semen was also heat shocked and analyzed, mostly to separate any proteins that came from the sperm from those that came from the queen when looking for protein changes in the spermatheca. *Figure provided by Dr. McAfee.*

sequences of the proteins were compared to human heat shock proteins to help assess their functions, some trends emerged. Heat shock proteins, true to their name, usually reduce damage to the cells after a heat shock. Some heat shock proteins require ATP, a key biological energy molecule, as fuel, while others act on the cell in ways that don't require additional energy. McAfee found that after a heat shock, the ovaries produced more damage-reducing proteins that used ATP, but the spermatheca produced more therapeutic proteins that didn't use up ATP. Since other research has shown that sperm survive best when there is abundant ATP (Baer et al. 2009), she thinks this suggests that the queen's spermatheca, which houses the sperm, tries to reduce damage while still preserving ATP resources after a heat shock. This is a particularly important consideration in the oxygen-depleted, low-ATP-output environment inside of the spermatheca. "This suggests that the energy usage economy in the spermatheca is important for sperm lifespan," McAfee summarized. You can read more about this research in her paper published on the bioRxiv (McAfee et al. 2019).

McAfee is continuing experiments in the same vein as well as branching out, with some funding from the Boone Hodgson Wilkinson Trust Fund. More sample results, including tests with different temperatures and concentrations of pesticides are needed, and the results of cold shock and pesticide exposure experiments will also be available soon. Her current methods require killing the queens, so she is trying to adapt her methods for testing live queens, possibly by testing the workers that travel with the queen instead of the queen herself, or by looking at the queen's fecal matter or brood. This expansion of her work is supported by Project Apis M.

Connecting her protein analysis results with some more immediate anatomical measurements, McAfee also assessed the quality of queens, both local and imported, based on their ovary mass, sperm viability, and sperm count. The BC Bee Breeders' Association is providing her with both failed and successful queens for this research, and using her newfound lists of protein markers, McAfee will try to find what kind of stress caused some donated queens to fail and explain the anatomical measurements with her results. Ultimately, this is the kind of information that McAfee would like to access, and her current experiments are meant to set up a system that will allow her to diagnose queen failures.

For beekeepers, such a system could help inform their hive management decisions, and McAfee hopes it will eventually be a service available to those interested. Of course, there's work to be done before on-demand queen diagnoses are available. One hurdle is that the current research only contains protein results from two days after queens were stressed, while most beekeepers would be unlikely to notice that their queen was failing until a couple of weeks later, in the brood pattern, or even a month later due to effects on the colony size itself. It's unclear if the protein markers McAfee is identifying would still be detectable so long after the stress, something time course experiments will establish.

The in-lab results provide some takeaway advice for beekeepers as well. The highest risk of both heat and cold shock to queens is in shipping, and McAfee also found that healthy local queens had bigger ovaries on average, although they had the same sperm viability and count as imported queens. If her protein markers find an epidemic of queen failures due to temperature stress, beekeepers may reconsider shipping their queens in variable conditions from so far away. If a particular beekeeper is experiencing queen failures due to what McAfee's technique identifies to be pesticide exposure, they may choose to start new comb to reduce contamination. Understanding the reasons behind their queens' failures can give beekeepers a chance to make changes that will foster healthier queens in the future, as well as inspiring some important questions about the way we procure and treat our queens in the industry. ❀

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# Apimondia 2019, Montreal

*by Ron Miksha*

Apimondia is a biannual three-ring circus of beekeepers. Circus? Well, I think it's the *Greatest Show on Earth* and you might, too. Every second year, beekeepers swarm to some interesting city's conference centre and present their wares, honey, bee science, and tall tales. In September 2019, we met in Montreal. Officially, there were over 5,000 of us registered, but I heard that over 12,000 folks were lured to the city for the conference. The other bee visitors were spouses, children, beekeeper-groupies, and grad-students who swapped name badges so that they could enter without paying.

It was a massive meeting. Not quite the Drone Congregation Area that it was years ago when the first Apimondia Conference was held in Belgium in 1897. This year, women scientists and beekeepers attended by the thousand. (I guesstimated that one-third of the participants were women.) People from every country, except maybe North Korea, were on hand promoting bee supplies, gizmos, gadgets, and off-colour honey. We came from all walks of life and brought our various beekeeping philosophies.

Before I write another word, I want to express gratitude to the organizers. Apimondia 2019 was held in Montreal, but Canadians from across the country volunteered to make the event outstanding. I can only imagine the Herculean feats performed to create the exciting conference. 5,000 guests, 566 posters, 269 oral presenters, and 205 vendors/exhibitors had to be smoothly accommodated. And some of us can be grumpy for no reason at all. The organizers handled it all with style.

**Exhibition Floor**

I spent a lot of time on the exhibition floor. Mostly, I was trying to find my way around, though being lost on a 50,000-square-metre floor covered in bee stuff and bee people isn't a bad fate. My favourite stops were honey exhibits and gadget displays.

There were probably some serious honey trades going on among the world's buyers and sellers visiting Montreal. The rest of us were getting small tastes of Slovenian acacia, Alberta white alfalfa, Chilean ulmo, Chinese jujube, and Argentine organic Yunga. Dark, white, mild, bitter, sweet, it was all on display and hundreds of tasting spoons passed into recycle bins. A friend gathered up a dozen small honey jars as samples to bring back for a honey tasting at the bee club. I once dreamt of taking a self-guided honey tour of the world. I only had to go as far as Montreal – the honeys met me there.

Gadgets littered the exhibition floor. Most were electronic – tools to weigh your colonies, record your queen health, monitor varroa, remotely track your stolen hives. Some dealt with honey handling. I really liked the honey pump with the glass wall – exposed and churning like a cow's stomach at a country fair; you could watch the lopsided gears spin. I wish I'd spent more time at the 'instant' honey creamer. To make creamed honey, you normally heat, cool, seed, and set honey, and settling takes about two weeks. I was told that this new process could extrude a ribbon of creamy honey while you waited. Or maybe not.

**Presentations**

For most beekeepers, the heart of Apimondia is the lecture hall. Actually, Apimondia had five halls in continuous use, and that was a problem. Attendees had to pick their talks carefully. I saw consternation on people's faces as they tried to choose wisely. Some dashed out of a presentation at mid-point to catch the end of a different talk. I know this is true because I was one of those people.

I only attended thirty or forty of the 269 presentations on offer. There were also exhibits and poster sessions to draw our attention. With so much candy in the store, and only ten cents to spend, focus was in short supply. During one of the four mornings, though, I moderated a session on "Diversifying income sources for beekeepers", so I was forced to stay in the hall, introduce speakers, field questions from the audience and (crucially) yank microphones from speakers' hands when their time was up. Since I had to sit there anyway, I decided to use my time wisely and listen to the speakers. I'm glad that I did; I learned a lot. One thing that I learned from that session was that beekeepers everywhere in the world think about money. And honey alone doesn't always pay the bills, hence the diversification theme.

I was one of the 269 presenters. I showed the results of a meta-analysis that I conducted at the University of Calgary this spring. I had studied the average distance commercially-deployed bees (i.e., rented honey bees, bumble bees, and alfalfa leafcutters) fly while foraging. The average for honey bees was 1,500 metres. That's just an average. It was determined from dozens of studies and tens of thousands of bees. But there is really no single, simple answer – foraging distance is highly landscape-dependent. This is important. Whether you are a farmer trying to figure out where to place rental bees for efficient, economical pollination or a land manager trying to reduce the effects of high-density non-native bees, you need to know how far the bees will be flying.

**Posters**

Every day, there were different posters hanging in the halls, about 150 each day. There were 566 posters displayed in four days. Among the rush of time and the squeeze of people, I only read about ten posters, but I photographed thirty for reading later. Some were highly technical, others, not so much. There was considerable artistic license on display, including a hand-drawn montage which stood near a poster that looked like it had been drafted by an engineer.

My own poster summarized statistics performed by Dr. Lawrence Harder and me. We presented "Who becomes an urban beekeeper?" I wanted to know if a city's bees are centered around the best nectar areas in the city or if it's determined by other factors. We used demographics from Calgary's 180 neighbourhoods and related that to where the city's beekeepers live. It turns out that Calgary's beekeepers aren't always surrounded by the best flowers. Instead, they tend to be in wealthier, older neighbourhoods with more retirees; better educated, third-generation residents. So, if

you are an older, well-off, university-educated urbanite, you are more likely to be a beekeeper. Urban beekeeping is an expensive hobby so this result isn't surprising.

**The World Beekeeping Awards**

An important part of Apimondia is a judged exhibit of bee-related arts, crafts, and honey. You can find books, paintings, lots of candles, and honey being judged. It's expensive to enter the contests, but it's a nice feeling to walk away with a prize. (I won silver in 2005 in Ireland. I'm still unduly proud.)

This year, there was a glitch. Over 40% of the honey was sitting on the showcases, but hidden by large placards that read, "This exhibit has failed laboratory examination and cannot be judged further." All honey entered for judging had been sent to a lab and analyzed for chemical residue. Of course, through the miracle of modern chemistry, parts per billion of anything can be detected. Of the dozens of entries from the USA, only four passed chemical analysis. The problem was mostly agricultural chemicals. There were some rather irritated beekeepers. Having 40% of the samples rejected was big news.



Organic Yunga honey from Argentina.

**Apimondia 2021**

At the end of the fourth day, I left a little early. I had to catch my flight back to Calgary. I didn't get to see the carpets being rolled up and the display boards being folded and stacked. It was the end of a great conference. I imagine that almost everyone left with plans to attend another Apimondia. Since it's held every second year, we can save up for Apimondia 2021, which will be in Russia. I don't know if I'll be there, but on my last day in Quebec, I heard an announcement about the Apimondia 2023 venue. It will be in Chile. I'd love to go. I'll bet they will put on a party almost as good as Canada did. ❀

# Bee BC Projects

## Hive Monitoring Project in the Peace Region, BC

– Kerry Clark, Jim Morrison, Claude Paradis, Colin Runacres, Sonja Runacres

*by Kerry Clark*

Anywhere in the world, the foundation of bee health and beekeeping success is knowledge of the target blooming dates and nectar and pollen production, for a bee colony's nutrition and foraging opportunities. Without this target, the most well-intentioned and resourced start-up will often fail, even with all the best equipment, bee stock and management practices.

The target is generally developed through experience and with advice from experienced local beekeepers: a beekeeper's calendar. This information is often elusive or insufficient, sometimes contributing to beekeeping failure.

Technology may now have a solution within grasp. This project is intended to see, using modern electronics (available hive monitoring systems) and the internet, if beekeepers (either beginner or professional) of a region could more accurately adjust their existing management to take better advantage of the forage available, and achieve healthier colonies resulting in higher yield.

I've been watching hive scale monitoring for several years (Gerry Rozema has some nice observations but he made his system so it's not available). The Bee BC program enabled us to explore available systems. To find participants for the project, I asked people at our local beekeepers meeting and really hit the jackpot; I hadn't realized the talent and skills of these folks. Our little group has a PEng and multi-generation beekeeper, a skilled electronic instrument-maker and a just-retired telecommunications worker, all beekeepers and great to work with.

**Methods**

Five commercially available systems (web search: bee informed scale option) for monitoring honey bee colonies were considered for use in the BC Peace region. Based on features and cost, two systems were chosen for testing during the summer of 2018: BroodMinder and SolutionBee. Hardware for the test was distributed to five apiaries with cooperating beekeepers from the Peace River Beekeepers' group. The equipment was installed in May and has operated continuously since then. Data was collected almost every day. The BroodMinder sys tem allows charts of current data to be posted to an internet site, visible to other members or (if the user allows), to the public.

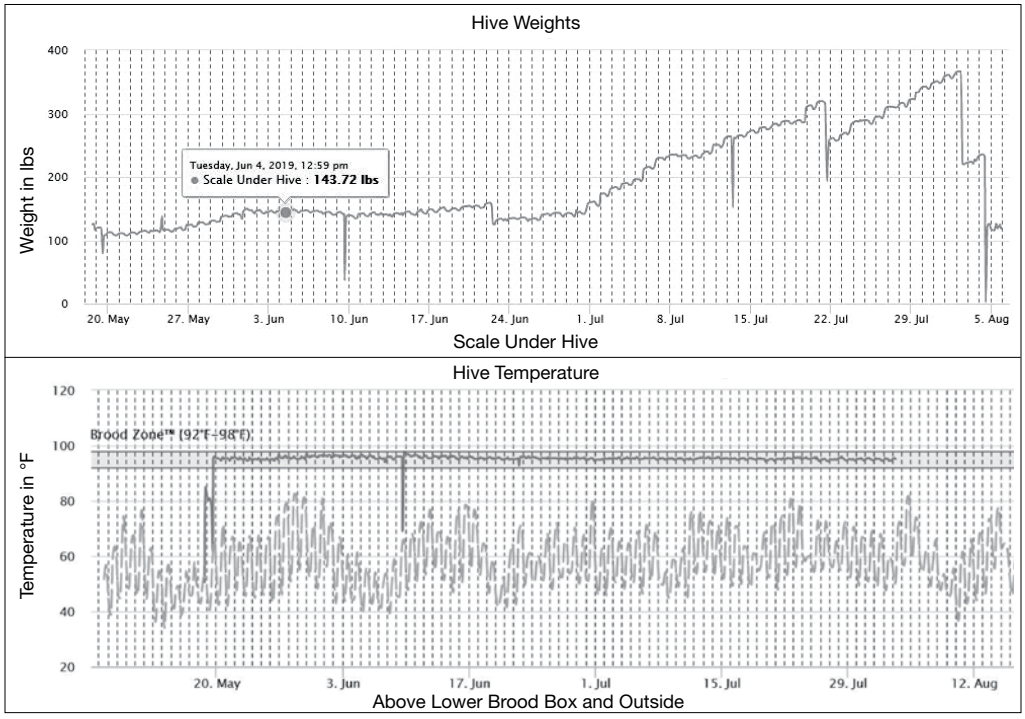
The system we used has an option that can automatically read and send the data by a cellular connection, so might (if the data plan worked in Canada, and the electronics all worked as intended) operate with no person present. It was a significant extra cost and we had people to attend the hives, so we used the version that requires a person to actually walk up to a hive and touch an app on a smartphone, which connects with the devices and records and uploads the data to a website. Both systems gave a good indication and record of nectar flow and reflections of colony behaviour and health.

**Results: BroodMinder system**

This system has a data logger that records and stores data from a hive and transmits it by Bluetooth to an app on a smartphone. The information can also be sent to a website, potentially visible to anyone on the internet. The information can include the WEIGHT of the hive, which goes up in the summer as bees gather food, and down through the winter as bees consume it. The system also has sensors for temperature and humidity that can be placed inside the hive to try to find out some details of how that colony of bees is behaving. The basic equipment for one hive was about $300 CDN, delivered.

**SolutionBee System**

This is a significantly larger piece of equipment, whose




BroodMinder System: Though not unexpected, the constancy of temperature (34.5°C +/- 1°C) inside the hive was remarkable. Outside temperatures both at the apiary and at the nearest weather reporting station are also displayed.

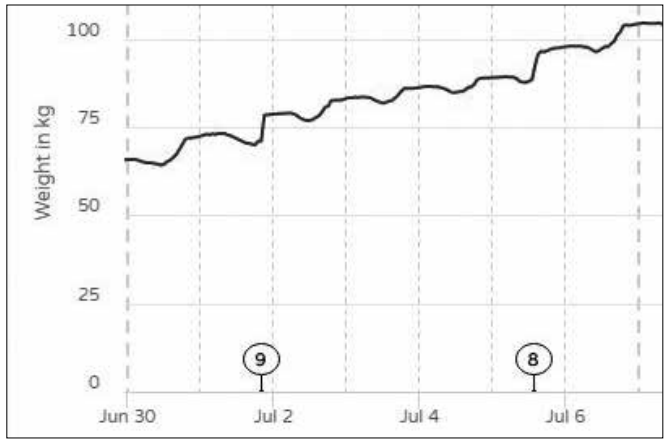
possibly greater accuracy may not be significant. Information is transmitted electronically using Near Field Communication (NFC), a system similar to Bluetooth, available on some late model smartphones. This scale cost about $500, delivered.

The shaded area in the graph below represents the accumulated weight in the hive, while outside temperature is displayed by the grey line. Vertical bars at the bottom indicate increase or decrease in each two hour period, but they are truncated at 2 kg, so of limited use in our area. Actual weight gains were up to 10 kg in one day, 40 kg in one week.

**Discussion and Conclusion**

The ability to see trends in weight and temperature gives us another view or measure into what and how a bee colony is doing: sometimes a reflection of something we knew about (weight increases as bees gather nectar) but sometimes things we didn't realize: the scale of weight changes! It will be interesting to see weight changes related to winter temperatures. There were intriguing changes in the amazingly constant temperature, associated with swarming and a change in fall, presumably when brood production switches off. It's a bit like having an x-ray, ultrasound or other sensing device with medical diagnosis.

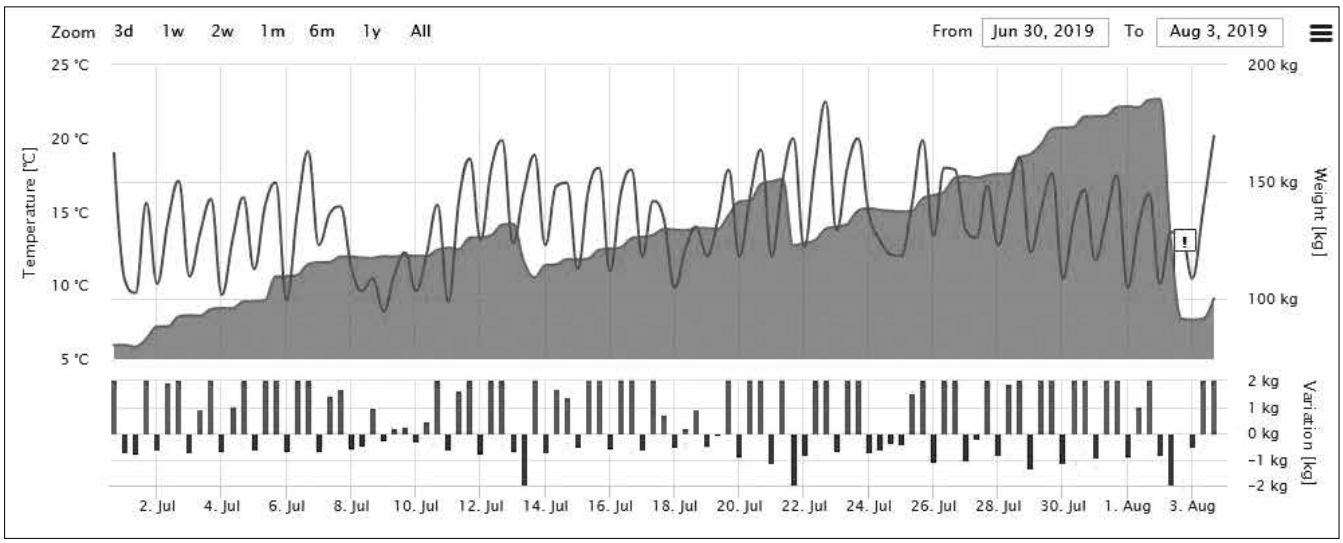
For temperature, treatment with formic strip and oxalic vapour resulted in clear changes, though the significance isn't so clear. I was interested to see the effect of oxalic acid vaporization on my monitored colony (see graph on following page). The outdoor temperature at the scale (blue line) is usually a bit warmer than the nearest public weather station (dashed pink line) since the hive is against a south facing wall and we're up here above the town. On Oct 24th however, a weather system came through that gave cooler temps for a while: cool wind then snow up here instead of the rain they got in town (near the pink line - weather station). On the 24th, 8 hours before the rain and snow, the hive was treated with an oxalic vapourizer. It's clear the colony generated a few degrees of extra heat that stayed up 25 to 35 hours, even as outside temperature dropped to freezing, then the in-hive temperature returned to almost the original.




Seven days record: More detailed data in the BroodMinder system is available through account sign in. This can include notes (numbered circles). In this figure, each day weight drops in the morning as foragers leave, increases as they return with nectar, then decreases as water is evaporated to make honey.

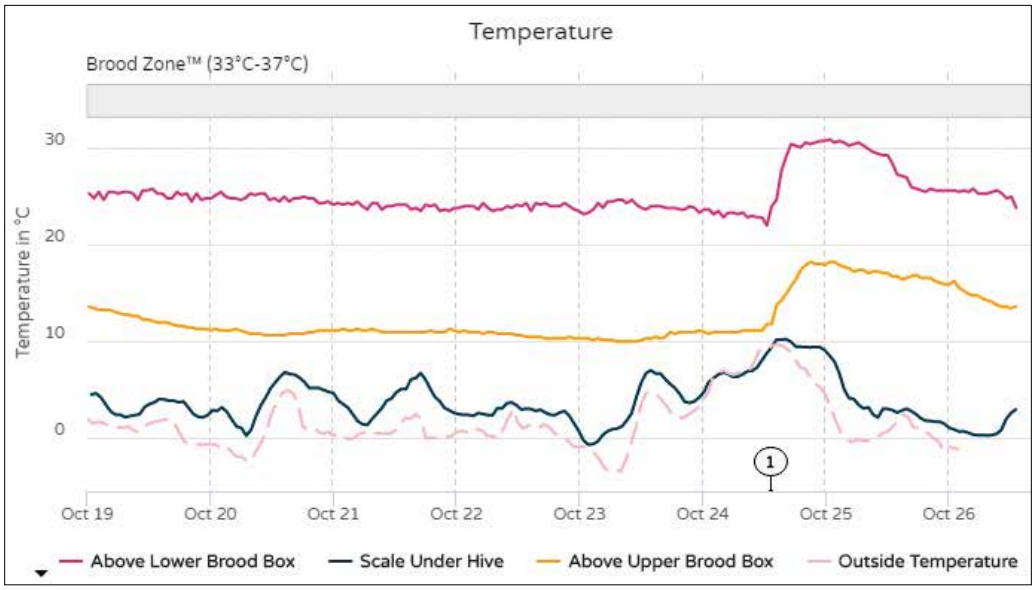
Better awareness of what one colony is doing can be an indicator (with caution) for a whole apiary or an indicator of seasonal progress for a region (like how we use outside temperature and forecasts to guide our actions). We still need some interpretation experience for the specific colony measures, but being able to observe more factors helps to know more about bee colony conditions that otherwise are hidden inside the hive body. It's interesting to see similarities and differences between parts of the region (we have cooperators in Charlie Lake, Fort St John and Dawson Creek), and between years will be interesting as well.

We're at a learning phase and some of our insights may be in hindsight, but next time a situation may arise (nectar flow start or stop, net weight gain or loss, brood temperature, etc) we may be able to see it in the records before it's obvious in the colony (even if we look). I don't think it will eliminate inspections, but it may add meaning to any inspection.




SolutionBee web display, July 1 through August 3, 2019: showing 317 lbs removed in 3 harvests (honey only = 280 lbs).

A major benefit of this project were the relationships built between beekeepers, sharing knowledge, experience and skills. The hive weight scales enabled many new insights into bee colony activities. Temperature records (in-hive) seemed less useful (though they and humidity may be, for winter and spring). In our project, the BroodMinder system was preferred . ❀




In-hive temperature and oxalic vaporization event.

## Enhancing Honey Bee Forage in the Boundary Area of BC
### – Kettle Valley Queens, Deane Farms, Kettle River Farms and Morbetta Farms

*by Liz Huxter*

The Boundary area of BC presently has little honey bee forage in late summer and the area is typically hot and arid in late July and August. In the past, we have experienced the benefit of large areas of white or 'diffuse' knapweed which supplied the bees with plenty of nutritious pollen and nectar. This gave the honey bees plentiful late season forage so the colonies could build large populations of healthy young bees to winter successfully.[1] The knapweed was eradicated by the local invasive species council who brought in numerous biological pests to control the plant, and they were very efficient.

Dry summer in Rock Creek.

This goal of this project was to partner with Boundary area farmers and ranchers to enhance late season bee forage, and to choose plants that would be valuable to the farmers' needs as well as honey bees. For this project I chose buckwheat and sunflowers and suggested them to the partnering farmers, and several of the growers had experience with growing them already.

**Buckwheat**
Benefits to bees: nutritious pollen and good nectar source.[2]
Benefits to farmers: fast growing and easy to grow, suppresses weeds, is easily tilled under, and increases levels of phosphorus in the soil for the following crop.[2,3]

Sunflowers at Morbetta Farms.

**Sunflowers**
Benefits to bees: copious pollen which has medicinal properties for honey bees – it has been shown to reduce *Nosema* levels.[4]
Benefits to farmers: when used as a winter feed for cattle, has a high oil content which is beneficial to cattle in colder weather. When grown with corn, helps to prevent lodging.

**Methods**
**Buckwheat**
We sourced seed from three places, two of which were organic: Fieldstone Organics in Armstrong, BC, Baker Creek Heirloom Seed Co. In Mansfield, MO, and from Rilkoff's Store in Grand Forks, BC.

Planting times were variable. In some cases it was just the way it worked out, and in others the planting happened when

Buckwheat at Deane's Farm with people for scale.

Buckwheat in bloom.

it was convenient for the farmer. We planted the buckwheat at the end of May at Kettle Valley Queens, mid-June at Deane's farms, late June at Morbetta Farms and in July at Kettle Valley Queens and Kettle River Farms. The buckwheat was irrigated once a week or according to need. No fertilizers were used on these crops. We had hoped to not use any herbicides and all were willing to accomodate this, and fields were prepared by tilling only. No one felt that fertilizer was needed for the buckwheat. We planted the buckwheat at the standard planting density of 50 lbs per acre; drill seeding was done on approximately 8 acres of the land used. To assess bee visitation on the buckwheat, we observed the flowering periods, bee activity, and hive intake of pollen and nectar.

**Sunflowers**

Sunflowers were planted in small amounts by Morbetta Farms. We found that there was no seeding experience or equipment on the west side of the Grand Forks Valley for large acreages, and the partnering farmer/rancher did not have time to plant sunflowers this year. It is likely that if the sunflowers had been grown in a large planting, the co-operator would have used fertilizer.

**Results**

**Bee Forage**

Nectar and pollen: Buckwheat honey is a dark honey, and we observed a darker honey in our hives near the buckwheat fields. The high number of hives in the vicinity of acreages planted to buckwheat probably did not allow for large amounts of honey per colony. Possibly we would have seen a greater increase of honey if a different variety of buckwheat had been grown, one bred for honey production. Also our hot summer may not be ideal for buckwheat to yield much nectar due to its shallow roots; buckwheat is often grown in areas with cooler summers.

We observed a green pollen in the hives not usually seen, this was possibly buckwheat pollen.[5]

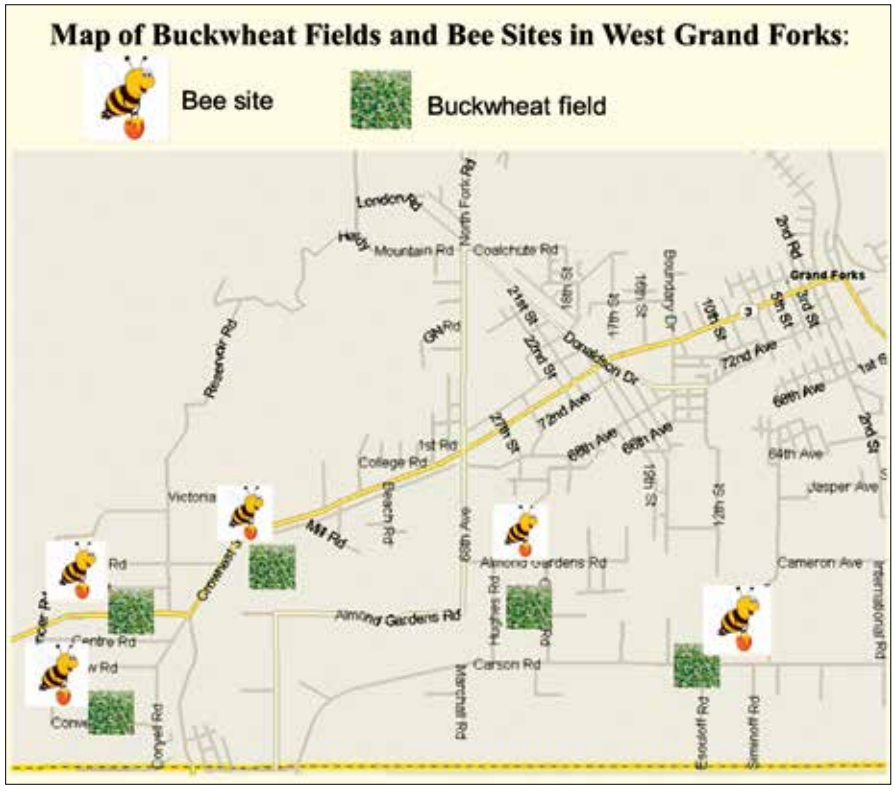
In some locations drones were reared later in the season.

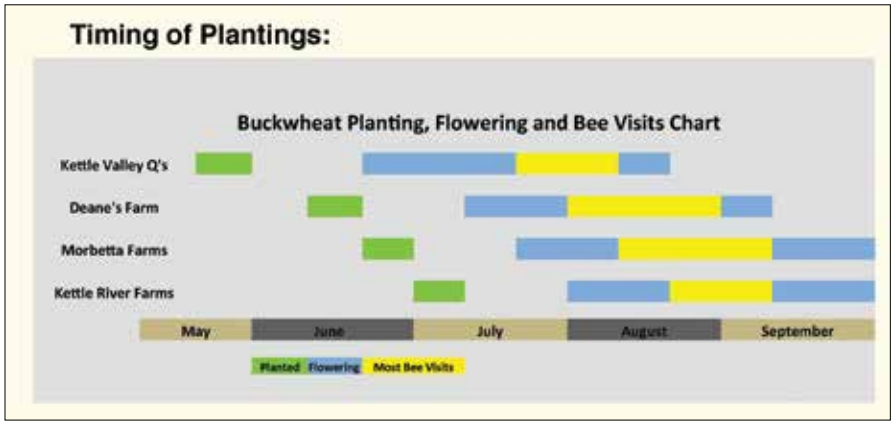
**Timing of Plantings**

**Growers' Observations**

Suppression of weeds: All the growers were very satisfied with buckwheat's ability to suppress weeds in previously worked fields. The weeds germinated but the fast growing buckwheat shaded them out, and they found it easy to grow and fast to germinate.

In one of our plantings, in a field not worked previous to tilling for the buckwheat, I found in the heavy clay soil areas of the field that the buckwheat did not suppress morning glory or quack grass. Plantings of buckwheat grew to variable heights, and grew 1.3m tall or better in most locations. Farmers suggested that the variability in height was due to soil differences. The best weed suppression occurred where seeding was extra thick (>50lbs per acre).






**Positive Spinoff Results**

Farmers who had never grown buckwheat before have decided to grow buckwheat next year, which will enhance bee forage in the Boundary Area.

We had a field day which opened lines of communication between a larger group of local farmers, ranchers and landowners interested in enhancing bee forage on acreages with cover crops. Field day participants suggested trialing other bee forage enhancing cover crops possibly better suited to the Boundary arid climate.

**Conclusions**

The acreages planted in buckwheat gave local colonies greater forage for both pollen and nectar in a time of dearth late in the summer. In some colonies drones were reared later in the season possibly affording queen rearing later into the season. Due to buckwheat's nature to have shallow and small roots it is probably not the most ideal species to encourage farmers to grow to enhance bee forage in our arid climate. Interestingly enough the late planted buckwheat flowering in September had mainly wasps on it - not a good situation.

Buckwheat is best sown on lighter soils unless the soils have previously been tilled, and 50 lbs of seed to the acre or more works best.

This project illustrated to local farmers that buckwheat has high potential as a cover crop since they found it suppresses weeds, is easy to grow and is easy to till back into the soil.

This project stimulated a valuable exchange of ideas and opened lines of communication between local growers and beekeepers. ❀

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funding provided by:

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*These projects have been supported by the Bee BC Program which is delivered by the Investment Agriculture Foundation of BC, with funding from the Government of British Columbia.*

# One Solution to Honey with 18% Water Content

*by Lance & Bobby Cuthill*

After keeping bees for over 40 years, this year's honey presented us with a problem. Simply put, too much of our honey was uncapped and had too high a moisture content. Our best guess is that the ample June rains resulted in a super abundant, July honey flow that bees were able to collect but were unable to cap before we removed the honey supers in order to begin our mite treatment.

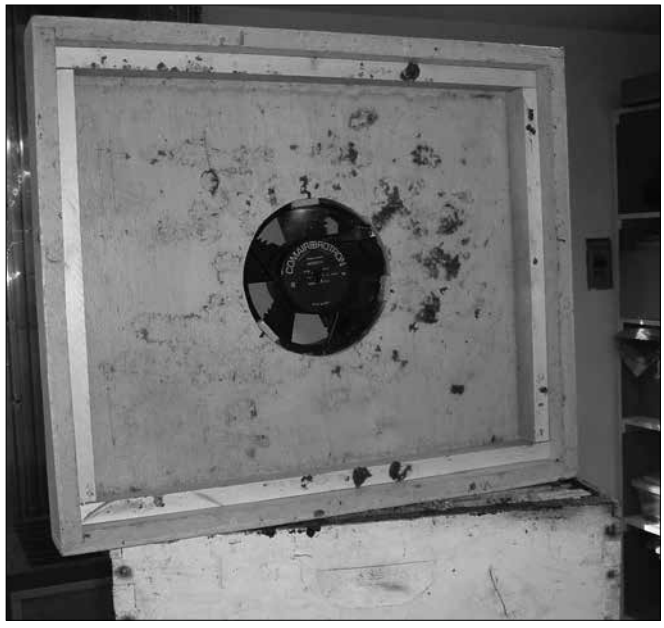
About 20% of the harvest was uncapped and showed an average refractometer reading of 18% water content. Readings from the capped honey showed an average of 17% water content. In the past, our honey has been, as one buyer told us, "the only honey I've seen that you can stack on your toast." Clearly, if we extracted all this uncapped along with the capped honey we would risk having honey that would ferment, not a product that would enhance future sales. So, what to do?

Knowing that the bees are able to lower the moisture content when converting nectar to honey, we thought that perhaps if we heated the honey house air and fanned it through the supers of uncapped honey it could perhaps lower the moisture content. So, first came taking a regular hive lid, cutting a hole in it and adding a fan on top.

Stack of hives with fan installed in lid.

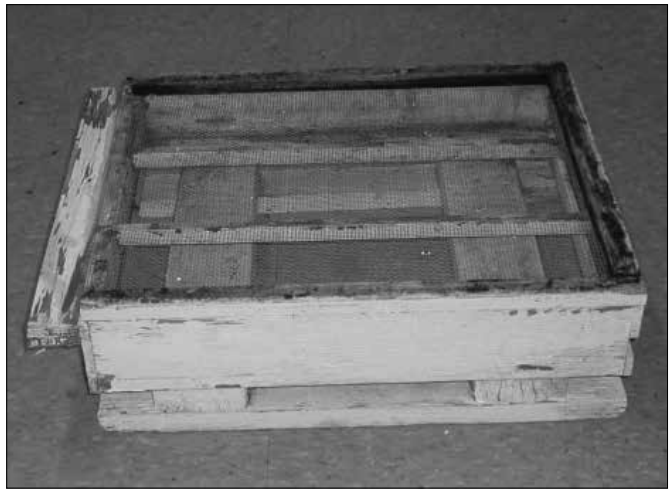
As well, the lid had to be prevented from sitting right down onto the frames so a ¾" x ¾" wood strip was added to the inside of the lid.

Finally, the supers of uncapped honey had to have an air exit at the bottom of the stack. A screened bottom board with its slide-out removed proved to work quite well. Two pieces of 2x4 on a flat surface would work too.



Wood strips attached to inside of lid.

The air in the honey house was heated to about 30°C and the fan was put into operation. After 24 hours, the uncapped honey moisture content was reduced by 0.4%. The plan was working, but was slow. We next added a room dehumidifier and found that the drier air in the honey house along with the fan and heat worked to bring the uncapped honey moisture content down to 17% in about 6 hours.



Screened bottom board to allow air to exit.

One question remains in our minds. Was removing moisture the only job left that the bees had to do? Or, were these uncapped cells still partly nectar waiting for the bees to finish making into honey? Oh well, at least the honey shouldn't ferment, and the flavour is excellent. ❀

# 2019 AGM and Education Days

The BCHPA quilt is displayed at every AGM and each host club is added.

From October 4th to the 6th the Prince George Beekeeping Club hosted the 2019 BCHPA AGM, Conference and Trade Show. The event was held at the Coast Inn where several of the meeting roooms were used to host the AGM on Friday, a social on Friday evening, an education day on Saturday along with the honey judging and mead tasting, followed by a banquet on the Saturday night. 165 people from across the province attended the education days. As always, old friendships were renewed and new contacts were made, and people enjoyed themselves in our fair city.

On Sunday, a second day of education sessions were presented. Our education day speakers Dr. Stephen Pernal, Amina Harris, Sarah Red-Laird, Karen Pederson, Medhat Nasr, Ian Steppler, Kathleen Suddes and Julia Common presented sessions throughout the two education days. The Trade Show that was running simultaneously featured 10 participants, including Bartel Honey Farms, BeeMaid, Nature's Own Design (NOD), Northern Acreage, Dan's Woodworking, Mann Lake, Sylvar, BC Bee Supply, Hobby Brews and Clapham's.

Our very hard working team of AGM coordinators worked tirelessly and attended what seemed to be endless meetings and exchanged hundreds of emails are: Rebecca Austin – secretary, Val Bjerke – trade show and auction items, Randy Chencharik – treasurer and auction items, Barry Clark – trade show and auction items, Linda DeLeenheer – venue and food coordinator, auction items, Gerald Matyas – transportation and auction items, Chad McDowell – trade show and auction items, Chris Morris – honey judging, mead tasting and auction items, Michelle Pryce – program design and printing, Sandra Ramsay – companion events and auction items, Sloane Rich – registration, name tags and volunteer coordinator. These people gathered over 55 silent auction items and 4 live auction items, which was a huge task. This group of volunteers along with many others who stepped up to help out at the event are deserving of much praise!! THANK YOU ALL. A survey of the AGM was conducted by Dan Mawson and I am proud to say that we received a 4.3 out of 5.0 as an overall rating. ❀

*~ David DeLeenheer*

*Photos courtesy of Bini Ball*


Kerry Clark and Julia Common


Making new friends


Sarah Red-Laird


Eugene Fielder and Kathleen Suddes

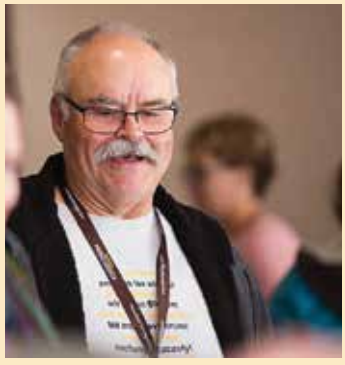
Medhat Nasr


Ian Steppler

Checking out Dan's Woodworking

Dave McDowel

Bruce and Marie Cairns



Barry Clark

Amina Harris holding forth on honey

Curtis Robinson asking questions

Tea time for the little guy

Axel Krause

Ted Hancock and Derrick Johnston

# Honey and Hive Product Contest Results

**Honey**
**Liquid White**
1st Sloane Rich
2nd Gerald Matyas
3rd Chad McDowell

**Liquid Golden**
1st Kathleen Suddes

**Liquid Amber**
1st Cheryl Reist

**Frame**
1st Kerry Clark
2nd Cheryl Reist
3rd Stan Reist

**Creamed**
1st Gerald Matyas
2nd Grimshire Apiary

**Cut Comb**
1st Amanda Goodman Lee
2nd Grimshire Apiary

**Chunk Honey**
1st Amanda Goodman Lee

**Beeswax**
1st Amanda Goodman Lee
2nd Gerald Matyas
3rd Cheryl Reist

**Mead**
**Traditional**
1st Lyn Smith
2nd Caleb Miller
3rd Kole Casey

**Melomel**
1st Caleb Miller
2nd Kole Casey

**Metheglin**
1st Caleb Miller
2nd Kole Casey

**Carbonated**
1st Caleb Miller
2nd Kole Casey

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# An Old Beekeeper Goes Back to School, Part 5: Into Grad School

*by Ron Miksha*

In my past few articles in *BeesCene*, I traced my steps as I turned the local university into a retirement centre for old beekeepers. Before going to the university, I had decided to learn more about bee biology. First, I checked out free resources, looking at the usual suspects (YouTube, free on-line courses, blogs). There's some good information out there, but my approach to learning was haphazard and undisciplined. In the end I decided to attend the local university. They have an "open studies" program that allows almost anyone to sign up for courses. I had two options: I could audit classes, which would exempt me from exams, or I could enroll and earn credits, which includes all the same assignments and exams as any other student. I decided to earn credits because I knew that would make me work harder and learn more. Besides, if I did well, I figured that I'd try grad school. That's where the researchers hang out.

Although I spent an entire year taking undergraduate courses, it wasn't wasted time. I was still working full-time, but meanwhile, I was learning and earning university credits. My real goal – from the very start – was research. I have had a research project in mind for years. I'd been a commercial beekeeper – raising queens and packages in Florida, producing honey in Saskatchewan and Alberta, and I'd long wondered if all those honey bees parked in big apiaries were having a negative effect on the environment. I was making a lot of honey. Was I also leaving behind a trail of ecological disruption? I didn't think so, but I didn't know for sure.

Getting into grad school to do research isn't easy. You need a university degree, mostly good grades, and references from people who know your abilities. You also need an advocate, a professor who is interested in you and your project. It helps enormously if you approach a potential supervisor with a project already outlined. I had that figured out in detail. Someone told me to go see Dr Lawrence Harder, a plant and pollination expert who had also researched bumblebees for decades. I had learned that he was brilliant in ecology and statistics. He agreed to take me on as a student.

I had heard of Dr Harder a few years before I met him. Lawrence Harder, of Calgary, and his colleague Marcelo Aizen of Argentina, had written a paper which I'd read ten years earlier. At the time, I reported on it in my blog. That paper reviewed the world supply of honey bees and the rapidly increasing acreage of crops that need bee pollination. Harder and Aizen's review, *The Global Stock of Domesticated Honey Bees Is Growing Slower Than Agricultural Demand for Pollination*, showed that the world needs more pollinators. However, it also showed that the number of managed honey bee colonies in the world had increased 45% in fifty years. Rather than honey bees going extinct, their numbers had gone up by tens of millions of hives. This, said the authors, was still not fast enough to meet pollination demands, especially with the decline in wild pollinators, which was already noticeable in 2009 when their paper was published.

Lab with leafcutter clocks ready for the field.

So I'd be working with Dr Lawrence Harder, who had co-authored an important bee and pollination study. He'd also authored dozens of other research papers. I'd be working in the Harder Lab, and I even had a room inside the lab to keep my books, park my computer, and think about science.

There wasn't a big transition for me from undergrad to grad school. I knew my way around the biology building and I knew most of the profs in the building. I had completed several undergrad courses, helping me sharpen my old brain and prepare for the next phase in my life - research. But quite a lot of paperwork was involved (I hate paperwork). It took me a few weeks to get the forms completed and submitted, but I started on my MSc in the fall of 2018. If this is something that you'd like to do – especially as a 'mature' student – let me know and I'll tell you more.

Ron, comfortably settled in his university office.

This series – an old beekeeper goes to school – will continue in the next issue of BeesCene when I describe my research project and explain how I set up my experiments. ❀

*Ron can be reached through badbeekeepingblog.com.*

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*Please contact the Editor with any changes.*

# In Tribute

# Blaine Hardie

Blaine Hardie always said beekeeping was in his blood. His great grandfather kept bees in Scotland, then his grandfather in Jordan River, Saskatchewan, as well as his father and an uncle. On the home farm in northern Saskatchewan where he was raised, he was often stung by the honey bees but in spite of this, always knew he would eventually keep them himself.

In 1970 Blaine and wife Jan bought 2½ acres near Duncan, where his apiary and extracting building are still located. He bought his first 2 hives of honey bees from a neighbour in 1980, gradually expanding over the years. He joined the Cowichan Beekeepers Club to meet other beekeepers, became involved as a Director, and then was the President for 5 years, and he and Jan each were presented with a Life Membership in 2018. Over the years they hosted field days and school tours at their apiary.

Back when the tracheal mite and then the varroa mite became a problem for beekeepers on the mainland of BC, Vancouver Island, the Gulf Islands and Powell River were declared mite-free and a quarantine zone (no importation of honey bees into these areas, except inspected queens from certain mite-free countries) was put in place, but package bees produced on Vancouver Island were permitted to leave. "About 1990 I started to produce package bees for a bee importer from Saskatchewan. He would come to Vancouver Island to load up 1500-1600 packages. I would coordinate the load in the Duncan area, and he would deliver to northern Saskatchewan."[1]

Vancouver Island had 10 years mite-free before the quarantine was removed by the Ministry. "The minute Saskatchewan beekeepers found out Vancouver Island had varroa mites I was cut off from exporting to that province, but in 3 weeks I established my own new markets all within BC."[1] Blaine had established connections with many beekeepers so producing packages became an important part of the business.

In 1995 the Cowichan Beekepers hosted the BCHPA Annual Meeting. Much to Blaine's surprise he was elected President of the BCHPA, the first time a 'hobbyist' was ever elected to that position. He spent countless sleepless nights wondering how he could fill this role adequately, and he did, serving 3 years as President. During his time in this role, he started communications with the Ministry of Agriculture over important issues regarding the beekeeping industry. Yearly meetings were established with the Ministry which continue to this day. He became the representative for BC on the Canadian Honey Council for 3 years, traveling to various provinces for meetings. After that he served on several committees of the BCHPA, addressing strategies and initiatives for the industry.

Meanwhile he was expanding his apiaries, eventually to over 300 hives. He took the Bee Masters course at SFU in February, 1996. He bought out Holman Honey in 1996 and Fredrich's in 1998, and the business Hardie Honey, and Blaine and Jan, became well known. Their son Duaine became part of the partnership in 1998. They imported queens and also raised their own queens (Duaine doing the grafting), produced and delivered packages through BC to the Peace River area for many years, and for 3 years sold packages to Scandia Honey in Alberta. Duaine drove one truck while Blaine and Jan delivered another load of packages to a different area. It was a busy and stressful time. "As we delivered packages, hobby beekeepers waited eagerly for their honey bees, some hugging us as we arrived. They were so happy to have the honey bees, unable in those years to winter them. Years after we stopped selling packages (due to transportation costs, etc.), beekeepers still phoned, begging us to deliver packages to them. They said that they were the best packages they had ever bought."[1]

Blaine proudly carried the Canadian flag at the opening ceremonies of Apimondia, the world beekeeping conference which was held in Vancouver in 1999. This was a once in a lifetime opportunity as Canada rarely has been

Blaine at one of their summer yards up in the fireweed.

Blaine with full honey supers ready to be extracted, one of their best crops from several years ago.

chosen to host this world event.

Blaine and Jan traveled the province twice a year, faithfully attending the BCHPA conventions, both annual and semi-annual. Through the meetings they established lifelong friendships and contacts. The Hardie hotel room became the place to bee, not only party central to share a few beverages and unwind but to discuss political decisions and important issues. Blaine served on countless committees regarding bee industry strategies and initiatives and was always vocal in discussions. One year Blaine and Jan traveled to Orlando, Florida, attending the American Beekeeping Federation convention, meeting more beekeepers and learning important information from the presentations.

Beekeeping was definitely Blaine's passion. He was happiest driving the logging roads and working his hives in the peaceful mountains, sun shining, with bees flying to acres of fireweed. When Provincial Apiarist Paul van Westendorp heard of Blaine's health issues he emailed the encouragement, "the bees need you."

Blaine passed away on August 15th after a brief battle with lung cancer, just 6 days before his 74th birthday. His feisty presence and historical memory will be missed. ❀

1. Blaine's words from a presentation/talk he gave to a men's group.

Beekeepers from all over the province are sending messages of condolence. Here are a few that describe Blaine well.

*In the beekeeping world we will always remember his forthright manner and sincere desire to get issues dealt with in a fair and equitable way. Alongside this he always had a ready sense of humour. In any group he was a presence that no one could miss. So many of us enjoyed the room parties hosted by the Hardies. We always appreciated his generous spirit and willingness to work to get any problem solved. He will continue to be an inspiration to all of us.* ~ Liz and Terry Huxter

*We have such fond memories of Blaine. From years ago when he'd arrive in our driveway with package bees, or to BCHPA business meetings that needed shaking up! Loyalty, a sense of right and wrong, and knowing how to kick back to enjoy life. This is his legacy.*

~ Diane and Dave Dunaway

*Blaine was always so strong, generous, a good judge of character and straight forward- calling a spade a spade. We shall miss him.*

~ Meg and Alan Paulson

*Blaine was an important part of beekeeping in B.C. and will be badly missed but his commitment will be remembered by so many.*

~ John and Ifón Boone

*Blaine and I were never close but that didn't stop me from admiring what he Jan achieved. Success in life doesn't come easily or to everyone. It comes to those who work for it, who are dedicated and diligent. Blaine was a mountain in our world and his absence will be felt by everyone who knew him.*

~ From a member of the Cowichan Beekeepers' Society

*photo courtesy of the Cowichan Valley Citizen*

# John 'Smiley' Nelson

Smiley was born in Torrance, Ontario on July 10, 1928, and grew up in Muskoka, farming the land his Swedish grandparents homesteaded. He later worked on the railroad, and then served with the Ontario Provincial Police at Kapuskasing in Northern Ontario where he (as he often reminded us) kept bees in single hives, buried under several feet of snow in winter. He and his family moved to Kelowna in the early 1960s where his family owned and operated Henderson Dry Cleaners. He also continued to keep a few bees.

He became the Kelowna RCMP's crime prevention officer, a new position that didn't have set duties. So, he crafted the job himself, starting a shoplifting prevention program for elementary school kids, growing Counter Attack against drunk drivers and starting Crime Stoppers, an initiative that saw him win a provincial award from the lieutenant-governor. He was also named BC's top crime prevention officer in 1995.

Bill Ruzicka, Carol Harvey and Smiley.
*photo Carol Harvey*

In the early 1980s, he introduced the alcohol-free Dry Grad concept to local high schools. Initially, there was resistance, but it caught on and Dry Grad is now a fixture at every high school. He also organized the first citizen patrols in Westbank, Rutland and Winfield, and set up community policing offices.

Smiley retired from the RCMP in 1995 and was then elected to serve on Kelowna City Council from 1996 to 2002. And as often happens, his bee hive numbers continued to increase.

Remembered for his smile, Smiley definitely was a Bee Man as noted in his email address. The North Okanagan Beekeepers were the beneficiary of his extensive knowledge of beekeeping over many years. He regularly attended our monthly meetings and mentored many

beekeepers over the last seven decades. He was president a few times and was continually involved, always ready to give advice but also to come out and give hands-on help. He often attended the education days at BCHPA semi-annual meetings in Kamloops and every year enthusiastically assisted with the honey bee display at the IPE in Armstrong.

Though he needed a bit more help the past few years, Smiley firmly insisted on doing as much as he could, and that is how he ended this life, working with the bees, apparently taken by a heart condition. He was certainly a model for each of us and we will cherish his legacy. ❀

*~ Rick Plantinga*

*We worked together a lot. Smiley was a founding member of our bee breeder circle and the best queen finder we had. He always showed up for the task to be done, and for many years took 30 cells during our season and reared Vernon queens. For me he is a great loss, not only as a good friend and bee breeder but he also helped with our formic acid kits. If you in the last two years used any of our vacuum filled kits Smiley vacuum-sealed them, smiling all along. He loved our family potato and wild mushroom soup, and he always carried some home. I hope he takes some with him into that heavenly bee yard he is in now. Thanks Smiley.*

~ Bill Ruzicka

*photo James Atzesberger*

# Lew Truscott

As many will have heard, Lew Truscott, a Life Member of the BCHPA, died on November 3, 2019 at the age of 94. He was predeceased by his beloved Iva in 2012. He was of a breed that will not be seen again: one of a pioneering family, he had a limited education yet was a person of achievement, a WWII veteran, and a person of considerable wisdom.

Lew will be remembered fondly, especially by our senior members as he was a driving force within our Association. He was considered a friend by so many, and that was especially true with my family. Lew and my father first met in 1958 when they attended the second Bee Masters Course, which at that time was sponsored jointly by the Apiary Branch and the UBC Extension Department. Although my father was more than 30 years his senior, he and Lew became lifelong friends. Perhaps they felt comfortable with each other as they both had a forthright nature. One could always expect Lew to state things how he saw them.

There were times that did not endear him to some and while he was President of the Canadian Beekeeping Council (which later became the Canadian Honey Council) he didn't hesitate to express his disappointment that the honey packers had a greater influence on honey marketing (and its price) than the honey producers. One could count on his honesty, his integrity, and his generosity in doing what he could for others. There are numerous accounts of Lew putting himself out for fledgling beekeepers. From 1959 onwards through the 1960's my father would visit the Kootenays for bee inspection work and my mother would tell me about his return with enthusiastic accounts of visits with Lew and Iva.

The last BCHPA AGM attended by Lew was in Richmond a few years ago. We attended the meeting together and although he no longer held a position of prominence, his strong voice carried throughout the assembly as he added comments and asked challenging questions. He stayed with us during the meeting and I recall that at breakfast, as he put comb honey on his toast, he would scrape the comb away from the foundation explaining that "you don't know what they put in the foundation". One might wonder if this carefulness may in part account for his reaching 94 years!

It may be recalled that a couple of years ago, greeting cards were created from paintings relating to bees that were made by George Wilkinson as illustrations for the purpose of teaching. It may not be known that as George became frail and the paintings were at risk of being lost, Lew acquired them and kept them until recently, when they were given to Lance Cuthill. The cards were made and subsequently the paintings have been preserved in the BCHPA section of Simon Fraser University Archives. So without the intervention by Lew, they would likely have been lost forever.

At the BCHPA AGM in 1959 a resolution was passed to look into the feasibility of producing mead commercially. Lew and my father were tasked to investigate that possibility. From the correspondence that I've seen I don't think this was tackled with much enthusiasm, but the final report concludes: "...the commercial production of mead in British Columbia would not be a viable undertaking at this time." This was over four decades before Bob Liptrot established his meadery in Sooke, near Victoria.

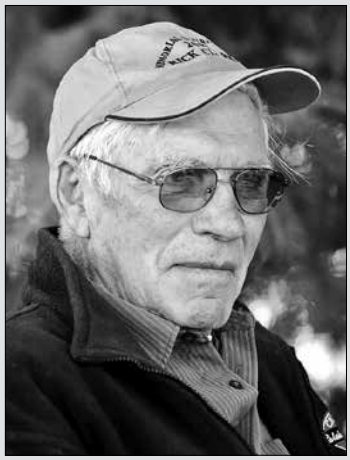
Many in the beekeeping community admired Lew, and Lance Cuthill writes: "I have known Lew Truscott for over 30 years and first met him when I was working for the BC Ministry of Agriculture. He was an amazing beekeeper who freely shared his knowledge and friendship with me. He never failed to take part in every introductory course I taught in Creston. His quick, warm smile and tremendous sense of humour made each visit to Creston an anticipated pleasure. I will miss my friend."

Preparing this tribute to Lew has been a pleasure in that it has allowed me to revisit happy times with the Truscotts. I wish to thank Lew's daughter Susan Snow for her assistance.

*~ John Boone*

Lew and Iva Truscott

**Biography of Lew Truscott**



Prompted by the romanticized descriptions in flyers and the British Newspapers of the availability of fertile farm land in Canada, the Truscott family sailed from England to Canada in 1908 and settled in Saskatchewan with the Barr Colonists. Two years later in 1910, with the promise of bountiful fruit orchards, they moved to the lush fields of the Creston Valley in southeastern BC. William Truscott, his wife and their four boys who were all born in Creston, BC farmed the land, growing primarily apples in those early years. They called their farm "Cornwall Ranch".

Lew Truscott was born in April, 1925. Because of difficulties encountered during the Great Depression, Lew Truscott quit school at the age of 15 to take over the 20 acre family farm singlehandedly while his father William went to work in Kimberly in the mines, to help pay the ever increasing bills.

Lew joined the Navy as a signalman in 1942 and was demobilized in 1945. Upon return from the war, Lew came back to Creston and farmed the orchards once again. Having been coerced by a buddy to go looking for a bee tree in 1954 on a cold winter day, and having looked exhaustedly for hours, they decided the best idea was to order three packages of bees. When the bees were delivered, his friend advised that "he wasn't going to touch those damn things" and it was left up to Lew to become the beekeeper which he did begrudgingly, but was soon to make it his life's work. To quote Lew, "Some famous person said 'my life has been full of many terrible things, most of which never happened' but I can honestly say that my life as a beekeeper has been full of many wonderful things, all of which happened."

He met and married the love of his life, Iva Watt, in 1955 and together their dreams of orchards and gardens, farming and honey flourished. Lew enrolled in the Bee Master Short Course at UBC in 1958, and became Apiary Inspector in the Kootenays for 6 years thereafter. He attended a BC Honey Producers' Association meeting as the Kootenay delegate and became President of the BC Honey Producers' Association in 1966, and the President of the Canadian Honey Council for two years in 1970-71.

In 1956, Lew and his wife Iva diversified the orchard offerings to include a fruit stand, and farmed over 500 bee hives producing high quality honey, all the while continuing to farm the apple orchards and acres of vegetable gardens and raising two small children. Lew and Iva were also pioneers in value adding. When the prices dropped in the apples, Lew purchased an apple press and began making and marketing fresh apple juice. That idea, or legacy, was somewhat passed down to Lew's daughter Susan Snow and son in law Gary who make Tabletree Black Cherry Juice after a similar downfall in the cherries.

Lew built and operated Truscott's Honey Farm and Fruit Stand in Creston where he also pioneered an Agritourism business. Lew and Iva tried different ideas to draw in customers and tourists and one such agritourism venture was the building of a golf driving range on their property (golf was another passion of his and he eventually became President of the Creston Golf Club for a time as well).

Lew was ever active in his community and was also in his church, having sung in the church choir for several years, and volunteered in the business of the church. He was a Member of the Kiwanis Club, the Creston Golf Club, the Legion, and was a Board Trustee for the Creston School Board for several years. Lew was also Federal Fruit Inspector in the Creston Valley for 15 years, and an active member of the Creston Fruit Co-Op. Lew taught several future beekeepers through local college instruction courses, and just anyone interested in asking him about the business of bees and farming.

Lew farmed apples with his son for several years in the late 1980's – early 1990's and when the prices dropped significantly, they were the first to pull out all of their apples and plant late variety cherries, which had, up until recently, been the saving grace for many orchardists in Creston at the time. Lew (along with his son, Bill) also developed a new variety of cherry called Kootenay's which is grown and sold around the world today.

Lew grew up with his toes in the dirt of the orchard, was destined to become a legacy in the fruit and beekeeping industry and to pass down that legacy to his children. ❀

*~ submitted by his daughter, Susan Snow*

Bee Masters short course 1958; Lew Truscott is in the back row, on the far right.

# Margriet Dogterom

It is with considerable sadness that I write to report Margriet Dogterom passed away recently, at the age of 73. Margriet spent well over a decade in my laboratory, as a Research Technician running the lab, an M.Sc. student (developing methods to mass overwinter honey bee queens), and then a Ph.D. student (studying four different species of bees as blueberry pollinators). Upon graduation, she founded a very successful company, Beediverse, providing pollination consulting and mason bee-related products.

Margriet was a person overflowing with life and energy, invariably enthusiastic and determined, and never hesitant to jump into new challenges. She was a scientist through-and-through, inquisitive and curious, but also with a knack for designing experiments and the work ethic to see them through. Two decades ago, before mason bees had become popular, she opened that door, and it is largely because of her efforts that mason bees have become an integral part of the Canadian pollination scene. She designed and sold nests, collected and sold bees, and published a readable and informative book, *Pollination with Mason Bees*, that has sold almost 30,000 copies.

Margriet was always gracious and generous to those around her, and invariably willing to give her time to individuals and communities. She loved anything outdoors, especially hiking, and was a fixture on the local Contra dancing scene for many years. "Bold" comes to mind, with a booming infectious laugh as one of her trademarks.

She was proud of her Dutch descent, and her Australian upbringing. Bees were not her first profession; she was a successful medical technologist when the call of bees drew her into a new career. Her courage in making such a radical career change and confidence that she could make it work were typical; when Margriet did anything, she was all in. Yet she made time for those around her, friends and family and the wider pollinator community, and reveled in the small moments that reveal the beauty of nature.

*~ Mark Winston*

Since I started working in Oregon I have found myself following footsteps Margriet left behind. She really blazed a lot of different trails. Her work on blueberry pollination still stands as a foundation (just this morning I saw her PhD work cited in a grant proposal from a US colleague). Also, just last week an inventive beekeeper in Oregon said he was about to crack the nut of how to overwinter queens and I had to politely send him Margriet's MSc work as a reality check. Then, of course, Margriet pioneered mason bee culture in the Pacific Northwest. I am on the board of the Orchard Bee Association and Margriet is regarded as high royalty by the entire industry. I have been encountering Margriet with such frequency that I was meaning to reach out to her. I am so terribly regretful that I waited so long.

*~ Andony Melathopoulos*

I met Margriet on the day when I first arrived in Vancouver to work as a Post Doc in the Winston lab. At that time Margriet was renting out space in her house on Clairmont in Burnaby and had an extra room which I happily snapped up and joined her eclectic mix of "roomies". It was a typical Vancouver day - pissing rain - had been for days and Margriet was bubbling over with enthusiasm and excitement with all the things that were going on in the lab. Almost immediately, she convinced me to go out and help sample bees for her queen banking project and get to know some of the others in the lab; caught up in her enthusiasm I agreed.

I was standing well back recording data on a clipboard on that day and as is always the case, as an innocent bystander I got nailed twice right between the eyes by a pair of rogue bees. Margriet immediately came over and volunteered to remove the stings, but because it was cold and rainy her dexterity was impaired. Instead of quickly and deftly removing the stings she managed to smush them into my forehead, giving me a full dose of venom. The next day I looked a little like I had gone 12 rounds with Mike Tyson. Margriet reveled in telling that story the next day, and also in teasing me about it ever since.

It may not be widely known, but Margriet had a serious foot fetish. I am not sure about her inclination towards human appendages but she was obsessed about honey bee queen feet! She was convinced she would find compelling evidence that preventing damage to the tarsal pads of queen feet would improve their wintering survival, and spent hundreds of hours examining them and dreaming up

management schemes to minimize queen feet damage. She was, I think, the first and possibly only honey bee podiatrist.

It is of note that Margriet's queen banking research was recently featured in a talk by A. Rousseau (from Pierre Giovenazzo's group) at Apimondia. Ms Rousseau is building on the foundations Margriet laid down and extending the work with some potentially exciting preliminary results. As was the case with Andony, it was on my "to do list" to get in touch with her and let her know of the impact her research was still having. She would have been pleased to hear it. Margriet touched so many lives and was a great friend and colleague. She will be missed. *~ Rob Currie*

It was Margriet Dogterom who first introduced me to working with bees, when as the technician running Mark Winston's lab, she hired me as an undergrad research assistant to help with beekeeping and research projects. Working with Margriet in that first week, I felt like I was working with a female "Crocodile Dundee" – it was partly her Aussie accent, but mainly her spirit of "can do" and the willingness with which she took on challenges, which to a greenhorn like me seemed daunting. Margriet's love of and natural curiosity for bees and other wildlife laid the groundwork for what would become my own lifelong passion, and her enthusiasm and strong ethic for scientific research has inspired me in my own research projects.

I remember Margriet's statement at her thesis defense, that because of her love for the outdoors and wildlife, she had imagined her future working on "big animals", but strangely enough had managed to work on "big numbers" of very small animals – the bees she had come to love. Margriet's mentorship included frequently asking me what I thought might be the problems faced by any given colony, and encouraging me to think about what the solutions could be. In this way she stimulated the thought process and kept me fully engaged in the task at hand. I assisted Margriet on both her Master's and PhD projects, and learned how all-encompassing a graduate student project could be. Her master's work on mass overwintering of queens in banks included many aspects of queen health and colony success, as she followed the overwintered queens for a full season after their winter storage, to determine if there had been any deleterious effects and to painstakingly assess their productive abilities multiple times in the following year. Her

The Swarm Team from Mark Winston's lab in 1989, with Margriet in the front row, fourth from the left.

*photo courtesy of Lillian Duthie*

efforts laid the groundwork for several queen overwintering projects that are currently underway in Ontario, Quebec, and here in BC.

The thoroughness and dedication she had applied to her queen work was eclipsed by the project she took on for her PhD – evaluating the effectiveness of different pollinators, including honey bees, bumblebees, and orchard mason bees on pollination and fruit production in highbush blueberry plants. We spent many hours collecting nectar from blueberry flowers at different times during the day, assessing bee visits to flowers, and later counting developed and undeveloped seeds within blueberries themselves to determine the effectiveness of the different pollinator systems. Again, her work on blueberry pollination laid the groundwork for many studies to follow, and her PhD work with orchard mason bees led to the formation of her successful business, BeeDiverse, which produced and supplied mason bees and nest blocks.

Margriet enjoyed her work, but also had a great sense of fun too, and we would often stop off at a local Dutch deli near one of the SFU bee field sites where she encouraged me to try one of their specialties – a whole pickled herring, filleted open and enclosed with onions in a large bun, complete with tail protruding out one side – delicious! In her hours not spent working, she enjoyed outdoor activities such as hiking, at that time with Kublo, her lovely big old Malamute who would often accompany us into the field and from whom she was able to collect enough woolly fur to produce her own very warm duvet! Margriet often opened her home to gatherings of people from the lab, and frequently had a student or post-doc from the lab renting part of her house. Her contributions were many, and she will be missed by all who knew her. ❀ *~ Heather Higo*

# British Columbia Bee Breeders Association

**Armstrong Apiaries**
James Macdonald
Armstrong
250-308-8219
jamesmacdonald@telus.net
Q N

**Ashcroft Honey**
Joe & Marguerite Lomond
Savona
250-373-2540  250-457-7193
marglomond@gmail.com
Q N, bee supplies

**Bear Creek Honey**
Mart & Rita van Herk
Chilliwack
604-845-1807
vanherk@telus.net
N

**Pure Agriculture**
Brad Cook
Victoria
250-818-8763
b.cook@pureagriculture.ca
Q N P

**Brenda's Bees**
Brenda Jager
Gabriola Island
250-755-5834
bzbees@telus.net
Q N P

**Campbell's Gold**
Mike and Judy Campbell
Abbotsford
jwcampbell@campbellsgold.com
604-856-2125
Q N

**Emily Huxter**
Armstrong
emilyhuxter@gmail.com
250-309-5408
Q N

**Flying Dutchman**
Stan and Cheryl Reist
Nanaimo
flydutch@telus.net
250-390-2313
Q N P

**Green Bee Honey**
Michalina Hunter
& Darwyn Moffatt-Mallett
Garibalidi Highlands
250-616-3070
greenbeehoney.bc@gmail.com
Q N C

**Heather Higo**
Langley
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604-532-6904
Q

**Heather Meadows Honey Farm**
Ian Bissonnette
Telkwa
250-877-3495
hometownhifi@yahoo.com
C

**Honey Bee Zen Apiaries**
Jeff Lee and Amanda Goodman Lee
Creston
250-866-6861
info@honeybeezen.com
Q N

**Howe Sound Honey and Bees**
Ian Kennard
Bowen Island
604-947-9518
icken@shaw.ca
Q N

**Jinglepot Apiaries**
Sol Nowitz
Nanaimo
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jinglepotapiaries@telus.net
Q N P

**Kettle Valley Queens**
Elizabeth and Terry Huxter
Grand Forks
lizandterry@gmail.com
250-442-5204
Q N

**Mark McPhail**
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250-764-2877
cmmcphail2@gmail.com
Q N C

**Rod Jo Moody Apiaries**
Rodney & Jo Moody
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250-743-1939
Q

**Silver Star Apiaries**
Richard Springborn
Vernon
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250-379-2567
N

**Similkameen Apiaries**
Blair and Cheryl Tarves
Cawston
250-499-2555
blairtarves@gmail.com
Q N

**Six Legs Good Apiaries**
Deborah Tin Tun & Liam Brownrigg
Vancouver
604-817-2349
6legsgood@gmail.com
Q N

**Sunnyside Apiary**
Nancy Leonard
Bowen Island
nancyhasbees@gmail.com
604-947-2240
Q N

**Sweet Nechako Honey**
Jon & Susan Aebischer
Vanderhoof
250-567-5037
sweet02@telus.net
Q N

**Wild Island Honey Bees**
David Macdonald
Salt Spring Island
250-653-9999
dmacdonad@telus.net
Q N Colonies

**Wildwood Queens**
Donna Moseanko
Powell River
604-344-0622
donna@wildwoodqueens.com
Q N

- **B = Bulk Bees**
- **P = Packages**
- **N = Nucs**
- **Q = Queens**
- **C = Queen Cells**
- **S = Shook Swarm**

# BC Honey Producers' Association AGM Minutes
# October 4, 2019 Prince George, BC

**Call to Order and welcome:** Called to Order at 8:33

**First Nation Greeting and Acknowledgment:**
Elder Darlene McIntosh
**Introduction of Head Table and Guests:** Kerry Clark
Remembrance of Members Passed: Blaine Hardie, Michael McLennan

**Agenda:** Amendments, Approval
Amendments – Afternoon Elections
Two positions that have to be filled: Trustees for BHW
Motion to approve the agenda
Moved by: Gerry Rozema
Accepted by consensus no additions.

Approval of Minutes of March 2019 Semi-Annual meeting: Approved as Distributed.

Business arising from minutes: No business arising that is not already covered by the rest of the agenda.

**Reports**
**President – Kerry Clark**
Many committees and task forces for the year.
Bee BC Projects – small projects that were funded through the Province of BC. BCHPA received funds to support poster presentations of the results or updates of these projects at this and our next meeting.

**First Vice President – Jeff Lee**
This is Jeff's last meeting at 1st Vice President as he times out (based on our constitution). Has been in position for five years. Some of the things that have occurred over the past five years – significant change in how the organization is run. Board has stabilized. Tech Transfer programs across Canada have been engaged and we are still working to see if that is a good idea for BC. Farm classification system and its prejudice against beekeepers who do pollination (still remains unresolved) – still cannot be claimed as farm income. Second issue is continued denial of farm status qualification for beekeepers – around the issue of "foraging".

Vice-president elections are both held at same time which causes issues with continuity of planning for education events, etc. May be the time to review that scheduling as the organization grows. Great time on the board and we haven't yet resolved the structural issues mentioned.

What has emerged over the past couple of years is that the job of 1st VP was to organize both semi-annual and AGM. Those have both grown and now the work has been divided between 1st and 2nd VP and this sharing model should be continued.

Barry Denluck: past-positions are there for continuity and support. Stan Reist: People often serve longer as it is difficult to have people accept positions. Alan Paulson: in the past the 2nd VP was elected every year and 1st and President alternated.

**Second Vice President – Dan Mawson**
Collaborated quite a bit with Jeff. We have had quite an exciting year. 180 people showed up for AGM in Kelowna which is a record. Victoria was a great event and this event here in Prince George is also looking to be very successful. Thank you to the organizing committee.

Next event is semi-annual in Kamloops. Well underway and at the Coast Hotel March 28-29, 2020. 2020 is our 100th anniversary. Already starting to advertise it as 100 years of beekeeping in BC. Big celebration with Langley Club at Quality Inn and Convention Centre for Oct 2020. Recruiting of speakers already underway.

Apimondia is the other big event (see later notes) that was a very positive thing for our organization.

As growth and expectation for events has increased so has the amount of work required. We have restructured events to take the financial responsibility away from the host teams (so they can focus on the event). The association is directly managing registration and financial aspects of the event. Some growing pains as we move towards this work both for financials and webmaster. As a result of this we are adding a new voluntary position to assist the board – conference registrar – Jennifer Dilfer has volunteered for 1 year to see how this goes. We have also established a dedicated web page for our conferences – this site will remain in place and will be repurposed as each new event requires it. As we change our

structure we have upgraded our conference guidebook so the organizing team has a clear manual for organizing and hosting conferences.

**Secretary – Christina Rozema**
Last year as secretary and am happy to announce there is a nominee later for a new person to take over the role.

**Treasurer – Irene Tiampo**
It has been quite a year and thank you for letting me continue on as our financial board member. Financial reports as presented. As our financial position is healthy (over $200k) we now have to submit a separate form to the government to outline our position.

Not all the branches have been represented.

Advertising in BeesCene has done well. Certified Instructors course is in black. Website costs are up as we now have two websites. Insurance policies – we earn $5 per policy as revenue to us. Ian Farber – How did we lose money on the semi-annual – lunch was paid for, travel expenses. Education day came in with proceeds net $130 (Saturday), meeting day included director travel and accommodation. Heather Higo – Pollination and Honeybee Health – this is the research fund from government that we give out to research projects.

Irene: There is a new line item for the 100th anniversary event to support 100 year merchanise/"goodies". Stan: We have made a reasonable profit on our events so is it that much of an issue if one doesn't make quite a profit? I think we are doing quite well. Jeff: We can't expect to make significant profit at every single event but overall we are very successful. New budgetary expectations for speakers and supports a $10k budget for keeping quality of speakers is maintained.
100th Anniversary may present higher expenses to gain the highest quality speakers for this event - it is a milestone.

Can we present events as singular reports so we can see how they do and can we see how the two website expenses separated? Comparison of budget vs expenses is a $1900 deficit.

Kerry: Bylaw amendment later in the agenda. Motion to delay moving financial to later, when budget is available to view – approved by consensus.

Motion to accept financial report: Barry Denluck. Seconded: Stan Reist. Motion carried.

Budget for coming year: Advertising revenue increased. CHC cost depends on how many hives registered. Convention remains similar. Added line item for 100 Year Anniversary. Insurance kept the same. Interest kept the same. Forecasting a budget deficit of $13k.

Motion to accept the budget: Jo Lomond. Seconded: Paul Petersen.
Discussion: Alan Paulson – there cannot be a deficit budget as in the past the organization was in a terrible financial situation. Gerry Rozema – states there is too much money in the bank and projects need to be funded. Stan Reist: there is money in the account that will need to be spent. Jeff Lee: Yes the organization has been in financial straits before but there have been education events which have been extremely successful and the excess money has gone into the bank. I think it is appropriate to move some of that money back into supporting the current year. These budget numbers often don't reflect the actuals. Kerry Clark – The idea of "no deficit budget" is in bylaw 8h to be addressed later in this meeting. In past years we have approved a deficit budget and have come out with a balanced or surplus financial statement. Motion approved.

Motion: To transfer $1951 unreserved funds to support the past year speaker funds. Barry Denluck: add a line item from reserve to current year for the express purpose of supporting speakers at AGM and Semi-Annual and to support smaller clubs to host. Moved: Barry Denluck, no seconder. Motion fails.

Motion to accept financial statement: Stan Reist. Seconded: Irene Tiampo. Motion carried.

**Canadian Honey Council Rep. – Stan Reist**
- CDN colony numbers 2018: 796,764
- CDN beekeepers 2018: 10,629
- CDN honey production 2018: $196,566,000
- 2019 CAPA overwinter losses: 25.7%. Most frequently cited losses due to weather, starvation, poor queens, weak colonies in the fall.
- CHC/Vita Bee Health reintroduced fumagillin.
- recent closure of queen exports to the US.
- threats to California queens.
- CHC plans to market CDN honey at meetings in the US, Japan, China and the UAE.

**BeesCene Editor – Heather Sosnowski**
Thanks for the support on the BeesCene – get good feedback and welcome criticism from readers. Let me know your thoughts. Advertising is up again and a bigger magazine

attracts more advertisers. More memberships means more mailing costs but the advertising revenue covers it. Page number will likely go down a little as last two editions were specials. All advertisers in the BeesCene are represented on the website by name (not an ad), and the classified ads go up there too. To be on the website you have to advertise in BeesCene. In the next issues some articles on Bee BC projects and gathering information on tech transfer programs.

Roselyne Lambert: has there ever been a discussion on selling the magazine separately in bookshops – feels that people are not beekeepers who would purchase the magazine. There has been some discussion on this in the past but there is option to subscribe without membership. Some feel there is a market of browsers in book shops.

BeesCene was entered into Apimondia contest (World Beekeeping Awards) and was very well regarded – one comment was that it doesn't have a glossy cover. Would that be required on bookstore shelves? Also may require a magazine distributor. The Board will consider the suggestion.

When two members are in the same household can they decline the second magazine – Yes. Could work go out via social media so people know they can purchase? There is a complication that we use BeesCene to promote memberships to targeted groups but there are extra copies available for specific groups. How do we sell on newstand and not undermine the cost this is for membership?

**Webmaster – Dan Mawson**

See previous notes re: conference website. Member website is our main way of communicating to members. We do not "advertise" on website to keep it cleaner but we do archive BeesCene editions (so ads are accessible that way). It focuses on member-related content. Event promotion is encouraged. Memberships, insurance and labels all available through the website.

Donate button currently is for BHW but could have options for other programs depending on donor preferences.

Thanks from Prince George group to simplify the processes to organize conferences, it's been a very good help to the organizing committee.

**Apimondia Report – Dan Mawson**

BCHPA was represented well at this global event – trade show booth with promotion of beekeeping in BC, pollination, the province in general from a tourism point of view. 1500 brochures handed out and some are still available to groups to use at their clubs. Printed extra BeesCenes that can be picked up as well at the information desk today. Encourage you to use these to promote the organization. 5000 participants, 130 countries, 4 keynote lectures. 940 abstracts submitted for presentations. 241 exhibitors in the trade shows. 17 technical tours.

BC Min of AG provided $20k and BCHPA invested $10k and covered some expenses of volunteers. Budget balanced. Thank you to the volunteers who helped and Paul who helped with funding application.

**Committee and Task Force Reports**

**Certified Instructor Committee – Lance Cuthill**

Now has 54 certified BCHPA instructors across the province and have taught over 1200 new beekeeping students. Program started in 2013 and thanks to Paul van Westendorp for support. Three lead instructors have over 100 years of experience between them. Thanks to Ian Farber and Axel Krause.

Every certified instructor signs a policy and recommendations document that they will guarantee to teach 20 hours of beekeeping instruction including hands-on education for their students. Promotion of BCHPA and BeesCene during course. Curriculum is defined and certified instructors must teach what is required. Next offering will be in 2021. Students must have the Bee Master certification as prerequisite.

Lance is stepping down due to health reasons so Axel and Ian will be looking for new member to join the team.

Requests from Alberta and Washington State to purchase or have for free the curriculum, timelines, flash drives but this information has been copyrighted to BCHPA. Leave this in the hands of the executive to discuss. Next thing to be done is to change the logo on the certificates.

**Librarian / Education – Ian Farber**

Current state of the library – there is little demand for VHS tapes and old DVDs. Much more relevant and new information on the Internet. In the process of winding down the library. We have received Doug McCutcheon's books, some old and some valuable. Have approached the archivists and enquiries have been made to UBC and SFU for their special collections. No answer yet. It will be a while before they reply.

Question: If the universities don't take the books would it be appropriate to put them in a silent auction at a convention? Concern that we might not receive appropriate funds for them. Could we advertise them in BeesCene at a recommended price?

SFU keeps the records from CAPA and we could tie this into the broader responsibility they have assumed for keeping beekeeping history.

**Boone, Hodgson Wilkinson Trust Fund – Kerry Clark presenting on behalf of Brenda Jager**

2018/2019 financials – year ending September 30, 2019

Income: $10,600. Donations: $5000 in memory of Percy Hodgson from Mr. And Mrs. John Merret of Wicks and Wax. In memory of Arne Axen, from Langley club $1000, from Richmond club $200. In memory of Mike McLennan donations totaling $920. From the CRBA $1000, general donations $772. BCHPA card sales $220. Interest on term deposits $1488.

BHW Trust 2019/2020 recipients: Dr. Alison McAfee and Dr. Leonard Foster of UBC, $10,000 over two years for project researching temperature stress on BC queens.

**Archives – Ted Hancock**

Two donations of books/materials – Rob Justice has donated a significant amount of information on beekeeping on the island, including the importance of nectar producing plants in BC. BCHPA had 200 of these pamphlets produced in 1920. The other donation was from Margriet Dogterom (1985-1992 BeesCene editor) who has donated over 100 pamphlets/bulletins and 100 books (earliest ones from 1800s). A number of documents from Bevan and Williams Hugh from Cloverdale. Has anyone heard of these brothers? Margriet hoping any not going to libaries could possibly raise money for BCHPA.

Have approached the libraries to see which of these books

could be put into the Archives. Can we put some of these into a display?

**Research Committee – Heather Higo**
5 research projects that the BCHPA directly supported, with funding from the BC government through the Investment Agriculture Foundation:
- Colony health in Blueberries (no answers yet, a lot more work to be done)
- New approach to honey authentication
- New varroa control method
- New perspectives on foulbrood
- Queen and drone quality of BC bee stock

40-50 people at Apimondia who are researching health issues in pollination for blueberries met to discuss/implement some collaborative research. There are similar problems showing up in blueberry pollination in other places so working together to get some combined answers.

Research committee is supportive of exploring the possibility of a Tech Transfer team in BC. Jeff Lee heading a Tech Transfer exploration committee.

Leonard Foster: support provided from Industry (BCHPA) is able to be leveraged significantly to support research. Thanks to BCHPA for continuing to support researchers.
Leonard's work on honey authentication using Mass Spectrometry (MS):
- Molecular fingerprint of honey to look at adulteration with MS.
- MS is a general diagnostic process and is very sensitive.
- Working to create a complimentary tool for NMR.
- Some limitations due to intellectual property on NMR.
- The more diverse range of tests we have, the less likely it is that people can beat the detection.
- MS can detect at level of 10% adulteration (10% syrup vs 90% honey).
- Working with Peter Awram in creating a library of honey to build MS library.

**Old Business**
Business Reports from research projects: See Research committee report and attached presentation.

**Regional Representatives Reports**
**Prince George - Barry Clark**
Want to thank everyone for coming to Prince George and recognizes the organizing committee. This year had heavy bee losses from mild winter early then a VERY cold February – bees brooded up early and then February to late March was much colder than normal. Cold wet spring that made those that did survive were slow building up. A lot of people getting into beekeeping in PG area which is nice. It wasn't until mid-June when nectar flow really started. Silver lining was that rain every three or four days kept farmers off the hay fields so nectar flow was high through August. Bees were still foraging up to 10 days ago.

**Northwest BC - Heather Sosnowski**
People have average honey crop despite the rainier year. A little above average potential. Not a lot of issue with wasps although Terrace reporting bad wasps. Bee BC project in Smithers focused on forage. A few beekeepers reporting

unusually high mite levels.

**Sunshine Coast – Kathleen Suddes**
Lower Sunshine coast – last year wasp Armageddon and weak hives going into winter. Very early spring and brutally cold February. Devastating to bees. Dry spring then wet summer. Blackberry nectar flow was awesome. Fireweed was skunked – super dry, weird weather. Wasps this year still plentiful but not as bad as last year.

**Cariboo – Ted Hancock**
Lots of rain. Good honey crop. Wasps almost non-existent. Mite levels seem to be high this fall.

**South Vancouver Island – Paul Petersen**
Thanks for Apimondia – absolutely fantastic. Not sure for Victoria how the crop went. Weather a bit further up on south island: spring was good but when blackberries came into bloom it was wet and cool with little nectar flow. Very micro climate area and various results. Mites have been varied. Bees out of mountains had high mite counts while local hives not seeing large mite drop. Early fall with lots of rain and very few nice days.

**East Kootenay – Lance Cuthill**
Great opportunity to send out 100 boxes of brood comb to Iotron funded by Bee BC. Honey flow was a mystery. Some reports of nothing all the way to over 50 kg per hive. Do not understand the variation. Honey flow came particularly early (rained through June) and plant blooms produced high flow 10 days earlier than usual, so much was uncapped and high moisture content.

**West Kootenay – Axel Krause**
Better year than last year due to no smoke from forest fires. Rain and sun mixed. Honey crop a bit better than last year. Rebate of $10 for branches if you apply early works well. Local food stores collect spilled sugar for club and they feed back to bees - raffled off as fundraiser. Have had for a few years an unidentified bee disease where the bees are dying through all larval stages. Cappings are perforated but not sunken and cannot get a handle on it. Working with province to determine what this could be. We need to get a handle on this issue. There will be an informal meeting at 4:30 today to discuss experiences around this unfamiliar disease.

**North Vancouver Island – Gerry Rozema**
A lot of weak hives in the spring. Wasps from last year then through the summer lots of rain but not high temperatures. Honey crop that never came – fairly cool so not a lot of nectar. Not even fireweed produced. Reports that hives looking healthy going into winter. Last report from Gerry as he is stepping down as regional rep.

**North Okanagan – Rick Plantinga**
Interprovincial exhibition (IPE) – agricultural fair: this year they set up an extracting exhibition and sold honey for a club fundraiser. Continuing to work with the college and produced their own BCHPA pamphlet. Very hot for a while and very unexpected rain in August that provided another flow. Issues with BC Assessment and some found a new attitude amongst inspectors except around pollination revenue. Continue to address misinformation from some vegan media about the benefits and impacts of honey.

**South Okanagan – Blair Tarves**
Lost hives to bad winter and lots of hives weak in spring. Strangely sporadic bud damage to cherry and apple – little fruit set. Buds had been frost damaged. Honey crop uneven due to rain. Small localized areas had good results while others had drought. Increased mite counts and poor queens plus mystery disease. Lack of forage due to larger monocultures of vineyards and marijuana crops replacing orchards.

**Fraser Valley – Elaine Garry**
Reiterating reports already given. Not big honey crops. Working on the 100th Anniversary AGM! Successful field day with over 100 attendees at Campbell's Gold Honey Farm. Went very well. Gerry McKee said it was the first bee event he had attended with a first aid booth.

**Peace River - Kerry Clark**
Virtually no wasps this year and had trapped a lot of bald faced hornets this spring. Same old good crop – see details in the current BeesCene. Trialed the Bee Health Guru App – records the sound the bee hive or swarm is making then analyzes for queen status plus risk of several other problems. Kerry showed the photo of a honeycomb with bees in a sort of pattern which when the bees were removed, showed "We heart LANA" and acknowledged the funding support of BC Government, delivered through Investment Agriculture Foundation.

**BC Ministry of Agriculture – Paul van Westendorp**
Spring Survey, Annual beekeeping production
Winter mortality of 32% with weather most common identified as reasons
Veterinarian Antibiotics – registered drugs in Canada as of Dec 1, 2018 no longer available OTC: tetracycline and tylosin. Need to establish a relationship with a veterinarian – need the vet/client relationship.
Testing for disease though Paul's office in Abbotsford free of charge. Only after confirmation of bee disease and registration of apiary up to date.
Higher EFB during extraordinary dearth period this year, as soon as flow resumed the EFB seemed to disappear completely without treatment.
Mystery disease – still no identification. Submitted quite a few samples (bacteriology, virology etc. ) for testing last year with no clear outcome.
No small hive beetle discovered this year. Across the US border there are some samples.
Ministry courses – Introduction to beekeeping – Jan/Feb 2020. Bee Master course: February 2020.

Asian Hornets – Paul gave a thorough review of the discovery and eventual elimination of a colony of Asian Giant Hornets near Nanaimo.

**Appointment of Financial Reviewers**
Motion: To continue with KPMG as financial Reviewer for our Financial Statements
Moved: Irene Tiampo, Seconded: Julia Common. Motion carried.

**Appointment of BeesCene Editor**
Motion: Reappoint Heather Sosnowski as Editor of BeesCene. Moved: Gerry Rozema, Seconded: Lance Cuthill. Motion carried.

**Appointment of Webmaster**
Motion: To continue with Dan Mawson as Webmaster
Moved: Axel Krause, Seconded: Stan Reist. Motion carried.

**Approval of Honorarium**
Motion: To continue honorarium to BeesCene Editor at the level of 2019 for the following year.
Moved: Barry Denluck, Seconded: Stan Reist. Motion carried.

**New Honorarium for Honey Judging/Mead Judging**
Motion: to provide an honorarium of event entry, 1 night accommodation if not local, travel expenses and small cash token of $150 to a person or persons who judge honey and/or mead for our events. Moved: Jeff Lee, Seconded: Kate Fraser.

Discussion: Stan adds up the amounts - $600 approximately. Comment is technically there is no cost on registration except for some food/drink costs. Gerry highlights that there are quite a few honey judges in areas now so incumbent on groups to find local. Can we redo the amounts based on local vs not local. Should we charge for entries.

In Victoria the judges got 50% registration fee and the one out of town judge got 1 night accommodation in addition. There were three judges. There are also mead judges which are separate.

Fall fair judges seem to get free access to the fair. Do we need to go back and look at this as a line item for honey judging. Honey and mead contests have become quite important to our association. Would people be interested in the minimal cost increase to conference ticket to balance this. Moved by Barry Denluck that the $150 cash be removed from the original motion, Megan Flatt seconded. In favour 24, opposed 2, amendment passes.

Motion: to provide an honorarium of event entry, 1 night accommodation, and travel expenses to a person or persons who judge honey and/or mead for our events. Opposed 4, Motion carries.

**New Business**
Diane Dunaway – proposing that we consider an ad-hoc committee for a greener association: environmentally friendly/ sustainable practices, especially around conference materials, etc. Is there interest from the floor?

Kerry – Diane appointed as the chair for this committee and will come up with a document for the group. Jeff- requests costs comparisons and trade-offs/alternatives. Lots of interest from the floor.

Motion: that the BCHPA send a certificate of commendation and appreciation to the Nanaimo Beekeepers club
Moved: Chris Rozema, Seconded: Jeff Lee. Motion carried.

**Elections:** Dan Mawson, nominations chair
1st Vice President: Nominations: Dan Mawson, nominated by Gerry Rozema – Acclaimed.
2nd Vice President: Nominations: Jeff Lee, nominated by Gerry Rozema – Acclaimed.
Motion to reopen nomination for secretary: Axel Krause/Ian Farber to add a nominee for secretary.
Nominations: Barry Denluck, nominated by Jo Lomond
Michalina Hunter, nominated by Dan Mawson
Ron Glave, nominated by Ron Glave
59 ballots – Michalina Hunter: 32 votes. Motion to destroy the ballots: Moved: Irene Tiampo, Seconded: Stan Reist. Motion carried.

Regional Representatives
New North Island Representative – to be determined.
Motion to affirm those serving as regional representatives. Moved: Stan Reist, Seconded: Kole Casey. Motion carried.

**Trustees of BHW Trust Fund**
Nominations: Christina Rozema, nominated by Dr. John Boone, 4 yr term, Acclaimed.
Alan Paulson, nominated by Dr. John Boone, 4 yr term, Acclaimed.

**Motions**
Bylaw Amendment: Extraordinary motions (requiring 75% Yes vote of the members voting):
Amendment of current bylaw 8(h) "The Table officers shall not be paid for any expenses, honorariums or remuneration of any kind if the payment will cause a deficit, or increase a deficit, in the year in which the payment is made."

Amendment, proposed in the Notice of Motion at semi-annual meeting in March 2019: to be considered with or without amendment: add to bylaw 8(h): "unless the expenditures resulting in such a deficit have been approved by members at the Annual General Meeting."

Moved: Gerry Rozema, Seconded: Axel Krause.
Discussion: Barry Denluck – objects to a bylaw amendment which may allow a future executive to spend more freely – should move reserve money to address any deficit (means that can ONLY happen when there is a reserve).
Alan Paulson – traditionally it has not been the AGM that has caused a deficit.
In Favour: 29, Opposed: 22, Motion fails, because a bylaw amendment requires 75% yes votes to pass.

Any other business from the floor
Motion: To charge $10 fee for each honey/mead entry for judging. Moved: Paul Petersen, Seconded: Kole Casey. In Favour: 3, Opposed: many. Motion fails.
Amendment: That we charge $3 per entry. Moved: Nancy Burkholder, Seconded: Meg Paulson. In favour: 2, Opposed: many. Amendment fails.

There is the possibility of purchasing the nectar plants of BC poster by area – contact Keith Rae.

AGM 2020
100th year Celebration – Langley October 2020

Meeting Adjourned at 4:29. ❀

# CLIPS FROM THE PAST

F. Dundas Todd was the first official apiary inspector hired by the BC Department of Agriculture in 1911. By 1919 Todd was nearing retirement and W. J. Sheppard had been appointed Chief Inspector of Apiaries, while Todd shifted to inspecting hives on Vancouver Island.

Todd authored *Bulletin No. 92 – Bee Culture in British Columbia* which supplied answers to the questions of early BC beekeepers. When he was not promoting beekeeping as a viable industry for BC, Mr. Todd organized Saturday field days in various locations where he demonstrated proper hive management. During his time as an apiary inspector, Todd also helped organize a provincial beekeeping association which became the BCHPA.

In his book *One Hundred Years of Beekeeping in British Columbia 1858-1958*, W. H. Turnbull credits Mr Todd with being that link between the 19th and 20st century of BC beekeeping. However, he also mentions one quirk: "Mr. Todd, in spite of his knowledge of bee-keeping, was not a natural born "bee man", as he had a great dread of bee stings and in his handling of bees, he equipped himself with a bee-dress that had much the appearance of medieval armor, or a modern diving suit. In fact, many bee-keepers used to get all kinds of fun twitting him about his "diving suit". This did not worry him and when he was all dressed to examine a colony of bees, he didn't much care how angry they got. In fact it was well recognised among bee-keepers that after he had examined an apiary, it was good business to leave it strictly alone for a few days until the bees had quieted down." The photo of Todd from the Provincial Archives below, however, shows him very lightly equipped, and appears as though it may have been staged.

F.D. Todd minus the full suit of armour.
*Photo courtesy of the City of Victoria Archives*

The accompanying Inspector of Apiaries Report was originally published in the *Province of British Columbia Fourteenth Annual Report of the Department of Agriculture for the year 1919*. The UBC library has published this and other early government reports which you can find online at https://open.library.ubc.ca.

*~ Ted Hancock*

APPENDIX No. 35.

ESTIMATED HONEY-CROP, 1919.

*Vancouver Island and Gulf Islands.*

| District. | Apiaries. | Hives. | Crop. | Average per Hive. |
|---|---|---|---|---|
| | | | Lb. | Lb. |
| Comox | 40 | 186 | 9,300 | 50 |
| Duncan | 70 | 280 | 8,000 | 29 |
| Gulf Islands | 40 | 145 | 3,000 | 20 |
| Howe Sound | 32 | 64 | 1,200 | 20 |
| Nanaimo | 120 | 480 | 12,000 | 25 |
| Victoria | 163 | 500 | 15,000 | 30 |
| Totals | 465 | 1,655 | 48,500 | 30 |
| *Greater Vancouver.* | | | | |
| Burnaby | 83 | 413 | 8,000 | 20 |
| Coquitlam | 16 | 75 | 1,120 | 15 |
| Kerrisdale | 24 | 88 | 2,080 | 24 |
| South Vancouver | 59 | 358 | 4,320 | 12 |
| Marpole | 18 | 68 | 1,520 | 23 |
| North Vancouver | 46 | 230 | 4,240 | 20 |
| Point Grey | 13 | 58 | 1,120 | 21 |
| New Westminster | 30 | 120 | 2,400 | 20 |
| Vancouver | 93 | 404 | 7,120 | 18 |
| Totals | 382 | 1,814 | 31,920 | 18 |

10 GEO. 5 BRITISH COLUMBIA. Q 93

REPORT OF INSPECTOR OF APIARIES, VANCOUVER ISLAND AND GULF ISLANDS.

F. DUNDAS TODD.

*W. J. Sheppard, Esq.,*
*Chief Inspector of Apiaries, Nelson, B.C.*

SIR,—I beg to submit my report as Inspector of Apiaries for Vancouver Island and Gulf Islands for the past season.

On commencing the season's work for 1919, my first duty was to inspect apiaries on the Lower Mainland whose owners purposed selling bees or moving them to new districts. In the course of the month of April three of these special inspections prevented the removal of infected bees into districts which were supposed to be clear of foul-brood. This work done, regular inspection-work was undertaken in Vancouver for two weeks, when the new Inspectors for the Lower Mainland having been appointed, I was transferred to Vancouver Island.

Starting from Victoria, work was continued on the south end of the Island until a call came for a special inspection at Parksville. There three apiaries were found affected with a mild type of European foul-brood, for which there was no accounting, as no bees had been brought into the district for several years. My next visit was to Nanaimo, where American foul-brood had been lingering in one apiary since 1914. One mild case was found, although there had been no signs of it in 1918, and only one mild case in 1917.

The district round Victoria kept me busy until the middle of August, the only interruption being a series of lectures, of a week's duration, on bee-keeping, delivered to the teachers of the Province at the summer school in Victoria. In all, about 170 bee-keepers were found in Victoria and vicinity, being just twice the number of names on the lists of the Department. The largest apiary visited contained twenty colonies.

A rumour that foul-brood was present in the Comox Valley drew me to that district. There I found forty apiaries, all free from disease. I was particularly struck with the great improvement in methods since my first visit in 1911. That year only one bee-keeper produced any honey, but in 1919 I estimated that there were at least 4 tons of surplus honey in the hives. Two days on Denman Island came next; then Alberni District, where I found twenty-five bee-keepers, all on a small scale, practically all beginners.

During the month of September most of the time was devoted to honey-judging at agricultural exhibitions, North Vancouver, Vancouver, Nanaimo, Duncan, and New Westminster being those visited. While at Nanaimo and Duncan opportunity was taken to see as many bee-keepers as possible.

In previous years I had paid short visits to Vancouver Island when reports of disease necessitated such, but this is the first season when systematic work was attempted. The Department lists were rather out of date; consequently much time was lost in visiting people who had ceased to keep bees and in revisiting districts as new names were added. For example, round Victoria forty old names had to be removed, while 120 new names were added.

The number of bee-keepers on Vancouver Island has increased very rapidly in the past two years, and there is call for instruction.

All of which is respectfully submitted.

F. DUNDAS TODD,
*Inspector of Apiaries.*

# Regional Reports

**East Kootenays**
*~ Lance Cuthill*

What a strange and unusual spring Mother Nature sent us. We started the spring with a big "hooray!" as the abundant May and June rains promised a higher than usual honey yield from nectar producing plants. The sweet clover was growing at a phenomenal rate but almost without warning the nectar plants bloomed nearly two weeks early. The "hooray" turned into an "oh no!" as our bees were not at full strength and the honey flow would, in large part, be missed.

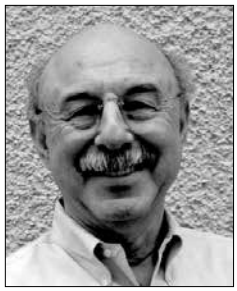
Well, Mother Nature continued to surprise us. We supered early and the normal 12 day honey flow turned into a 35 day honey flow that provided more honey per hive than we have ever had in all of our years of beekeeping. The "hooray" was back. However, this hooray didn't last. It quickly turned into another "oh no!" when, in late August, we went to pull honey and found that over 40% was uncapped. Leaving the bees untreated for mites was not an option, so we brought in the honey and found, as expected, the moisture content in the uncapped honey was too high (18.5% average). We raised the temperature in the honey house, bought a dehumidifier, and built a fan that blows air down through a stack of honey supers. This worked and brought the honey down to less than 17% moisture content. Hooray!

Reports from others here in the East Kootenays, ranged from "a super crop" to "I didn't get any honey." After asking a few question of the "didn't get any" beekeepers. I'm thinking (my best guess) is that the honey flow came on early and the beekeepers waited until the usual supering time to get their honey supers onto the bees. By this time the bees had plugged up the brood nest, leaving little or no room for the queen to lay. This resulted in a diminished work force that was not able to be replenished with new workers in time to take full advantage of the unusual timing of the flow.

**West Kootenays**
*~ Tom Bell*

August was dry and in the low 30's and the honey season mostly ended earlier in the month. September and October were cooler, with showers and rain and some fall flowering. It has been an odd year – we often have either very good years (moisture, early start, lots of forage) or poor years (dry, smoky, cooler spring and fall) – this year has been right in the middle and with the welcome exception of no smoke we have had everything else!

Honey crops were okay to good and many keepers had a strong early build up of colonies with opportunities for splits and increases. Many hives will be going into the winter in great shape with hope for next spring. However, other beekeepers and hives are more concerning – they have been struggling with die off of colonies from an unknown cause – over the course of 3-4 weeks the colony population drops and there is brood die off in all stages, little to no dead bees in the hive or near the outside entrance, and the queen can still be present and may even be laying a small number of eggs. Axel Krause, our bee inspector, has been working with Paul and the provincial lab in trying to identify the cause – a brood disease, complications from mite and virus loads, or something else?



**Metro Vancouver**
*~ Allen Garr*

Beekeepers hereabouts usually stop feeding syrup by Thanksgiving. Hives that have made it to this point are now bundled up for winter, though not everybody wraps or insulates their hives. More and more are putting sugar cakes or granulated sugar above their inner covers for emergency food supplies.

Honey production is being reported as lower than usual, but then folks are also reporting that mite counts have been lower in most cases, and the dreaded wasp assaults that caused so much damage last year are nowhere near as bad this time around.

The sunny days of October and early November have produced frosty evenings and mornings that have slowed wasps down and reduced their numbers as well, and by midday I'm not sure what is in bloom, but city bees were hauling in bright yellow pollen, more than I recall from years past. All the better, I would suppose, to help them through the long haul until spring. Good luck to us all.

**North Okanagan**
*~ Rick Plantinga*

The mild weather in September was welcome but the girls kept producing a lot of brood well into the fall and may have consumed more of their stores than usual. We will have to keep an eye on hive weight later in the winter.

Not a lot has happened further to the report at the AGM. Most members report average or below average honey yield, likely due to the unusual weather in July and August. What else could we blame it on? Surely not poor beekeeping or maybe poor timing.

Now into November, the bees are still bringing in pollen on warm days. We still have a few yellow jackets skulking around but they are manageable. We continue to have a good turnout at our monthly meetings and more newbees checking us out.

**South Okanagan**
*~ Blair Tarves*

This will be a fairly brief report, and probably much like the others. There are similar concerns and phenomena occurring throughout the province.

As we all know, the harshness of last winter took a high toll on bee hives and rendered many more very weak in the spring. This effect was notable but not pronounced in the South Okanagan. However, there was strangely sporadic bud damage to some cherry and apple trees. Nice blooms, bees everywhere, but little fruit set. Beekeepers were occasionally blamed for this crop failure. Of course the buds had been frost damaged. Beekeeping is a neverending education project.

The honey crop was uneven in our region, partly because of rain. Some small localized areas received perfect rainfall, or bee yards were on sub-irrigated land. Other nearby places were in a state of drought with no honey crop. This was unusual.

Another reason for reduced crops (and according to some) increased mite counts and poor queen cell building and mating, was the EFB-like mystery disease. I'm not going to discuss this here because I think it will probably be discussed in greater detail elsewhere.

Another problem is the lack of forage. This used to be insidious, but now it is rampant and obvious. The trouble a few years ago was orchards devouring hay fields. That was sort of OK, because they needed pollination, and at least there were dandelions.

Recently, vineyards have been replacing orchards, hay fields and native sageland. These wind-pollinated sterile monocultures are not good for native bees or other insects - indeed not for any native creatures except maybe bears and wasps.

Land next to one bee yard used to be a nice mix of milkweed, alfalfa and sweet clover. This year it is a fenced 20 acre industrial marijuana patch. Honey yields were way, way, down. Drugs and alcohol, the scourge of Okanagan beekeeping. On the bright side, some growers are developing a sensitivity to the environmental effects of their practices, and there is the beginning of an interest in planting and encouraging bee and other insect forage plants. Still, on a warm day, my yard smells like a skunk family reunion!

**Cariboo**
*~ Carole Mahood*

Our regional association meetings resumed in October, where club members met to discuss our beekeeping year so far. The fairly wet summer had mixed results for beeks in the area, with some reporting high honey yields while others had a minimal flow.

As the temperatures dropped quickly in late September/early October some had to scramble to get their winter feed on while waiting for warm enough days to open their hives. Diane Dunaway and Ann Carter shared their experiences with oxalic acid dribbles mid-winter to knock mite loads down prior to the spring build up, and I anticipate several of those in attendance will be trying this out

on a warm day in January.

Our next scheduled event is a value-added honey, beeswax, and propolis crafts night in November, which will also gather donations for a local food bank. A similar event held last year was a hit with club members, and this one looks to be just as fun.

**Prince George**
*~ Barry Clark*

I have a lot to talk about for the winter issue. It is November 2nd as I put pen to paper. The Prince George Beekeepers' Association (a branch of the BC Honey Producers' Association) hosted the 2019 AGM and Education Days. For those of you who made the trip, you know what a wonderful/worthwhile event it was. Thank you for coming out.

A BIG SHOUT OUT to the group of volunteers who worked on this for well over a year (you know who you are), also to the many club members who came out to work the registration desk, take photographs, set up and take down, contribute to the silent auction both in donations and bidding and other stuff. Well Done Everyone!!!

To the BCHPA Executive, A BIG THANK YOU for guiding us through this (Dan, Jeff, Irene, Christina and Kerry) and for your work on the event. I also want to recognize the Regional District of Fraser Fort George, the City of Prince George, and Prince George Tourism for their support.

I would like to give recognition to our Gold sponsors, Northern Acreage Supply, Nature's Own Design (NOD), BeeMaid Alberta Honey Producers, Bartel Honey Farms, and Coastal GasLink. Our Silver sponsors were Mann Lake, Dan's Woodworking, and BC Bee Supply, and our Bronze sponsors were Gustafson's KIA, Pittman Asphalt, and Huber Farm Equipment. Your support means a great deal to us.

OK, now for the local update: we had a rough winter like most areas of the province. It was super cold from the later part of January through to early April. Then it got very warm (summer temperatures) for 2 weeks in late April and early May, followed by cold and wet through May and June. This confused the beekeeper and bees big time, and many colonies didn't make it to June.

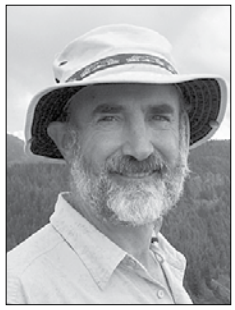
The honey crop was just OK, even with the extended nectar flow; the reports are mostly of an average to below average yield. The honey is a nice amber color, not dark to black as it was the last couple of years. No fires this summer and no issues with smoke, and no issues with wasps reported.

Varroa levels have been very high this fall. Several folks have said they are losing colonies now, and it is looking like mite overload and possible viral issues. Those who don't monitor, didn't treat, or relied on late season treatments may be in for some disappointments next spring.

The fall has been wet with unseasonal cold spells in October. Our first snow came 2 days after the conference, on October 8th. I guess having the conference early was a good idea after all. The snow didn't stay, but it will be back soon, very soon!!

On September 21st, the PG club participated in our first annual Fall Fair, held in downtown PG. It featured local farm to table enterprises, and we were there to promote honey bees and all pollinators in the grand scheme of nature. There was a huge turnout, and the live bees stole the show!

That's it for this report. Wishing Everyone a Very Merry Christmas, and a BEE Happy 2020.



**Peace Region**
*~ Kerry Clark*

After the epic population of yellow jackets in the fall of 2018, Peace beekeepers were pleased to find that the wasps were not a factor for beekeepers in 2019. The special fall 2019 issue of BeesCene included information about each BC beekeeping region - check there for an outline of Peace conditions.

This seemed a cool and often wet year: not the kind that would obviously benefit bee colonies, but some areas did exceptionally well, perhaps because of the wet weather delaying the cutting of hay fields well stocked with clover and alfalfa. Some beekeepers had below average crops, while many saw good yields above 150 lbs/colony average, some over 250 lbs from established colonies, and a few up to 400 lbs.

Our Peace beekeepers group continues with useful communications through a Google group. In addition we have scale hives in both the North and South Peace, with results accessible to all at beecounted.org (although the interpretation of those weights and temperatures results in lively discussion).

Some felt fortunate that the BCHPA convention was early

in October this year. Within a few days after it, snow was a definite factor, and some of the heavy (in-field) crops (e.g. canola, oats) won't be harvested before Christmas, if at all. No especially warm periods, but fluctuations above and below freezing occurred throughout October. It will be interesting to have an in-hive view of some colonies through the website weight and temperature records.

**Fraser Valley**
*~ Courtney White*

It's the beginning of November and winter prep is well underway here in The Fraser Valley. The production season was over and done with by mid-August in most areas. I've been getting mixed reports on honey yields; sounds like folks that left their honey on a little too long came back to find the bees had munched it up. There was certainly a 1-2 week dearth period in August, except for the yards closer to urban areas. A slight cold snap at the start of October prompted more hobbyists to wrap their colonies for this winter, and the girls were still bringing in pollen right up until Thanksgiving.

The annual autumn wasp problem we've been observing in recent years has continued. I had hoped our wet September would knock them back a bit, but no such luck. The wasps are dazed and confused, but still interested in robbing enough to do some damage. Fingers crossed the girls can fend them off until winter!

**South Vancouver Island**
*~ Paul Petersen*

Here on the South Island the the weather abnormalities continue. In Mill Bay, which averages a few degrees higher than Victoria with it's three different climatic zones (as a result of ocean proximity), we have had three weeks of beautiful sunshine. Daily temperatures have averaged 15°C with bees bringing back pollen in large quantities. September was in large part cool with near daily precipitation. Having said that, this is a complete reversal of normal weather patterns.

A perfect storm describes this year. Normally there is a gradual blooming pattern with our nectar giving flowers. Where normally one bloom leads into another and beekeepers are able to take advantage accordingly, early cool weather delayed this normal bloom pattern so that everything seemed to come at once. Blackberries came into bloom with really nice weather and just as the girls started to fill some comb, along came rain and cool temperatures, choking off what many of us thought was finally a decent nectar flow. Many beekeepers in Victoria took their bees to the mountains, hoping to take advantage of fireweed. Though some nectar came in, many had not built adequate populations to fully exploit the good weather that we did get during the later part of July and early August when El Niño effects came into play.

To make a long story longer, honey harvests for Southern Vancouver Island where less than a third of average. This leaves me to wonder what beginners thought of their results as they had been advised of what to expect - had been given specific instructions of what to do, with the end results of a jar of honey. Well folks, that's farming.

**Sunshine Coast**
*~ Allan Cobbin*

At our October Club meeting our President Sally Burke gave a summary of some of the presentations at the recently held BCHPA AGM and noted the interest in Kathleen Suddes' (and her husband's) innovative examples and demonstration of practical beekeeping technology. The next BCHPA AGM will be held in the Lower Mainland and it was noted that as we have a fairly healthy bank account that we might consider assisting our club members with ferry costs, thus enabling more of our members to attend.

Bruce Millburn, who is a most knowledgeable newer beekeeper (especially about wasps and their destruction) gave us a talk on the Giant Asian Hornet. He mentioned that there had been a miscommunication that we had seen the Giant Asian Hornet on the Sunshine Coast, in Halfmoon Bay and the Sandy Hook area, but it was clarified that this is not true.

Steve Clifford (a commercial beekeeper) who moved to the Sunshine Coast about a year ago from Saskatchewan also spoke about how he prepared his colonies for winter in the prairies, where different weather conditions prevailed, but noted that he is using many of the techniques here on the Coast

as well. Time will let us know of his results next springand we are very fortunate in having him outline his experience and interest in sharing.

Kathleen Suddes has stepped back from her position as club President and as no one stepped forward, Sally Burke graciously took up the mantle again and was acclaimed by the members. Kathleen had done a great job for the club and will continue to be as engaged as ever in pushing forward bee advocacy.

There was some discussion regarding speakers for future meetings and although several names were mentioned, it was agreed that the executive would make the final choice. There was some thought of a December potluck dinner, more social than educational, but no final decision was made.

The weather here has been mostly sunny and mild recently, but colder weather and storms will probably prevail as usual. Our usual Festive Greetings from the Sunshine Coast!

**Terrace/Smithers**
*~ Christine McDonald*

In the Northwest, fall is here in name but not in spirit as we watch the weather for a forecast that tells us it's time to wrap up the hives. Here in Terrace, we've had only a handful of frosty mornings, but the bees are still flying during the warmer afternoons, and we saw pollen coming in as recently as November 5th.

In Smithers, the weather has been a little cooler and many beekeepers are fully winterized, although they are still seeing warmer than seasonal fall temperatures.

Our fireweed season was a bust this year because of the cold and wet weather in July, but the late-blooming flowers at lower elevations did produce enough honey that most hives were able to build up to winter weight on their own once they were brought back to town, and a few even offered a surplus of wildflower honey to give us something to take to local markets. The Smithers area saw a decent bloom of clover and alfalfa later in the summer.

While we still do not have a formal club for Terrace, our Highway 16 Beekeepers Facebook group is quite active and a great place to share stories and seek advice. Having the BCHPA conference in PG this year was a great opportunity for several of us northern keepers to attend for the first time. Rushing River Apiaries hosted a winterizing workshop in September that was well attended by newbees from Topley, Smithers, and Terrace. The 4-H club in Smithers started a honey bee program this year that had 7 young members, and a beautiful display at the Bulkley Valley Exhibition.

For now, we process and play with wax, work the Christmas markets, and look forward to dusting off our hive tools next spring. ❀

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**WILDWOOD QUEENS AND NUCS:** West Coast raised Queens available March-Sept. Queens can be mailed through the postal service when needed. Great for the backyard beekeeper! Overwintered Nucs available starting mid May. Limited supply, order early. Pollination services available for local farms. Contact Donna Moseanko, Powell River: donna.moseanko@gmail.com or call **604-344-0622**.

**HONEY FOR SALE:** Bear Creek Honey is selling 3500 lbs of Fraser Valley blackberry honey. Available in approx 35 lb buckets. For further info please contact Marty at **604-845-1807** or email **vanherk@telus.net.**

**NUCS FOR SALE:** Strong 5-frame nucs with young, locally raised queens. Available mid-May to the end of August. Contact Marty Van Herk, Bear Creek Honey, **604-845-1807** or email **vanherk@telus.net**.

**FOR SALE:** 80 baby nucs with frames, inner feeders, 7" X 5.5" X 8.5", $25 each. Misc. honey pallets, frame parts, hive cracker, 2 & 3 way nuc boxes, inner feeders, all kinds of odds and ends. Call Dianne and Reg, **(250) 546-6149**, Armstrong, BC.

# wordsearch

*Submitted by Steve Mitchell*

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