Bee sCene

WINTER 2018/2019
Volume 34 #4

Promoting and Encouraging Beekeeping
in British Columbia since 1920

BCHPA Website: www.bcbeekeepers.com

BRITISH COLUMBIA HONEY PRODUCERS' ASSOCIATION

Publications Mail Sales Agreement No.40828130

Inside:

To:

Letter from the editors . . .

It was a big trip to Victoria a few weeks ago, but I was thankful to go. Our association meets infrequently, and time has a way of gathering momentum as it goes on; a lot happens in the meantime. It's good to see the familiar faces and pretty nice to make new friends too, which happens at every meeting despite my shy nature. Ours is a welcoming group, and although it's always changing, the sense of history and accomplishments of members over the years are still with us and continue to shape our work. The two go hand in hand, the old and the new.

I was apprehensive about going because of news that there was a dress code at the venue – even though it was only applicable in certain of the common areas, and not to the rooms that our group was using to meet in. It turned out that the staff were lovely and I needn't have worried, not even a backwoods girls like myself. It was a privilege to stay in an old building so near to the downtown harbour, and I was disappointed that my family wasn't with me; the girls (now 5 and 10) would have loved being in that old port city for a few days, enjoying the people and the scenery and the smell of the ocean. I got to spend an extra day there with a girlfriend who took me on a walking tour around the downtown area. At the recommendation of one new friend from the conference, we stopped in at Russell Books, an amazing and huge used bookstore - paradise for book lovers, and there are delicious pastries just a few doors down! My favourite part of the day was walking through the hidden alleyways strung with lanterns in the middle of Victoria's Chinatown, with the Gate of Harmonious Interest looking over the neighbourhood's daily doings.

Speaking of architecture, a block away from the conference venue another historic building was in the process of being rebuilt. The developer had taken care to preserve the outside walls of the old structure; they had somehow taken away the whole inside of whatever building it had been, and the rest was held up with an impressive array of steel braces. They were blasting the ground underneath it during the day of our business meeting, and a few times the conference room shook. An impressive effort, and I tend to think it is worth it. That old stonework is beautiful.

I'll do my best to catch up with the guest speakers for articles in future issues – unfortunately we don't have much on them in this one. I was glad to hear Anicet Desrochers speak as I've been curious about him for awhile. We bought some queens from him when were first starting out and I have been intrigued with his involvement in the industry, from breeding to value added hive products. I was surprised and impressed with his energy and his strong belief in what they are working to do, and with the family-oriented nature of their business. They are also building overlapping families of local people around them. His passion and dedication about bees

The Gate of Harmonious Interest in Victoria's Chinatown

was obvious, as well as respect for the unpredictable aspects of beekeeping – sometimes things don't work out the way you hope, but that doesn't mean you're done yet. Most interesting was to learn about his commitment to work with surrounding farms in his area to grow organic crops, which his bees can make honey from and the farmer can make a living from, too. Part of the deal he makes with them is that he'll do the work to secure a market for the crop. It seems like an intimidating thing to do, to make that guarantee, but he's proven that it's possible. There is a significant potential for many of us to collaborate with nearby farmers in this way.

Since returning from the island I have been in touch with filmmaker Naomi Mark, whose father Don is on the cover of this issue. I had been in touch with Don a few years ago when we did a profile of Yukon beekeepers. He seemed to be one of the only old-timers around his area, but then it isn't the most productive place to keep bees, from what I gather. I was hoping to someday meet Don as I had really enjoyed getting to know him from a distance. We exchanged some interesting emails and I really liked his gentle point of view and patient nature, which seemed to say (even from so far away) that we gotta slow down a little, it takes a while longer, sometimes, to figure things out. He was comforting to me and I hardly even knew him. I was sad to learn of his passing not long ago. Naomi had been spending time with him in the last few years of his life, and had been filming some of their time together. She's turned the footage into a full length film about living with her dad while his health is failing, and about him teaching her how to keep bees; how he found a way to pass a special part of his life on to her that way, and that when the old and new ways meet, it can be a challenge. I recommend checking out the trailer for it and keeping your eye out for an opportunity to see it – details are included in an article in this issue.

In the meantime, best wishes to everyone! I hope you're all prepared for the winter, and I'm looking forward to being in touch in the spring. ❀

EDITORIAL & ADVERTISING: Heather Sosnowski
12180 Hislop Road, Telkwa, BC V0J 2X1 tel 250-877-3495 email: BeesCene@bcbeekeepers.com

Additional Editing & Proofing: Ian Bissonnette – hometownhifi@yahoo.com
Graphic Design & Layout: Jill Schick - jillschick@telus.net Printer: International Web Express Inc., Coquitlam, BC
Publisher: BC Honey Producers' Association

BCHPA CENTRAL EXECUTIVE AND REGIONAL REPRESENTATIVES 2019

President **Kerry Clark**
PO Box 2090, Dawson Creek, BC V1G 4K8
tel 250.782.6646
email: president@bcbeekeepers.com

1st Vice-President **Jeff Lee**
220 East Placsko Road, Creston, BC V0B 1G5
tel 604.328.5028
email: firstvicepresident@bcbeekeepers.com

2nd Vice-President **Dan Mawson**
1613 West Creston Road, Creston, BC V0G 1G7
tel 250.215.0037
email: secondvicepresident@bcbeekeepers.com

Secretary **Christina Rozema**
3072 York Road, Campbell River, BC V9H 1A8
tel 250.923.9466
email: secretary@bcbeekeepers.com

Treasurer **Irene Tiampo**
PO Box 5609 Station B, Victoria, BC V8R 6S4
tel 250.216.7601
email: treasurer@bcbeekeepers.com

Canadian Honey Council Rep **Stan Reist**
6124 Metral Drive, Nanaimo, BC, V9T 2L6
tel 250.390.2313
email: chcrepresentative@bcbeekeepers.com

Prince George **Barry Clark**
18835 Ness Lake Road, Prince George, BC V2K 5L7
tel 250.967.4141
email: barrydouglasclark@gmail.com

Cariboo **Ann Carter**
2498 Sutton Road, Williams Lake, BC V2G 5H4
email: anncarter@shaw.ca

West Kootenays **Gavin Firkser**
6117 Wills Road, Nelson, BC V1L 7A4
tel 250.509.0728
email: g.firkser@gmail.com

East Kootenays **Lance Cuthill**
4300 Wilks Rd, Cranbrook, BC V1C 6S9
tel 250.426.6049
email: lcuthill@gmail.com

Metro Vancouver **Allen Garr**
2750 West 14th Ave., Vancouver, BC V6K 2X2
tel 604.736.4184
email: bygarr@telus.net

Peace River **Kerry Clark**
PO Box 2090, Dawson Creek, BC V1G 4K8
tel 250.782.6646 email: kccsclark@gmail.com

Thompson-Nicola **Amber Michaud**
281 McGill Road, Kamloops, V2C 1M2
tel 778.257.0362
email: aclunn@gmail.com

North Okanagan **Rick Plantinga**
24-1101 Cameron Ave., Kelowna BC, V1Y 8V7
tel 250.712.9496 rhplantinga@telus.net

South Okanagan **Blair Tarves**
208 Ritchie Drive, Cawston, BC V0X 1C2
tel 250.499.2555 email: blairtarves@gmail.com

South Vancouver Island **Vacant**
North Vancouver Island **Gerry Rozema**
3072 York Road, Campbell River, BC V9H 1A8
tel 250.923.9466 email: gerryr@rozeware.com

Sunshine Coast **Allan Cobbin**
2737 Lower Road, Roberts Creek, BC V0N 2W4
tel 604.886.7006 email: alcobbin@telus.net

Fraser Valley **Courtney White**
4530 198 Street, Langley, BC V3A 1E8
tel 604.309.1684
email: courtney.leigh.white@gmail.com

Terrace-Smithers **Rudi Peters**
4524 Haugland ave., Terrace, BC V8G 1G3
tel 250.615.7404 email: r.peters@telus.net

Boone, Hodgson, Wilkinson Trust Fund
Brenda Jager
948 Harrison Way, Gabriola island, BC V0R 1X2
tel 250.755.5834
email: bzbees@telus.net

Librarian/ Education **Ian Farber**
3249 Schubert Rd, Kamloops, BC V2B 6Y4
tel 250.579.8518 email: ian_farber@telus.net

Archives **Ted Hancock**
General Delivery, Dog Creek, BC, V0L 1J0
tel 250.440.5689 email: hancock.ted@gmail.com

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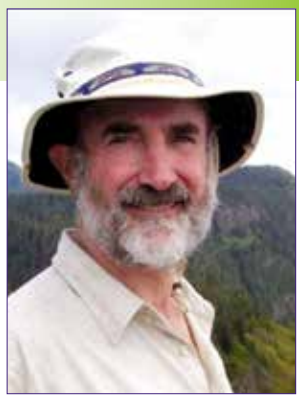
In This Issue

Our cover story:
This photo is from Naomi Mark of the Yukon, of her father Don who taught her about honey bees. Naomi recently made a film about her experience; the full story is on page 14.

From the President



Kerry Clark
BCHPA President

Dear fellow members of the BCHPA and the broader BC beekeeping community, it's a good time for apiculture in BC. We just concluded a remarkably effective and memorable annual convention. We have never before been as enabled to pursue our priorities of improving beekeeping at various levels throughout the province.

Part of that empowerment has been the prudent use of our resources over many years. A large part is the remarkable support we have been provided by the Ministry of Agriculture. Minister of Agriculture Lana Popham announced a further increase in funding through the Bee BC program, toward local community projects to support bees. I encourage bee enthusiasts throughout the province to give careful attention to this opportunity and I hope for some great ideas and results to follow.

This is in addition to the funding of $ 25,000 per year to enable the BCHPA to partner in research initiatives to address our research priorities. We look forward to guidance from our Research Committee on the best use of those resources. I again thank and congratulate Heather Higo who chairs that committee for her work over the years, recognized at our convention with the BCHPA President's Award.

I won't review all the great presentations that emerged at our convention. I'm on a busy schedule just now: I'm in Africa near the base of Mt Kilimanjaro. It's 4 a.m. and I'd like to finish this as I'll be picked up at 6 to continue a steep learning curve about stingless bee culture in this area. I find it fascinating and I hope all involved will find the project a win-win scenario, just as are so many things related to bees. I'm contributing knowledge about business planning, market strategy and some parallel successes I've seen with stingless bees in the Philippines, to name a few things.

One aspect of our business meeting that has left me concerned is the renewal of our association logo. We embarked on a process involving volunteer time and energy as well as professional input and expense, that culminated with a presentation of three possible images at the business meeting. Members in attendance were asked to choose one of the three images, and a fourth option was to recommend further development of the ideas presented. The largest number of votes was for a symbol of a bee, with a dogwood flower incorporating a hexagon as a strong second choice. Since the vote, there have been strong expressions both pro and con on the outcome: some clearly the result of agonized consideration and dissatisfaction with the result. Some have felt the image selected makes no reference to BC, some that bee doesn't look much like a bee and others feel a better logo altogether is needed. I appreciate all of those concerns. Adopting a new logo for an association such as ours is a tricky business; some feel strongly about the particular image adopted, some are not too concerned about the specific details, and some don't care to be too involved. Your executive has struggled with the decision and has decided to follow the vote at the AGM, that the BCHPA will adopt a version of the image, modified to make it a bit more representative of a honey bee.

I do appreciate the concerns that have been expressed after the vote and the executive has taken some of those into consideration. Our prime concern is in developing and using a logo that best represents our association. Let us pull together, take advantage of the remarkable opportunities we have in front of us, and not lose or risk the good relationships we have built on for so long. ❀

Bees be with you, Kerry Clark, President

We need your help...

The BCHPA is producing a short video presentation for Apimondia 2019. We are collecting high quality photographs and HD video content that highlights our beekeeping community, province and industry:

- BC beekeepers & honey bees in action
- BC scenics featuring apiaries
- Commercial operations - Honey production
- Farm Gate Sales
- Farmer's markets & retail displays
- Education & community involvement
- Day of the Honey Bee

Send to: media@bchoneyproducers.ca
Please submit before April 1, 2019

Beelines

News from the Ministry of Agriculture

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

BCHPA Conference, Victoria, October 26-28
A huge "Thank You" to the organizers of the 2018 conference in Victoria. Yes, there were hiccups and surprises but the overall event was great. Putting a meeting like this together demands a lot of planning, coordinating and delivering over many months. Thanks to all for your time and commitment.

One of the highlights of the conference was the attendance of the Honorable Lana Popham, Minister of Agriculture, who enthusiastically participated in the meeting and announced an additional $50,000 towards the BC Bee Project to which $100,000 had already been committed! The project fund has offered an excellent opportunity for BC's beekeepers to develop and apply for local, small-scale projects that address bee health issues.

Lana Popham and Kerry Clark.

The business day managed to generate a few concerns and controversies, including the selection of the new logo. As a non-voting member, I can remain impartial of the final decision. However, the bee logo which was chosen is simple, easily recognizable and representative of the one single thing that unites all beekeepers, whether they are strictly honey producers, queen and stock producers, contract pollinators or any other facet related to bees. The logo is easily reproduced and can be applied to many different promotional and marketing products.

Most artistic designs generate controversy at the time of their introduction. As I commented to one beekeeper, remember the introduction of Canada's maple leaf flag in 1963. There were demonstrations, radio and newspaper articles and debates in provincial and national legislatures accusing the Canadian government of being disrespectful of tradition and culture. Yet, the Canadian flag became one of Canada's most revered iconic symbols recognized the world over.

The conference was enhanced with two educational days that offered a wide range of topics and speakers from the practical to the scientific. A few highlights;

- Apimondia 2019 will be held in Montreal, September 8-12. This is going to be phenomenal event with delegates and exhibitors from all over the world. Keep an eye open for additional information about conference details and hotel rates. Delegate registration is now open.
- Anicet Desrochers of Québec. The energy of youth was quite apparent, even though Anicet was gracious enough to give a lot of credit to his wife on the success of their business. I was impressed with the sheer number of projects and activities Anicet and his wife are involved with.
- The Nuclear Magnetic Resonance (NMR) project of Peter Awram. As we have been hearing about the widespread adulteration of honeys on the international market, NMR diagnostics may offer an effective defence. Without such technology, imported honeys will continue to destabilize the Canadian beekeeping industry and threaten its future economic viability. I encourage beekeepers to support Peter's project by submitting honey samples that will lead to a reference library of honeys from across the province.
- Honey labelling. Finally, after many years of struggle, new honey labelling regulations will come into effect…..in 2021. It is slow but at least it holds the promise that Canadian beekeepers will finally be able to differentiate domestic produced honey from imported honeys. Canada No 1 labeling can only be used with 100% domestic honey.

New Apiary Inspector
A new Apiary Inspector position has been created for the East Kootenays. Axel Krause, Apiary Inspector of the Kootenays and Boundary Region has been responsible for the inspection and extension services of this huge area. To provide services to the outlying areas meant that Axel expended a lot of resources to get to the beekeepers. Axel recommended to split his position into two inspection areas. In the last issue of *BeesCene*, beekeepers were invited to submit applications for the position.

Dan Mawson of Creston has been selected to be the new Apiary Inspector of the East Kootenays. Dan brings a great deal of beekeeping experience with him as well as familiarity with the area since he grew up in the Kootenays. I'm pleased to welcome Dan to the Apiculture Program inspection team. He will be starting in early 2019. Contact details will become

available in the new year and will be posted on www.gov.bc.ca/apiculture.

Ray Levesque, 40 years of service

Recently, Ray received a long-service award at Government House in Victoria in recognition of his 40 years of service as an Apiary Inspector. Ray started his apiary inspection role in 1978 when John Corner appointed him the position for the South Okanagan. Ray and his wife Cindy have lived in Oliver for all those years where they operate a small commercial beekeeping operation. Ray has also been an avid antique collector of farm machinery and implements. Thanks Ray, for all the years of dedicated support to the beekeepers of the South Okanagan.

Veterinary Antimicrobials, The New Regime

In the previous issue of BeesCene, I mentioned about the big changes coming to the availability and distribution of veterinary drugs. The changes have been in the works for many years with the aim to reduce their use in animal production systems and slow down the development of antimicrobial resistance (AMR).

In Canada, only oxytetracycline hydrochloride (Oxytet, Terramycin) and tylosin tartrate (Tylan) have been registered for use in bee hives to control brood diseases. Oxytet became available in the 1950s and has been available over-the-counter (OTC) ever since. Most provinces recommended the use of Oxytet as a preventative medicine. After BC diagnosed resistant AFB (r-AFB) in 1997, prophylactic use was no longer recommended. r-AFB was also diagnosed in Alberta around the same time which let to the introduction of tylosin. Until 2014, Alberta beekeepers only had access to the product through a veterinary prescription. After 2014, tylosin became registered for use in bee hives in Canada. As of December 1, 2018, all veterinary drugs will no longer be available OTC and must involve a veterinary prescription (please note that fumagillin is an antimicrobial that has been excluded from the new policy).

While larger commercial beekeepers may readily establish a relationship with a local veterinarian, we have been concerned about the small scale beekeeper who may only need a small amount of Oxytet to treat a few hives. A veterinarian consultation and a prescription may quickly exceed the value of the hives. To address this challenge, the Ministry is proposing a framework with the following options:

- Individual beekeepers may establish a working relationship with a local veterinarian who could issue a prescription at an affordable price. Suspect samples may be submitted to the Abbotsford lab for diagnosis at no cost to the beekeeper.
- Beekeeper groups and clubs may establish a relationship with a local veterinarian who could provide services to the club and its members. Suspect samples may be submitted to the Abbotsford lab for diagnosis at no cost to the beekeeper(s).
- For individual beekeepers who can't establish a relationship with a veterinarian or who does not have access to a local veterinarian, a drug prescription can be obtained from the Ministry of Agriculture at no cost. The following conditions must be met:
  - The beekeeper must request an inspection by an Apiary Inspector who will collect samples and assess the condition of the colonies, apiary and operation. The samples will be submitted for laboratory diagnosis.
  - Where the services of an Apiary Inspectors is not available, the beekeeper must collect and submit a sample(s) for laboratory diagnosis to confirm AFB / EFB. A description of the apiary and the entire operation must be included.
  - A veterinary prescription will be issued only when AFB / EFB has been confirmed.
  - Prescriptions can only be issued to beekeepers with up to date registration with BC Ministry of Agriculture.

Annual Production Survey 2018

After a couple of appeals, many beekeepers have submitted their production data of the 2018 production year with a final participation rate of 28%. Thank you to all those who submitted their data. A detailed report will be posted on the government website (www.gov.bc.ca/apiculture) and the BCHPA website. A few production estimate highlights:

- Total BC colony number: 52,033. A significant increase over previous years. (Out-of-province colonies are not included).
- Total honey production estimate for BC: 1,542,000 kg with an average of 30 kg/colony. This is a bit below the long-term average of 36 kg.
- Total honey sale value estimate: $13,320,000. The increase was especially reflected in the retail sales of $10,562,000 reflecting 56% of the 2018 crop. This is significantly higher than the 2017 estimate of $7,227,000. The increase can be contributed to different factors from honey price increases, improved marketing near urban centres, better reporting by beekeepers, etc.
- A total of 29,000 BC colonies were used in pollination contracts (some with multiple contracts) for a total value of $3,790,000.

Since the compilation of the survey data has just recently been completed, a detailed analysis and commentary will be provided in the next issue of BeesCene.

~ Paul van Westendorp
British Columbia

The Robson Valley Beekeepers, AKA The WannaBee Beekeepers

by Monica Zieper, Founder (and Queen bee)

When I arrived in the Robson Valley, I heard that historically there had been a thriving group of beekeepers here. Many of them had been local farm families, but none were active beekeepers that I could find when I arrived in 2005. I had kept bees in the Portland, Oregon area, while I was there for employment for approximately 10 years.

Word of mouth advice to me here was that it is very difficult to raise and keep bees here. It's true...everything is relative. In comparison to a generous climate like the lower mainland or parts of Oregon, the climate of this valley is significantly more challenging, and our bees' foraging season is very short. However, there is something fabulous about northern perseverance, whether human, animal, or insect.

Monica Zieper

As I re-established my hives, since I was not able to bring hives across the border, I also did small presentations at the annual Robson Valley Fall Fair, including a very small demonstration hive, and also did 2 summer mentoring programs for youth where they participated in hands-on beekeeping throughout the summer months. Over time, and also through word of mouth, I was asked to do short courses and/or demonstrations at events such as Seedy Saturday in Dunster and at the Community Garden in McBride.

As inquiries grew, I felt the need to put the call out for a more formalized method of sharing, growing, and mentoring apiculture, and thus a simple ad, listing meetings of The Robson Valley Beekeepers and WannaBee Beekeepers, was placed in our little local free paper - about 4 years ago.

The local library (in McBride) was entirely supportive and provided a meeting place, once a month, year round. Each year we have added new members, and interest in all aspects of beekeeping has grown. We have remained an informal group but are contemplating adopting a more formal status, including non-profit, or co-op membership, particularly as we consider grant applications to support expanding programs.

We would also like to revisit the youth mentoring program again in the very near future. Through an explorer program the library put on during the summer for a few years, the children in the valley showed a keen interest in learning about bees, and some even went home and convinced their parents to become beekeepers. These are our future beekeepers, so to have the youth mentoring program again would prove to be very valuable.

In 2019 we will be putting on a Day of the Honey Bee celebration, with displays and a very special guest speaker, Dr Leonard Foster, Professor at the Department of Biochemistry & Molecular Biology at UBC. McBride is Dr Foster's hometown and where his parents still reside, so it was a natural choice to invite him, and learn more about his projects. ❀

The Club takes a 'smoke break' during a meeting.

bee notes

West Vancouver Based Charity Fosters Award Winning Honey Production in Liberia, West Africa

Universal Outreach program reducing poverty through beekeeping delivers international award-winning honey.

Liberia Pure Honey, a social enterprise mentored by West Vancouver charity Universal Outreach, was awarded first prize in its class at the National Honey Show in England on October 26, 2018. Judged against honey from across Africa, Liberia Pure Honey was awarded best in its category because of its superior aroma, taste and viscosity.

Universal Outreach has been working to reduce poverty in Liberia through its beekeeping skills training program since 2012. That same year the organization began mentoring Liberia Pure Honey, a local honey packaging business, to ensure Liberian beekeepers had a market for their product.

"We started our beekeeping program in response to an overwhelming need for jobs, especially in rural locations," says Landis Wyatt, Communications Coordinator for Universal Outreach. "We also knew that a strong market for honey was necessary for success, so we started mentoring a local honey packer. From the very beginning the beekeepers and Liberia Pure Honey were incredibly committed to the idea of creating a first-class honey that would show the world what Liberia is made of. We're delighted that our British Columbia community has provided continued support to our programs since their inception, enabling the growth of an important industry in Liberia."

During the past six years Universal Outreach has trained approximately 1450 beekeepers in 13 of Liberia's 15 counties. Liberia Pure Honey sales are expected to reach $130,000 this year

and honey production has become an important industry in a country where 93% of the population makes less than $2 per day.

After receiving the award, Gladys Freeman, co-owner of Liberia Pure Honey stated, "Honey is a gift and a blessing, and we treat the bees and the land with the respect they both deserve. We view the award as belonging to all the employees of Liberia Pure Honey, the beekeepers of this nation and our mentors—Universal Outreach."

Beekeeping provides an income for Liberians, but also contributes to conservation of Liberia's globally significant tropical rain forest. In partnership with conservation organizations, Universal Outreach's beekeeping program provides an alternative income source for communities who choose to manage their forests with greater social responsibility. ❀

True Honey Buzz

Over the last decade, there has been a sharp rise in the amount of adulterated or fake honey. Forms of fraudulent honey vary, including sugar syrups added to honey, mislabeled packaging, unethical farming practices, and more. Evidence suggests that upwards of 25% of the honey sold globally is fraudulent to some degree!

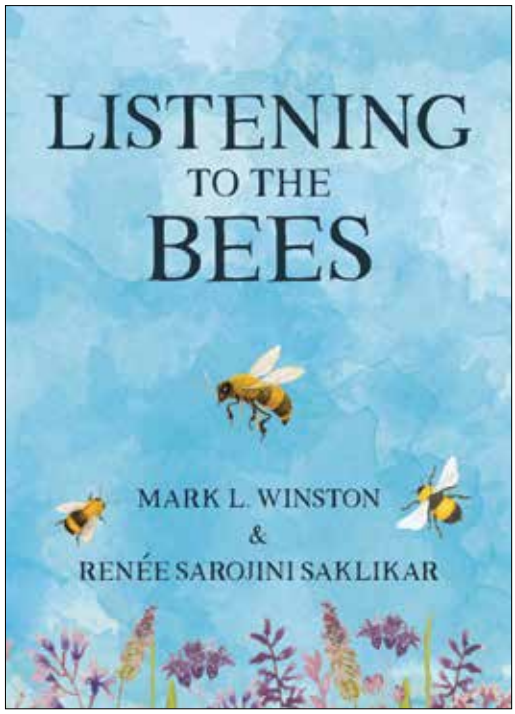
Fraudulent honey poses a risk to consumers because it often contains unknown chemical compositions, heavy metals, and even medication, such as antibiotics, that have not been approved for human consumption.

True Honey Authenticity is an ongoing project conducted at True Honey Buzz that aims to stop the production of fraudulent honey, and protect the authenticity and value of true honey. We use a modern technique based on Nuclear Magnetic Resonance (NMR) fingerprinting, which can differentiate between true and fraudulent honey. We are currently collecting honey samples from all over North America in order to create a comprehensive database of true honey. This will facilitate the detection of fraudulent honey by allowing us to observe differences between true and fraudulent honey in various geographic locations.

However, we need help gathering honey samples! If you are interested in providing honey samples, or have any questions or comments, we would love to hear from you!

Visit truehoneybuzz.wordpress.com for more information. ❀

Bee Tales and Beautiful Poetry



Mark Winston's newest book "*Listening to the Bees*" is an intelligent conversation about beekeeping over the past 4 decades. His writing is both clear and intimate as he tells about his early experiences studying Africanized 'killer bees' in French Guiana and gives an overview of his many research projects as head of the bee research lab at SFU. He has something insightful and informative to say about swarming behaviours, varroa mite treatments, queen pheromones, bees in the city and so much more.

Dr. Winston is an internationally respected scientist and winner of the Governor General's Literary Nonfiction award. This latest accomplishment combines his compelling stories, considerable knowledge and philosophical views. Winston reminds us that the environment and business will benefit from returning to organic sustainable farming practices.

Between each of Winston's short and engaging chapters is the poetry of Renée Sarojini Saklikar, Poet Laureate of the City of Surrey. Inspired by and reflecting Winston's scientific research she strings graceful images and fragments of hive life in a repetitive non-narrative style.

Winston and Saklikar are 'listening to the bees' and allowing the lessons of the hive, co-operation and communication to infiltrate into their own lives and the readers. Through the distinct but complementary views of science and art Winston and Saklikar reflect on the instinctive life in the hive and our own connection to the natural world. The book is a lovely work of art and Mark Winston is an engaging writer. A thoroughly enjoyable read! ❀

~ Dianne Wells

Note from the Sunshine Coast: Salal Offering

The summer weather here proved to be a challenging time for our honey bees. A wet spring followed by drought left them with little to no nectar plants in bloom by early August, and so they needed to access their own stores of honey by late summer. Maybe some of you noticed the bees sucking juice from your raspberry fruits.

The most challenging thing though was our collective battle with the huge onslaught of wasps, and the decimation of large numbers of hives for our members. People lost up to 30 or more hives, and found that the front of their hives were blanketed with wasps, leaving the honey bees unable to stave off such an attack. Wasps come and take it all: the larva, the pupae, and they chew adult bees into pieces and then take all this back to their nest to feed their larva. It is a heartbreaking experience to feel so helpless in doing all you know how to do to protect them, and finding ourselves short. And here it is November and the wasps are still flying and attacking the hives.

Our hives at the Botanical Gardens.
Photo Harry Meier

We harvested a small amount of honey from the hives in June, flavoured by the blossoms of the maple. When it came time to go through the hives that we keep at the Botanical Gardens in August, to see about their efforts through the blackberry bloom, there was only a minimal amount of honey in them. We ended up dispersing this throughout some of the ones with lower food stores.

We then did our formic acid treatment for varroa and tucked them in for winter. We will check the hives next in late December or early January to treat again for varroa, but this time with oxalic acid.

The Club is looking to put together a presentation for the general public come February, 2019. Details to follow. Merry Christmas everyone and Happy New Year.

~ Sally Burke, President,
Sunshine Coast
Beekeepers' Association

The United Beekeepers of Alberta: A New Provincial Organization

by Tracey Smith and Ron Miksha

The province of Alberta has several fine beekeeping organizations. There is a provincial commission focused on the concerns of commercial beekeepers and at least a dozen city and regional bee clubs filling various needs while attracting mostly small-scale beekeepers. Alberta, however, did not have a province-wide beekeepers' group to spread news and beekeeping tips of provincial interest to all beekeepers, large and small. For a few years, some Alberta beekeepers had seen the need for such a bridging organization. During 2018, the United Beekeepers of Alberta Council (UBAC) came into existence. It is starting slowly, listening to the concerns of beekeepers, and trying to respond by designing a form of organization which will meet the needs of most Alberta beekeepers.

Andony Melathopoulos and the Oregon Bee Project.

The biggest tangible achievement in the UBAC's first year was the execution of a very successful inaugural meeting and conference. Held in Calgary on September 29th, 2018, the conference was attended by 216 participants, including trade show representatives from eight bee-related enterprises. The main draw for the large audience was a remarkable lineup of presentations representing the latest in beekeeping science and craft. The featured speakers included beekeepers Simon Lalonde and Ron Miksha and scientists Dr Andony Melathopoulos, Dr Shelley Hoover, Dr Stephen Pernal, and Dr Jerry Bromenshenk. Dr Medhat Nasr, Alberta's provincial apiculturist, spoke about the status of Alberta's worst pests – AFB, Nosema, and varroa. Unbeknownst at the time, this would be the last presentation given by Dr. Medhat Nasr before his retirement from the position of Provincial Apiculturist, a post he held for a memorable 16 years.

Dr Andony Melathopoulos opened the talks with a description of the Oregon Bee Project, an initiative that is fostering collaboration between organizations, different levels of government, and native and honey bee enthusiasts. This includes census and survey information on bees in Oregon and dissemination of information to maintain the welfare of bees in the state. The entire program seems transferable to other jurisdictions and should improve biodiversity and agricultural success.

Dr Shelley Hoover compared single and double brood chamber colonies in terms of population, foraging force, and pollen collection. Her surprise lesson (a surprise to most of us) was the finding that single-storey pollination units do a more effective job in rental contracts per frame of bees because there is less stored pollen for the bees to rely on, requiring the bees to gather a greater amount of pollen (and do more effective pollination) than double-storey units. Also, single brood chamber colonies can have adult and brood populations as large as some double brood chamber colonies.

Dr Stephen Pernal presented an update on research at the Beaverlodge Research Farm while Dr Jerry Bromenshenk (Montana State University) was interviewed by beekeeper Allen Dick. Bromenshenk recapped his long career in honey bee research and introduced a new app, Bee Health Guru, which should be able to diagnose a variety of honey bee ailments based on hive sounds detected and interpreted by software on a smartphone.

Simon Lalonde presented an entertaining and informative discussion of organic beekeeping at his operation in Saskatchewan and Ron Miksha ended the presentations with an overview of beekeeping in Alberta - and what makes this province such a wonderful place to keep bees.

During the UBAC business meeting associated with the conference, members who had served on the steering committee were unanimously approved to constitute the first interim board for the new organization. The interim board members are Jean-Francois Cianci, Allen Dick, Liz Goldie, Malcolm Connell, Ron Miksha, Thomas Schweizer, and Tracey Smith. The board is developing by-laws for the organization. Meanwhile, the UBAC is preparing to grow while guided by the aspiration "to promote cooperation and communication between bee enthusiasts, support bee education, and consult with government and organizations on extension, research, and regulatory matters." UBAC plans to focus first on education and community engagement. The board will keep *Bees-Cene* and beekeeping enthusiasts informed of events for beekeepers scheduled in the new year. ❀

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Promoting and Encouraging Beekeeping in British Columbia since 1920

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* OPTIONAL $5,000,000 BCHPA GROUP LIABILITY INSURANCE — ADD ON $75

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Also see our website for more information about the group insurance program and other benefits of membership.

How to Bee

How To Bee is a film by Naomi Mark, which follows the journey of her and her father Don over three beekeeping seasons as he passes his knowledge on to her, and they come to terms with his changing health. Through archival photographs and interviews with family, the film explores the history of Don's beekeeping in the Yukon and traces his journey in the present day, as he teaches Naomi how to keep bees after being diagnosed with Chronic Obstructive Pulmonary Disease (COPD). Part biography, part point-of-view documentary and part intro to beekeeping, *How To Bee* is a celebration of life in all stages, that depicts the journey of a father and daughter as they come to terms with the changing shape of their lives.

We recently got in touch with Naomi about her film, and what follows is part of our conversation.

My parents started their family in the village of Carmacks, a town of around 500 people, two hours North of Whitehorse along the Klondike Highway. My dad was American and came to Canada in 1967 after graduating from university, before receiving his draft notice for Vietnam.

I've been interested in bees since I was little, but mostly because it was part of my Dad's identity. He had a serious apiary from when I was a baby until I was about 6 years old, and it was one of those things about him that gave me pride as a kid – because it seemed so weird and cool to me. Although he was working a seasonal job at the time, my Dad had around 20 hives. He was one of the first to be able to sustain an apiary of that size in the Yukon. He capitalized on the fireweed burns and his hives were very productive, but after a few tragedies back to back, including both wolverines and bears destroying a significant portion of his

hives, he decided to take a break and focus on his family and the development of his bush property.

I am a professional filmmaker and have been working in film in a part or full-time capacity since 2008. I worked in television and film in Vancouver until 2015, when I moved North to take a break from the work and spend some time with my Dad. He was diagnosed with COPD in 2002 but hadn't made our family aware of it until 2012, when his illness became more obvious and he started to require oxygen support.

Since moving back to the Yukon my filmmaking career has picked up and I have moved into documentary filmmaking. In 2017 I resigned from my part time job as the Executive Director of the Screen Production Yukon Association, and incorporated a production company with my partner called Midnight Light Media.

We are hoping to have the Canadian premiere of *How to Bee* at the Available Light Film Festival in Whitehorse this February, but have applied to over 20 festivals worldwide. The film is also set to have its television premiere on the Knowledge Network next fall - we are negotiating the date at the moment, but are hoping for October.

Do you have any early memories of your dad's bees?

I do! The film actually starts with one of my most distinct memories of beekeeping in the early days. Though the memory is actually not mine, its my dad's, it is one of those family stories that gets told so many times that it is impossible to separate story from memory. My dad had

taken me out with him to check on his hives and I was observing the honey bees coming in and out of the hive, and hanging out at the front of the hive. I watched their thoraxes pumping and said, "Hey dad, the bees breathe with their bums, hey?" Of course my dad thought that was pretty funny.

My own early memories are more sting-based. I remember my older brother poking a front entrance with a stick and me getting stung for it. I remember the sticky mess of the kitchen during extraction time, and chewing huge wads of cappings and honey mixed together and calling it bee gum. The smell of burning burlap is certainly a nostalgic one, that and warm honey air wafting out of the hand-cranked 10 frame extractor that I still use today.

What was the impetus for the film - making something about your dad? Or did it start with him teaching you about beekeeping, and then you thought about making a film?

In 2014, before I decided to come back home for an extensive visit, I was in Whitehorse in July to celebrate my Dad's 70th birthday. After my Dad retired he had started dabbling in beekeeping again and was maintaining 2 – 4 hives. He asked me for help moving a hive while I was visiting, and it seemed like the first time he had ever asked me for that kind of help. We went on a late night hive-moving mission, and I lifted a hive for the first time; something about the experience felt really cool. We checked the hive the following day and I realized I really hadn't learned much about beekeeping before then, and I also realized how much my dad was going to start to need help with the bees if he was going to continue doing it.

My dad had a very different adulthood than I did. He spent a long time living and working in the bush and I was always impressed and proud of all of his adventures, but as our family expanded his former hobbies and vocations like trapping, dog mushing and beekeeping took a back seat. My early childhood memories were speckled with pieces of those things, but I always felt that as my father's daughter, I had missed out on learning them. Lifting that hive out of the back of the truck made me feel like I could maybe keep bees, and be a bit more like my dad after all.

The following summer I returned to the Yukon - I was sick of city and film contracting life in Vancouver and felt like I needed to spend some time away from that world to get more grounded. I was in denial about my Dad's illness but also thought that it would be a good opportunity to spend time with him – the project of learning to keep bees seemed like a good way to pitch in, but it also felt like a very deliberate way to spend some quality time with my dad, so I asked him to teach me. Being a filmmaker, I decided to film it. Part of me knew that time with my dad was limited so I needed to preserve it, and another part of me thought it would be fascinating being able to film the first person experience of someone learning to keep bees from scratch. I didn't think the whole project through too much but felt like it would be a meaningful way to spend my time for a summer. In the end, we worked together for three summers, from 2015 – 2017, and I filmed every summer.

Where are you at with bees now – do you have your own hives? If so are they the bees that your dad had? Are you hooked?

I am still maintaining one of the hives that was from the apiary my dad and I were working together. When I first started learning from him he was maintaining an apiary of four. The last spring we had together in 2017, we opened the hives to realize that they had been completely overtaken by mites.

I remember the first mite I saw. I think it was the first my dad had ever seen in the Yukon. This was midway through the summer we started working together (2015). It was a really sunny day so I had pulled a frame out of our more docile hive and propped it up between two boxes so I could film some super close-up footage of the bees with a macro lens. I spotted a drone, recognizing the shape from the text-book my dad had recommended I read. The mite seemed huge sitting on the edge of a drone's eye. I brought it over to my dad and he confirmed that's what it was. The following summer, many Yukon beekeepers had mites, and there was much debate on how to treat for them.

My dad's illness had progressed significantly by that time and he said that if we were to get new hives, they would have to be mine. I decided that I would get three. I'd definitely say I'm hooked and would love to continue to maintain 1 – 4 hives in a hobbyist capacity, but as my dad would often say, "life is what happens to you while you're busy making other plans", and life may lead me somewhere else. One thing is for sure, and that is that I would like to have bees when I settle down and have a family.

Beekeeping brought me closer to my dad in many ways and proved to be a wonderful way for me to connect with him. I definitely feel closer to him when I am working with my bees – though my dad was always far more impressed with my filmmaking abilities than my beekeeping abilities. I always hear him in my ear now, "You're not gonna light the smoker? Slow down, you better light the smoker, don't move too fast, careful!" It is comforting now to be with the bees and be able to think of what he would do in a particular situation, and to have those three years of working together for me to draw upon; that feels pretty special.

To see the trailer for the film, please visit howtobee.ca. ❀

Bee Research Update from UBC

BeeOmics Project Update

by Alexandra Sébastien

Alexandra Sébastien

The past few months have been extremely busy and rewarding for the BeeOmics project. You may remember that this is a large-scale project aimed at promoting honey bee breeding using new protein markers. Multiple laboratories across Canada are working together to collect information on traits such as honey production, docility and varroa resistance. Overall, we sampled ~1,000 colonies in 2016, and ~500 colonies in 2017. The section of the lab focusing on the proteomic data is nearly completed for the entire project. All the 2016 samples have been analyzed and the proteins have been identified, which took the mass spectrometer (the instrument that collects protein sequence and abundance information) running for eight continuous months. Now, intense data analysis associating both field work and lab data will start to discover potential key protein markers linked to the many colony traits we recorded in the field. While our computers are working, we are also gathering data on the samples collected in 2017. Once the 2017 samples are analyzed and their proteins are identified, we will be able to test the quality and robustness of protein markers from the 2016 samples. It's just up to the computers and instruments to churn away.

Life after the Defence

by Alison McAfee

Alison McAfee

Despite my best efforts, a few tears escaped from my eyes as I closed the door behind me. My whole academic career had led up to that pinnacle moment – my doctoral thesis defence – and when I left the room to let the examiners deliberate in private it felt like a ton of bricks were lifted from my shoulders, finally allowing me to breathe.

I wouldn't be writing this article if I wasn't successful. It has been an absolute pleasure conducting my research in Leonard Foster's lab and to become a part of such strongly interconnected honey bee research and industry spheres in BC. I am fortunate to be a part of it, and am grateful to be awarded a doctoral degree along the way.

Like most long-term research projects, my path has meandered substantially since I began. Originally, my plan was to decipher the molecular mechanism of hygienic behaviour; that is, what genes are necessary and sufficient to enable bees to execute this social disease-resistance strategy? But I became distracted, as curious researchers do. What genes are changing as a varroa egg hatches and grows into a nymph and then an adult? Are genes regulated differently in male and female varroa? Are there actually more honey bee genes than we once thought? If so, what are they?

Despite the extra questions and meandering path, my interest in hygienic behaviour remained and I continue to research this trait. By now, I am not entirely convinced that there even is a molecular mechanism of hygienic behaviour, at least, not in the way I was thinking about it before. The more I ponder the topic, the more I have come to think that there are likely many molecular mechanisms, and my work has made headway in deciphering just one of them. In a way, it's kind of like my PhD: the final goal is the same, but there are many routes to get there.

What the Future Holds

Very soon, I will begin working with Jeff Pettis and David Tarpy at North Carolina State University, Raleigh (but I'll still spend a lot of my time in BC). In fact, by the time you are reading this, I will have already begun. For my post-doc, I am switching gears from social immunity to sperm viability, and I could use your help.

Some of Jeff's previous research suggests that colony failure is linked to low sperm viability within queens, and that temperature stress (heat-shock) on the queens during routine shipment is a potential causal factor.[1] Queens keep sperm alive within their spermathecae for years, but despite being one of the most critical determinants of colony health, precisely what molecular processes enable this sustained sperm viability are largely unknown. Is sperm viability mainly a queen trait, or a drone trait? Either way, can we find the genes for superior sperm storage?

I'll be tackling this question in several different ways, including laboratory tests where I will heat-shock queens to find what genes respond to this stress and corresponding plummet in sperm viability. But while a lab test is a reliable, highly controlled method of manipulating viability, the real world is not so clear-cut. To confirm that candidate genes linked to sperm viability are relevant in the field, we want to compare gene expression in spermathecae from queens heading 'healthy' and 'failing' colonies in typical apiaries.

That's where you come in. I have secured help from one collaborator, who has contributed 30 queens to this cause (half from 'healthy' colonies, and half from 'failing' colonies), but ideally, I would like at least twice as many, and possibly more. Field data is inherently 'noisy' – that is, there will be many differences between queens just because they experience different environments in their lifetimes. This means that a larger number of samples are needed to identify consistent trends. Ideally, I would like to obtain 20-30 queen samples from an apiary in the lower mainland and 20-30 samples from somewhere else (maybe Vancouver Island, maybe the Interior). The perfect samples would be from a mass re-queening, replacing roughly equal numbers of queens heading 'healthy' and 'failing' colonies at the same time, where the queens in the two groups are similar in age.

If you think this endeavour is something you might like to help me, Jeff, and David with over the next year or two, please send me an email (alison.n.mcafee@gmail.com) and we can discuss the details (i.e. organizing replacement queens, what constitutes a 'healthy' and 'failing' colony, etc.). We hope this work will provide information about the molecular mechanisms underlying sperm viability – one of the most important aspects of queen quality – which could lead to improved breeding strategies and management approaches in the future. I sincerely hope to hear from you, even if it is simply out of curiosity or you want to relay your thoughts on the project.

A Glimpse of Thesis Past

So that's what I'm up to now. But you might be wondering, what exactly did I end up doing during all those years of my PhD? The thesis itself is now publicly available in UBC's online repository (cIRcle), but it takes some stamina to get through. Here is a short summary, which is hopefully more digestible.

Abstract

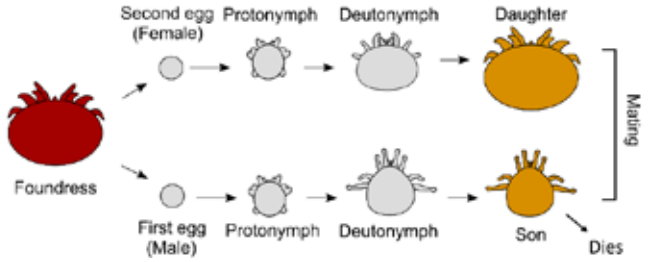
Despite being the most pervasive pest that honey bees face, our knowledge of the basic biology of varroa is surprisingly limited. Furthermore, the molecular mechanisms for how honey bees fight off varroa and other brood diseases are largely unknown. For these reasons, we developed some community-wide tools for investigating honey bee and varroa biology in the 'omics era. We then use some of these tools to support our own research into hygienic behaviour. We identified specific odorants from freeze-killed brood that stimulate hygienic behaviour and we suggest a mechanism involving interactions between the odorants and odorant receptors in the bees' antennae. Finally, we begin to develop methods for manipulating the genes for these receptors to study how they may affect the bees' ability to perceive disease odorants. Overall, these results are helping us understand the simple molecular mechanics behind a complex behaviour and further validate existing approaches for selectively breeding hygienic stock.

The Varroa destructor Protein Atlas: An On-line Tool to Support Varroa Research[2]

Inside the cells of every organism is the genome, made up of long pieces of DNA that contain instructions (genes) for making proteins, which are the molecular machines responsible for virtually all essential cell functions. Different proteins are expressed in males and females at different life stages, and knowing which ones are expressed at a given time can, among other things, help researchers figure out how mites transmit so many viruses, how to design more effective miticides, or differences between the mite's immune system and the bee's immune system. However, until now, we knew extremely little about the patterns of protein expression throughout the mite's developmental cycle and between different sexes.

Fig. 1 Samples included in the protein atlas

50 mites per sample, n=3 samples for each stage and sex

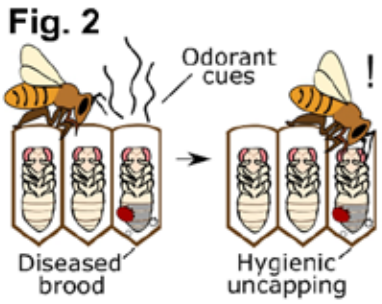


To help fill this knowledge gap, we quantified the expression of over 3,000 different proteins (using a technique called "mass spectrometry-based proteomics") across all male and female mite life stages and made this information publicly available as an interactive, web-based protein atlas. The goal was not only to learn about the molecular processes underlying development (i.e. changes in protein expression as the mite grows from egg to nymph to adult; Fig. 1) and sexual differentiation, but also to create a catalogue that other researchers can access to facilitate further hypothesis generation for their own projects. One example of something we discovered during this project is that foundress mites strongly produce enzymes for carbohydrate metabolism, possibly to support the energetically demanding task of egg-laying. Another finding was that female mites invest heavily in developing their protective cuticular armour, whereas male mites do not (which is consistent with male mites dying soon after copulating and never leaving the safety of the brood cell). Overall, the varroa protein atlas project was a first-of-its-kind interrogation into patterns of protein expression, and we expect researchers all over the world to continue using it in years to come.

Towards an Improved Honey Bee and Varroa Genome Annotation[3]

Today, genome sequencing is relatively simple, but for that information to be useful, it needs to be annotated (that is, the gene and protein sequences must be identified and catalogued). The honey bee genome has been sequenced and annotated twice over, but evidence suggests that we are still missing a number of genes. The varroa genome annotation has

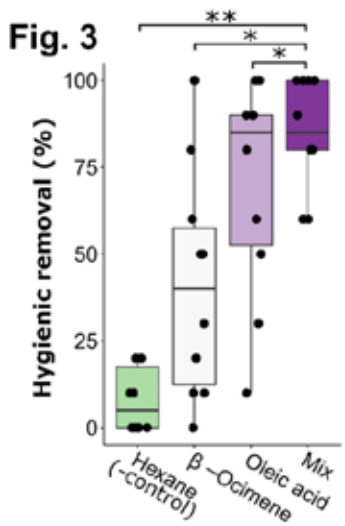
undergone far less refinement, so there are likely genes yet to be identified in the mite, too. Therefore, for both honey bees and varroa, we used the protein expression data we generated in combination with all publicly available proteomics data to identify new protein-coding sequences (via a method called "proteogenomics"). We identified over five hundred candidate new sequences in varroa and over fourteen hundred candidate new sequences in honey bees. Further work will be needed to determine the full gene sequences (some of these sequences might be different parts of the same gene, for example), but it is a significant step forward in our quest for finding the missing genes.



A Molecular Mechanism for Hygienic Behaviour[4,5]

Social insects live in dense colonies where there is a high risk of transmitting disease. To prevent contagion, workers physically remove dead or diseased brood from the colony (in honey bees, this is called hygienic behaviour; Fig. 2).

E. O. Wilson, a famous American entomologist, researched this topic extensively in the 1950s, when he identified that one death pheromone (oleic acid) was sufficient to stimulate ants to remove their otherwise healthy comrades from the colony. Recently, other researchers found that same chemical stimulates burial behaviour in termites. Now, I have found that it stimulates hygienic behaviour in honey bees, pointing to deep evolutionary origins of this chemical's role in disease prevention. We also found that oleic acid and another pheromone (β-ocimene), which is (surprisingly) emitted upon freeze-killing, synergize to enhance hygienic behaviour (Fig. 3).



Odorant binding proteins (OBPs) bind and transport odorant molecules to olfactory nerves, stimulating insects' sense of smell. Previously, Marta Guarna et al. found that two specific OBPs were among the best biomarkers for hygienic behaviour.[6] That is, by measuring the amount of these proteins (along with others) in the workers' antennae, we can accurately predict if the colonies are hygienic without ever doing a freeze-killed brood test.

We found that the very same OBPs strongly bind oleic acid and β-ocimene, whereas they weakly bind odorants that do not stimulate hygienic behaviour. Taken together, we proposed a mechanistic model where the co-opted brood pheromone (β-ocimene) works together with an evolutionarily conserved death cue (oleic acid) via interactions with hygienic behaviour biomarkers (OBP16 and OBP18) to induce hygienic behaviour. The goal now is to see if altering these specific genes makes bees more or less sensitive to disease odors, like oleic acid and β-ocimene: the ultimate test for any proposed molecular mechanism. This will push the boundaries of what is possible in honey bee research and simultaneously helps validate why these OBPs (which are actively employed in selective breeding programs today) are such good predictors for hygienic behavior. ❀

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EurBee 8 Conference, September 18-20 2018, Ghent, Belgium

by Richard Jones,
Chairman of the Eva Crane Trust

Some of the 400 plus delegates at the great hall of Ghent University for the opening ceremony. *Photo Richard Jones*

I grew up in the aftermath of World War II at a time when the terrifying proliferation of nuclear weapons saw the Cold War at its coldest. This, coupled with a school trip to France in my early teens, set the foundations of a cornerstone of my philosophy which remains rock solid today. That is that travel, meeting and talking with others from different countries and cultures is essential for the welfare and peace of the world. In the words of Winston Churchill, "Jaw, jaw is better than war, war" or more elegantly summed up in the BBC axiom "Nation shall speak peace unto nation".

"What has this got to do with bees?" I hear you ask. Well, as Director of the International Bee Research Association (IBRA) I was privileged to travel the world and attend meetings where delegates from nations that hardly recognized each other in diplomatic circles, talked happily about their bees. In 2002, I had the opportunity to exploit this when IBRA organized a conference in Wales which I called "Bees without Frontiers". It was attended by just short of 100 delegates from 22 nations. From this, the EurBee series of conferences arose: Italy 2004, Czech Republic 2006, Northern Ireland 2008, Turkey 2010, Spain 2012, Germany 2014, Romania 2016 and Belgium 2018. The next will be in 2020 in Belgrade, Serbia. The Eva Crane Trust was pleased to be one of the sponsors of this year's event. We had a major presence there for the three days and I was given the opportunity to address the conference on the work of the Trust and how it can help bee scientists.

Over the years the event has grown tremendously and there were some 420 delegates in Belgium, representing over 40 countries worldwide, well beyond the boundaries of Europe and including Canada. It is therefore a major meeting place for scientific minds. This was reflected in the very full three day programme which necessitated three and sometimes four parallel sessions. As can be seen from the following summary of the topics, just about every aspect of bee health, development and management was covered:

· Microbiota
· Ecology - New Challenges in Bee Microbe Community and Functional Ecology, Chemical Ecology
· Neurobiology and Behaviour
· Reproductive Biology
· Genetics – Resilient Bees
· Bee Health
· Ecotoxicology – Where have All the Bees Gone?
· Immunity
· Pathology – Viruses, Varroa
· Linking Foraging patterns, Food Intake, Nutrition and performance in Bees
· Bee Products
· Multiple Enemies of the Bee

This rich menu was covered in a total of 157 oral presentations and in addition to this there were 221 poster presentations on the same themes. There were also six major keynote lectures:

· Gut Microbiota by Philipp Engel of the University of Lausanne, Switzerland
· Genetics by Karen Kapheim, Utah State University, USA
· Neurobiology by Alison Mercer, University of Otago, New Zealand.
· Innate Immunity by Dan Hultmark, Umeå University, Sweden.
· Chemical Ecology by Yves Le Conte, Institut National de la Recherché Agronomique, France
· Evolutionary Biology by Tom Wenseleers, Leuven University, Belgium.

The whole intricate and comprehensive program ran smoothly with absolutely no glitches of which I was aware. It was a credit to the hosts - Professor Dirk de Graaf and his team at Ghent University and Honey Bee Valley. They ensured that EurBee is an event no scientist working with bees can afford to miss.

The content was truly mind boggling and it is impossible here to give anything other than a general overview of the Congress. The program, with online descriptions of each presentation, is available if you search for EurBee 2018. In the past the book of abstracts has become available on the Internet. The one for the previous conference in Romania is available on a simple search for EurBee 7 Book of Abstracts. Therefore, I hope that in due course, this year's event will also become available. In the meantime looking up the work of the keynote speakers on the Internet will give some insight into their fields of study.

It is nice to know that so much work is being done on behalf of our bees and we hope the benefits will eventually cascade down to receptive beekeepers everywhere. For me, it was particularly rewarding to see that several of the projects presented had been enabled by grants from the Eva Crane Trust – long may we be able to help the pursuit of good science and so help the world have happy and healthy bees. ❀

Canadian Honey Bee Health Survey: 2014-2017

submitted by Christy Curran,
Research Assistant at the National Bee Diagnostic Centre,
Technology Access Centre.

In 2014, the Alberta Beekeepers Commission (ABC) and the Manitoba Beekeeper's Association (MBA), through funding provided by Agriculture & Agri-Food Canada's (AAFC) Growing Forward 2 Program and CropLife Canada, initiated the Canadian National Honey Bee Health Survey. The National Bee Diagnostic Centre (NBDC) was contracted to manage the survey and perform the diagnostics. The survey was a four year, nationwide surveillance project designed to document the health of honey bee colonies in Canada. The purpose of the survey was to document the prevalence, intensity and distribution of pests, pathogens and parasites in Canadian apiaries. This project represents the beginning of a honey bee health database in Canada for the first time.

Christy Curran

SURVEY DESIGN

The survey was designed as a progressively expanding project, starting in the Prairie provinces of Alberta and Manitoba the first year, and to spread across Canada by the final year. Beekeepers from BC have been part of the survey since 2015. The number of samples from each province was calculated based on the number of registered hives, targeting a representation of 0.5%.

Samples were collected between July and August (some exceptions of September and a few October samples) each year before fall treatments for Varroa and Nosema were applied. Sample technicians in each province were employees or contractors of the NBDC that received skill specific training for the survey. In BC, apiary inspectors from the BC Ministry of Agriculture provided support for sampling every year.

All diagnostic procedures were performed at the NBDC with the exception of chemical residue testing of bee bread, completed at the Alberta Agriculture & Forestry Agri-Foods Laboratories branch in Edmonton, AB.

RESULTS

Sample Population

	2014	2015	2016	2017
BC	-	30	30	27
AB	123	127	138	128
SK	-	-	-	-
MB	40	40	39	42
ON	-	15	30	25
QC	-	-	35	-
NB	-	-	11	8
NS	-	-	14	16
PEI	-	-	8	7
NL	-	-	5	2
YT	-	-	4	-
TOTAL	163	212	314	255

Table 1. Number of apiary level sample sets collected per province between 2014-2017.

Nosema

Nosema spore loads were calculated as average number of spores per bee using a haemocytometer under a light microscope (400x). In 2014, prevalence and levels of Nosema were escalated, but only AB and MB were sampled that year. From 2015-2017, levels and prevalence remained consistent nationwide (Figure 1). Levels and prevalence of Nosema were consistent each year for BC. In addition, for all years, both levels and prevalence in BC were below the national averages and well below the fall nominal treatment threshold of 1 million spores per bee (Figure 2).

Figure 1.

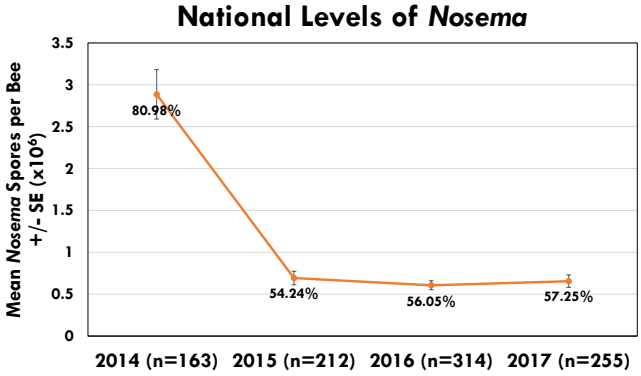
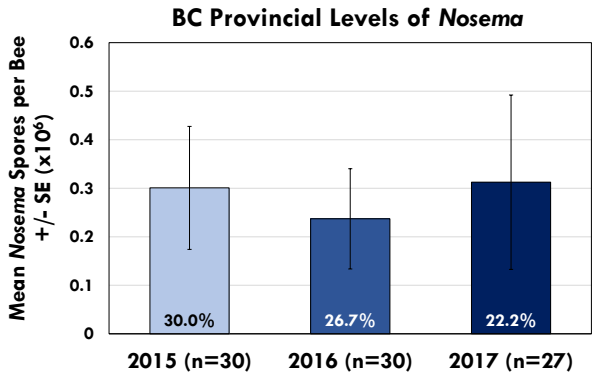


Figure 2.



Levels of *Nosema* indicated by the bar height.
The % inside each bar is the prevalence of *Nosema* in BC for that year.

Diagnostics to detect Nosema species were also performed. *Nosema ceranae* was found to be the dominant species and the presence of *Nosema apis* as a single infection was not detected by 2017 in samples nationwide (Figure 3), as well as in samples from BC (Figure 4).

Figure 3.

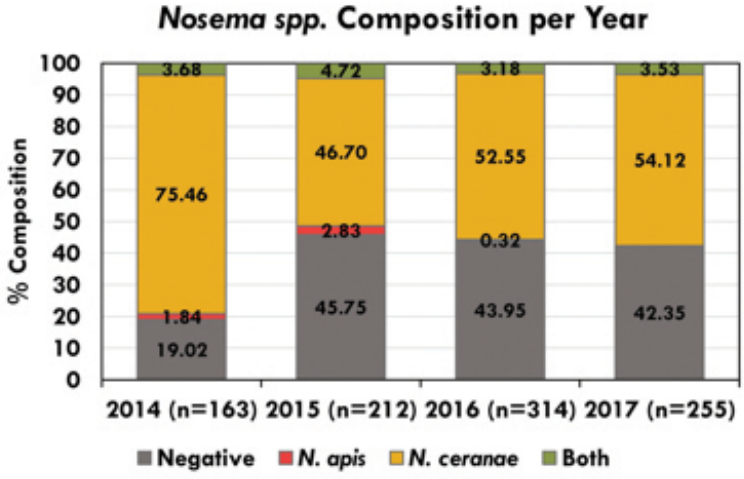
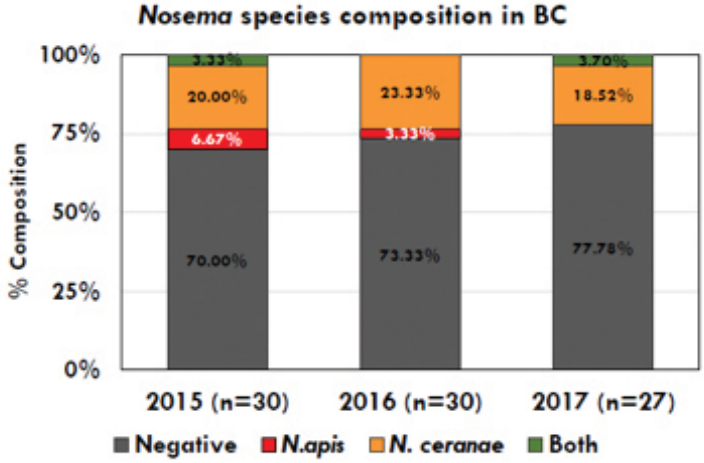


Figure 4.



Varroa

Varroa infestation levels were determined from a 70% ethanol wash of bee samples. In Canada, an increase in prevalence and infestation level was observed between 2014-2016, then dropping in 2017 (Figure 5). Samples from BC also displayed this same trend (Figure 6).

Figure 5.

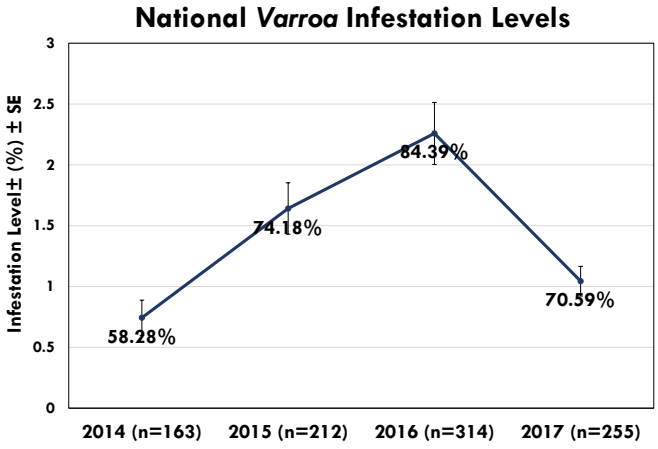
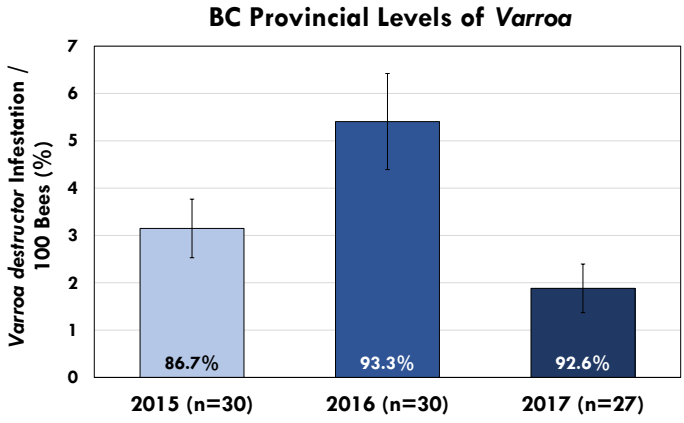


Figure 6.



Infestation levels of *Varroa* indicated by the bar height.
The % inside each bar the prevalence of *Varroa* in BC for that year.

American Foulbrood

Adult bees were tested for the presence or absence of *Paenibacillus larvae*, the bacterium that causes AFB. Each sample was cultivated in triplicate on diagnostic media plates that supported the growth of the bacterium. Samples that tested positive were further analyzed for resistance or sensitivity towards the antibiotics Oxytetracycline (OTC) and Tylosin, which are registered for the control of AFB in Canada. All samples in BC positive for AFB were sensitive to OTC; the only cases of OTC resistance were found in Alberta, and one in Manitoba (Figure 7). All AFB positive samples have been sensitive to Tylosin.

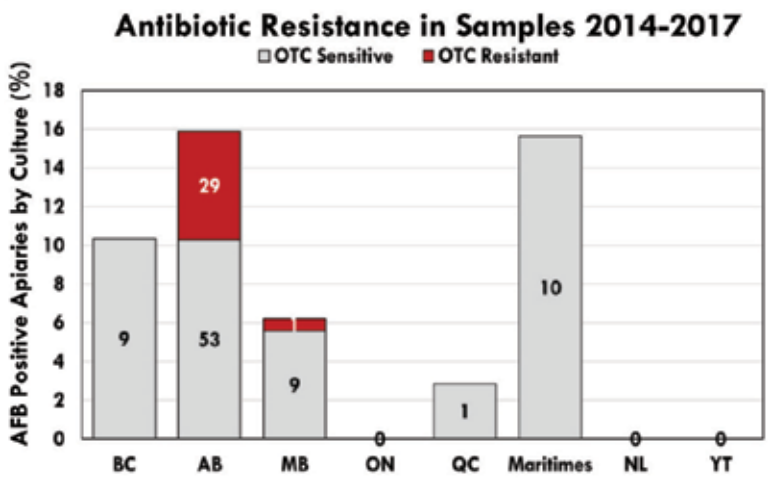


Figure 7.

Exotic Pests: Tropilaelaps and Apis cerana

Neither Tropilaelaps and Apis cerana have been identified in any samples from the survey between 2014-2017 and 2017, respectively.

Viruses
Between 2014-2016, a panel of 7 viruses were tested for including: acute bee paralysis virus (ABPV), black queen cell virus (BQCV), chronic bee paralysis virus (CBPV), deformed wing virus (DWV), Israeli acute bee paralysis virus (IAPV), Kashmir bee virus (KBV), and sacbrood virus (SBV). In 2017, 2 additional viruses were added: Lake Sinai virus (LSV) and slow bee paralysis virus (SBPV). Apiaries were scored as 'positive' for any detection level of the virus or 'negative' for the absence using extracted DNA from bee samples.

The most prevalent viruses in the survey were BQCV and SBV. ABPV was the least prevalent, found in only a few apiaries from AB, BC and MB. The recently described LSV was identified in samples from all provinces participating in 2017 and SBPV was not detected in any samples that year (Figure 8). Similar to national trends, BQCV and SBV were the most prevalent viruses each year in BC (Figure 9). * Note a positive detection by this technique is very sensitive and does not conclusively diagnose an active condition within the apiary.

Figure 8.

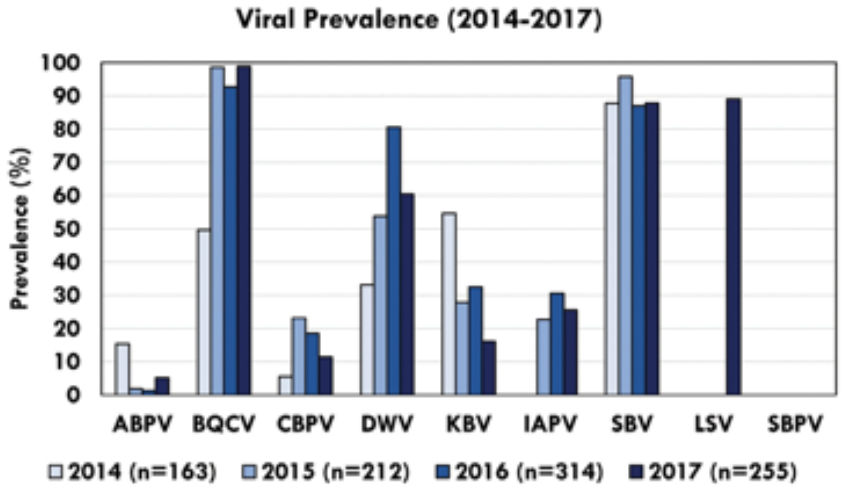
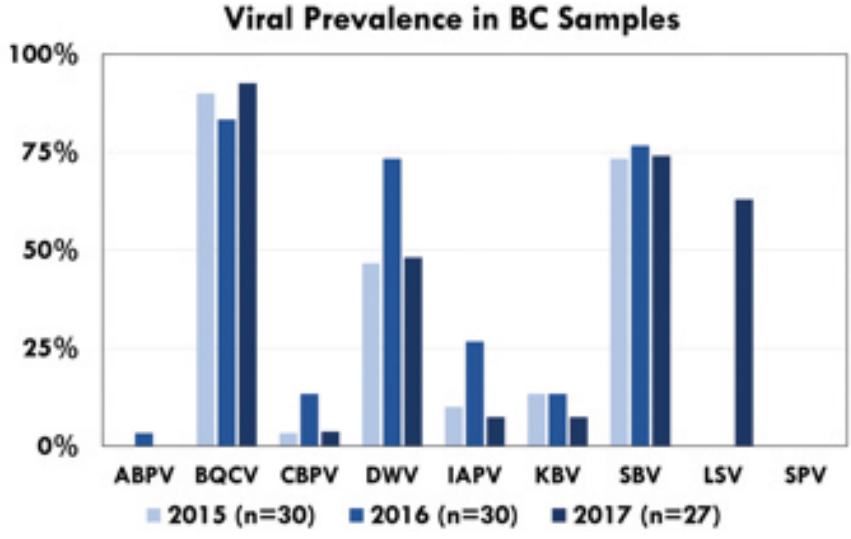


Figure 9.



*Note LSV and SPV were only tested for in 2017 samples.

Conclusion
Between 2014-2017, 944 apiary level sample sets were collected from 338 beekeepers throughout Canada, generating a wealth of data regarding bee health. From 2015-2017, 87 apiary samples from BC were collected as part of this sample set. This marks the beginning of a bee health database for the country. The information presented here is some of the information which has been put together for the survey to date; in the near future a full final report will be available on the NBDC website, www.gprc.ab.ca/research/initiatives/nbdc.

In BC, the cooperation between the BC Honey Producers' Association, Provincial Apiculturist Paul van Westendorp, apiary inspectors, and participating beekeepers have made this project possible. Despite the success of the first phase of the survey, high overwinter losses and emerging diseases/exotic pests remain relevant concerns for producers, therefore, continued monitoring is vitally important. A second phase is being planned with the goal to continue sampling again in 2019. ❀

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tel 250.755.5834 rmail: bzbees@telus.net

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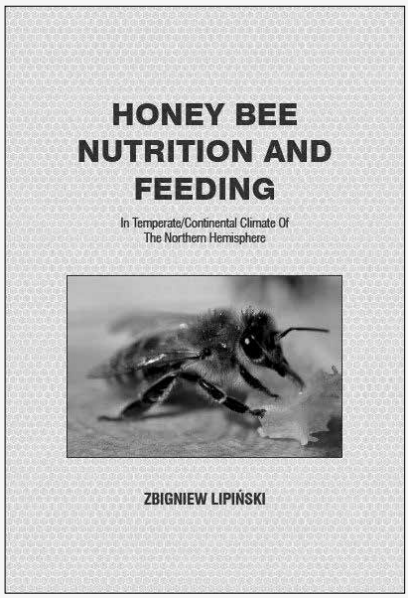
Honeybee Nutrition In Temperate/Continental Regions of the Northern Hemisphere

by Zbigniew Lipinski



This book provides a general description of honey bee nutrition in temperate/continental regions of the northern hemisphere. The text is based on a substantial body of contemporary research taken from the subject literature (over 1350 references) and the author's own experience gathered over 40 years of working with bees.

The first bees appeared on Earth about 140-220 million years ago as part of the long term evolution of wasps. These first bees fed on nectar/ honeydew, small animals, including insects, spiders and fungal spores, and then slowly switched to feeding on plant pollen.

Thus the ancestors of our present honey bees have changed from eating mostly animal proteins to plant proteins. This adaptation started with the advent of the first flowering angiosperms, plants which in fact co-evolved with bees. Hence, honey bees can still eat some fungal spores and mildew or behave as cannibals when eating even their own eggs and larvae in times of extreme hunger. When nectar is not available, bees can collect sweet-tasting juices from overripe fruit or plant exudates, as some wasps still do. Furthermore, when pollen is unavailable, bees may collect man-made protein substitutes including some plant or animal tissues such as powdered soya or dried eggs. They can even store some of these substitutes in the combs as they would pollen.

The adaptive abilities of honey bees are also reflected in the perfect management of energy derived from macronutrients with the indispensable participation of micronutrients, which orchestrate a range of vital metabolic, and physiological functions.

The crowning adaptive achievement of the honey bee's vital functions is the cognitive expression of its behaviour. This includes food supply behaviour that allows them to acquire food and collect it as duly processed stores both in their own body (fat body, haemolymph) and outside it (combs).

A nutritional shortage during larval development has life-long consequences for honey bees, leading not only to smaller workers and shorter lifespans, but also to impaired performance and productivity later in life.

Well-fed spring and summer generations of worker bees:
• live longer
• are more resistant to disease and poisoning
• raise more brood
• raise more vital queens
• raise drones richer in sperm than malnourished or hungry bees.

Similarly, better nourished generations of winter worker bees:
• have a higher body weight
• live longer than poorly nourished workers.

The increasing problem of the weakening of bees due to habitat loss, along with a growing contact with xenobiotics (ie. environmental pollutants) on monocultures of melliferous plants can weaken the whole bee colony.

Did you know that:
• more than 120 different pesticides have been found within bee hives
• the pollen or nectar of no one plant meets all the nutritional requirements of honey bees
• a lack of even a single but important nutrient can affect colony population, shorten life span, and increase disease susceptibility
• the nutritional value of bee foods is influenced by variables of environmental conditions such that colony development and survival is first limited by climate, then proteins and finally specific nutrients.

In these circumstances the beekeeper should be able to assess the alimentary needs of the honey bee colony in relation to the amount of proteins (pollen) and carbohydrates (nectar/ honeydew) collected in the field and stored in the hive. This needs to be done in order to:
• bring the colony to strength (have a large number of healthy bees) before the main nectar flow
• maintain this strength for the desired period of time
• even decrease this strength, before an expected period of lack of forage, to avoid malnutrition due to an excessive number of bees in the apiary.

To achieve the above goals the beekeeper is forced to constantly deepen his/her knowledge of bee nutrition and in particular of the nutritional value supplemental foods have on bee physiology and behaviour. Today, knowledge of honey bee nutrition is still disproportionately small compared to that of other farm animals. This radical new book on bee nutrition tries to rectify that omission and is essential reading for all those who want healthy and vigorous bees.

This book is now available through Northern Bee Books in the UK: www.northernbeebooks.co.uk

2018 BCHPA AGM
hosted by the Capital Region Beekeepers' Association in Victoria

My personal thanks to all who volunteered on behalf of the CRBA to host the conference.

My main team organizers were Jody Aylard for the Trade show, Alana Morbin for the silent auction, Jennifer Roberts for food services and floral arrangements, Bill Fosdick for the Banquet MC and Rupert Rodes for accounting. Supporting volunteers were Kimberley Bowman and Tara Beringer for the auctions, Eric Davies for Audi Visual technical services, Daryl Finlayson for trade show assistance, Paul Peterson for greeting and the group of Carolyn Hissen, Janet Fontaine, Ian McDonald and Kate Fraser for Registration and Reception.

Many familiar faces ... good to be together!

A special thanks to Larry Lindahl and his assistants Alana Morbin and Sharon Bolton for Honey Judging. As always, thanks to Bob Liptrot for his expertise in judging the Mead competition.

Thanks to the Union Club for supporting the Honey Bee industry in BC. The Union Club hosts bee colonies on their roof, donated to the silent auction and they provided the venue for the conference at $0.

I personally have received many unsolicited positive accolades from BCHPA members attending the conference. Initial responses suggest that we have hosted the conference with a quality venue, food and staff services. Looking forward to your input through the survey. Well done team!

See you all in Prince George for the 2109 BCHPA AGM, Conference & Trade Show.

Barry Denluck, Event Manager

Paul van Westendorp, Julia Common and Jeff Pettis.

Ifôn and John Boone.

Heather Sosnowski and Janet Scullion.

All photos courtesy of Paul van Westendorp

Heather Higo and Mark Winston.

Bob Fisher and Al Cobbin.

Kerry Clark with the graduates of the first BCHPA Honey Judging Course: Nancy Burkholder, Tony Lovse, Allan Cobbin, Barry Clark, Steve Hasiuk, Diane Dunaway, Joseph Bai, Donna Moseanko (front), Barry Denluck (back), Christina Rozema, Jeff Lee, Amanda Goodman Lee and Larry Lindahl (course instructor).

Jeff Pettis, Marta Guarna and Shelley Hoover.

Bob Meredith and Leigh McGinity.

Heather Higo receiving the President's Award from Kerry Clark.

Kerry Clark presenting the Lifetime Membership Award to Stan Reist.

Urs Schaufelbuhl, Zac Lamas, Deb Acheson, Jennifer Dilfer, Derek Schneider, Mike Dilfer.

BCHPA AGM Honey & Mead Competition Results

Mead
Commercial
1st – no prize awarded
2nd – Festina Lente

Hobby:
1st – Jeff & Amanda Lee
2nd – Tie Fraser
3rd – Brent Morgan

Special thanks to Bob Liptrot of Tugwell Creek Meadery for judging the mead entries.

Honey
Liquid White
1st – Nancy Burkholder
2nd – Michalina Hunter
3rd – Diana Grimshire

Liquid Golden
1st – Bradford Vinson
2nd – Chris Morris
3rd – Kathleen Suddes

Liquid Amber
1st – Jennifer Leamy
2nd – Bradford Vinson
3rd – Brent & Kellie

Liquid Dark
1st – Bradford Vinson
2nd – Donna Moseanko
3rd – Lindsay Dault

Granulated/Creamed Honey
1st – Ken Popowich
2nd – Nancy Burkholder
3rd – Jennifer & Mike Dilfer

Chunk Honey
1st – no prize awarded
2nd – Nancy Burkholder
3rd – Diana Grimshire

Comb Honey
1st – Reza Askari
2nd – Nancy Burkholder

Frame of Honey
1st – Jeff & Amanda Lee
2nd – No name was give for this frame that was inside an observation hive stand. Please contact us for your ribbon.

Beeswax
1st – Jeff & Amanda Lee
2nd - Bradford Vinson
3rd – Nancy Burkholder

Congratulations to all of the contestants. I was very pleased to see the increasing number of entrants, and am hoping to see even more in 2019. Judging was a challenge as all the entries were very close. *~ Larry Lindahl*

Club Contacts

BCHPA BRANCHES

BC Bee Breeders Branch
4880 Wells Road, Grand Forks, BC V0H 1H5
Elizabeth Huxter president@bcbeebreeders.ca 250-442-5204

Central Cariboo Branch
Box 825, 150 Mile House BC, V0K 2G0
John Hoyrup hilltop4@telus.net

Kamloops Branch
1062 Fleetwood Court, Kamloops, BC, V2B 8J4
Ed Zurawell ezclocks@gmail.com

Langley Branch
34701 Mila St., Abbotsford, BC, V2S 4Z7
Elaine Garry langleybeeclub@gmail.com 604-852-2272

North Okanagan Branch
3910 25th Avenue, Vernon, BC, V1T 1P4
Keith Rae K_S_Rae@hotmail.com 250-540-0227

Prince George Branch
77633 Toombs Drive, Prince George, BC V2K 4Z5
Sandy Ramsay sramsay@netbistro.com 250-562-1653

West Kootenay Branch
431 Rosedale Road, Castlegar, BC, V1N 4L3
Axel Krause a.krause@telus.net 250-608-7397

BCHPA AFFILIATED SOCIETIES

Capital Region Beekeepers Association
Box 43033, Victoria, BC V8X 3G2
Bill Fosdick
president@capitalregionbeekeepers.ca 250-216-7761

Comox Valley Beekeepers Association
5411 Wildwood Road, Courtenay, BC V9J 1P5
Jennifer Dilfer jenn.dilfer@hotmail.com 250-703-2669

Richmond Beekeepers Association
c/o Richmond Nature Park, 11851 Westminster Hwy,
Richmond BC V6X 1B4
Fiona Gold president@richmondbeekeepers.ca

OTHER BEE- RELATED ORGANIZATIONS

BC Peace Beekeepers
P.O. Box 2090, Dawson Creek, BC V1G 4K8
Kerry Clark kccsclark@gmail.com 250-782-6646

Burnaby Beekeepers Assoiciation
990 Cliff Avenue, Burnaby, BC V5A 2J5
Janice Bobic burnabybeekeepers@telus.net 604-298-6164

East Kootenay Beekeepers
4300 Wilks Road, Cranbrook, BC V1C 6S9
Lance Cuthill lcuthill@gmail.com 250-426-6049

Nanaimo Division Beekeepers Club
925 St. David Street, Nanaimo, BC V9S 2H8
Peter Lange
nanaimobeekeepers@gmail.com 250-753-0554

North Fraser (Maple Ridge) Beekeepers Association
24565 Dewdney Trunk Road, Maple Ridge, BC V4R 1W9
Renata Triveri rtriveri@telus.net 604-466-3254

Oceanside Hive: A Beekeepers Collective
Don Fowler
pinebug@gmail.com 250-710-9517
Oceanside Hive on Facebook

Quesnel Beekeepers Association
Patti Lalande
pdlalande@shaw.ca 250-747-2557

Salt Spring Island Honey Beekeepers
Kelly Johnson owlchemist@telus.net
Salt Spring Island Honey Bee Keepers on Facebook

Shuswap Beekeepers Club
1040 8th Ave. NE, Salmon Arm, BC V1E 4A4
Bill Lynch wjlynch@telus.net 250-832-2732

Smithers Beekeepers Association
Tom Smith
smithersbeekeepers@gmail.com

South Okanagan Beekeepers Association
Margret Purcell
margiep221@gmail.com 250-488-2410

Sea to Sky Beekeepers
Michalina Hunter michalinahunter@gmail.com
www.seatoskybeekeepers.ca

Strathcona Beekeepers
Vancouver
Bruce Little strathconabee@gmail.com

Sunshine Coast Beekeepers Association
2137 Lower Road, Roberts Creek, BC V0N 2W4
Sally Burke sally.burke8@gmail.com 604-886-4863

Skeena Beekeepers Club
Patsy Drummond
patsy.drummond@gmail.com 250-975-0286

Chilliwack Beekeeping Community
Laura Cameron - Delisle
chilliwackbeekeepers@gmail.com 604-703-0341

Stuart Nechako Bee Club
Box 595, Vanderhoof, BC V0J 3A0
Jon Aebischer sweet02@telus.net 250-567-5037

Surrey Beekeepers Association
2071 174th Street, Surrey, BC, V3S 9Z8
Thomas Schmitz
bees@surreybeeclub.ca 604-785-3403

Please contact the Editor with any changes.

Beeswax: Its Importance in the Hive and to the Beekeeper

by Ian Farber

Beeswax is a unique product, which is produced in large quantities by social bees. Beeswax can only be produced during times of a nectar flow or if the colony is fed sugar syrup as a substitute for a nectar flow. Within the honey bee colony, which can be a hollow tree cavity or man-made bee hive, there are many uses for beeswax. Beeswax is used for comb building, making cappings for sealing cells of honey or brood, and for creating construction supports to stabilize comb, especially within a tree cavity. At certain times of the year, beeswax is also needed for the production of queen cells. It may also be reused or recycled by honey bees, which will chew and soften older comb or beeswax foundation and reform it for its needed purpose within the hive.

A worker bee's abdomen consists of 7 plates or segments, and the last 4 segments are involved in the secretion of flakes of beeswax, or segments 4 through 7. The wax itself is produced by two pairs of glands within each of the segments, on the underside of the abdomen. The worker bees use the sugars in honey to make the wax: The bee's digestive system digests the sugars in honey, and, in the right aged bee, this stimulates the wax glands to secrete wax. Beeswax is secreted as a liquid, and is squeezed between the smooth upper and lower 'wax mirrors' on each abdominal segment. The wax mirrors are smooth shiny mirror-like plates, where the liquid wax hardens into flakes, and, like snowflakes, each beeswax scale is unique and different.

The worker bee then passes the wax to her mouth, by using her legs to move the wax flakes to her mandibles, where it is chewed and mixed with salivary secretions and molded as needed for comb or cell building purposes. The wax is chewed, molded, deposited, and then removed, rechewed and redeposited in a process thought to strengthen the wax, and the structure it is being used for.

It is commonly believed that 8 pounds of honey is needed to enable workers to produce one pound of beeswax. Beeswax production can begin to take place at a minimum temperature of 32°C (90°F). A pound of beeswax is made up of approximately 800,000 wax flakes. Specific worker bees produce beeswax after two to three weeks of their adult lives, but not all workers bees can secrete beeswax. To do so the worker bee must have eaten pollen in the first 5 to 6 days of her adult life. If she has not been fed pollen early in her life, she will not have the ability to secrete beeswax. Once worker bees begin foraging, they lose the ability to secrete beeswax.

The secreted wax flakes are white, not yellow. The yellow colour comes later as a result of contamination from honey, propolis and/or the old cocoons in cells. Beeswax is an organic compound primarily made up of carbon, hydrogen and oxygen atoms. In total it has about 300 components and yes, it can also retain some agricultural chemicals. The most common agricultural chemicals found in beeswax are introduced by beekeepers. Fluvalinate, coumaphos and amitraz are used as varroa treatments, and are often found in chemical analyses of beeswax.

Honey bee excreting wax flakes from it's abdomen.
Photo Debbe Krape

Festooning.
Photo Kathy Keatley Garvey

Festooning is a term which describes how honey bees hang together in clusters in the hive. During festooning, a great deal of wax production takes place, and generally the bees remain still. Honey provides the energy for the secretion of beeswax, which is stored in the honey crop, a nectar and storage compartment in honey bees.

Beeswax can have many different scents. The scents differ according to the floral source of the honey sugars used for secretion of the beeswax.

Beeswax was highly valued in historic times. Realistic portraits representing the image of the deceased were created using pigments mixed with beeswax; these were used to cover mummies in Egypt, and have been dated to 60-230AD. Beeswax was, and still is used in lost wax casting, the process by which a duplicate metal sculpture is cast from an original sculpture. Most beeswax is used in cosmetics (35-45%), pharmaceuticals (25-35%), candles (20%) and minor uses (10-20%).

Examples of waste that falls to the floor of a bee hive. Here you can see from the waste in the middle row lost pollen packets of different plants, in the bottom row a bee wing, three freshly exuded wax scales (white in the beginning and almost transparent, as long as they are not used in construction of honeycombs), and a varroa mite.

Photo Waugsberg, Wikimedia commons

It is helpful to the bees to add a little extra beeswax to plastic foundation, by rubbing a block of beeswax over the foundation before placing the new frame in the hive. This will make the plastic foundation more attractive to the bees and hopefully, they will begin drawing comb faster. Some beekeepers will paint on ultra thin coats of liquid beeswax, being careful not to fill the cell impressions.

Beeswax candles are long burning, dripless in still air and are smokeless if the correct wick size is used. A burning beeswax candle is believed to produce negative ions, which are thought to assist in stress reduction, boost energy and alertness levels, and reduce the amount of dust mites in a room. Claims have also been made on negative ions and the reduction of germs. For more information on this topic, an Internet search will provide many links to information. It is interesting to note that some movie productions call for 100% beeswax candles on the movie set. Paraffin candles are considered an unhealthy risk to those on the set, as paraffin is a petroleum-based material.

This cake of rendered beeswax is several years old and is coated with wax bloom. Note how the bloom enhances the lettering.

Photo Rusty Burlew

If you sell beeswax products, be sure to explain to your customers that all natural beeswax is soon covered by a whitish bloom. This occurs when some of the lighter beeswax components migrate to the surface. Bloom may look like a light mold, but it isn't; polishing with a soft cloth or hair dryer will quickly remove the bloom. Beeswax contaminated with paraffin will not produce this bloom, so it is an assurance of beeswax purity. The

bloom will melt and disappear at 40°C, while beeswax itself melts at about 62°C.

It is important to always melt your wax using a double boiler, or use a water-jacketed heater. Heating wax in a barbeque or on an open flame can easily cause a fire that will be very difficult to extinguish.

Be careful with your good drawn wax comb. Your bees used a lot of honey to make their comb, and destructive extraction methods, such as crushing good honeycomb seems counter productive. Going too deep when uncapping also wastes comb that will need to be rebuilt. Saving a pound of good comb will repay you with 8 pounds of honey in the future.

Many beekeepers report gathering 2 pounds of beeswax per 100 pounds of honey. If your wax to honey ratio is creeping up to 5 pounds of wax per 100 pounds of honey, you may be destroying too much comb while extracting. A capping spinner is a good investment, as it will generally spin out 10% more honey and leave you with drier cappings to render into wax blocks.

A very useful tool to have is a solar melter, and by all means use your solar wax melter to render old comb and cappings. If your comb is not too dark, consider irradiation at Iotron.

There is a local market for clean beeswax, as homemade lotions, salves, and creams are becoming very popular. Beeswax food wrapping cloths are also in vogue as is wax for candles and polishes.

Save your best beeswax blocks and review the judging criteria for entering a beeswax competition, and consider entering your best beeswax at the BCHPA AGM in Prince George in 2019.

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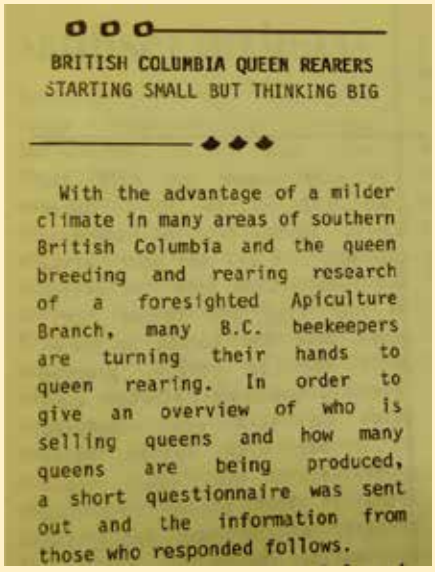
Stell, Ian, *Understanding Bee Anatomy: A Full Colour Guide*. The Catford Press.

Winston, Mark L, *The Biology of the Honey Bee*. Harvard University Press.

Ian Farber is a Master Beekeeper in the Kamloops area. Ian is also a wax chandler and makes a variety of candles from his beeswax. He has taught introductory beekeeping courses for 15 years. His honey is marketed under the Westsyde Apiaries label in Kamloops.

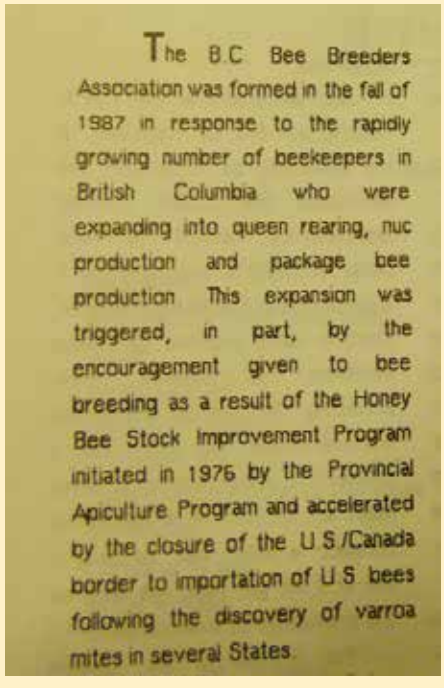
CLIPS FROM THE PAST

These clips are the initial paragraphs in articles that appear in 1985 and 1988 issues of Bee Scene (note the different spelling at that time) and were selected to focus upon the B.C. Bee Breeders Association that has been in existence for 31 years! This is in contrast to other organizations formed within the BCHPA and were short-lived: the Commercial Beekeepers Association was initiated in 1962 and disbanded in 1980. The Fraser Valley Pollinators and The Okanagan Pollinators Associations were formed in the 1970's but lasted only a few years. It appears that the BCBBA is here to stay! And for good reason - there is a real need, and that was recognized as far back as the 1970's with the initiation of the Honey Bee Stock Improvement Project centred initially in Powell River and in Vernon. A major impetus was the closure of the U.S. border for importation of bees in 1987, but before that in 1985 a "package production field day" was organized by Doug McCutcheon and was well attended. There has been great interest in new stock and in 2006 there was a contribution in BeesCene by François Petit on Russian Stock.



BRITISH COLUMBIA QUEEN REARERS
STARTING SMALL BUT THINKING BIG

With the advantage of a milder climate in many areas of southern British Columbia and the queen breeding and rearing research of a foresighted Apiculture Branch, many B.C. beekeepers are turning their hands to queen rearing. In order to give an overview of who is selling queens and how many queens are being produced, a short questionnaire was sent out and the information from those who responded follows.



The B.C. Bee Breeders Association was formed in the fall of 1987 in response to the rapidly growing number of beekeepers in British Columbia who were expanding into queen rearing, nuc production and package bee production. This expansion was triggered, in part, by the encouragement given to bee breeding as a result of the Honey Bee Stock Improvement Program initiated in 1976 by the Provincial Apiculture Program and accelerated by the closure of the U.S./Canada border to importation of U.S. bees following the discovery of varroa mites in several States.

In the past three decades much has appeared in BeesCene regarding queen and colony propagation. In 1999 an article by Steve Mitchell appears on producing packages. In the same year the importance of producing quality drones is in an article by Rodney Moody. There have been detractors regarding package production: we can recall Ernie Fuhr advising us in the strongest terms that the U.S. border should be opened for honey bee importation to sustain the bee industry. In 2002 Dale Hanson published an open letter in which he pointed out the inability to produce queens and packages early enough to satisfy the needs at the beginning of April. These are serious concerns expressed by Ernie and Dale, but I wonder if at least part of the problem is being resolved by the overwintering of nucs and mated queens.

In 1990 an article appears by Margriet Wyborn (Dogterom) on the storage and overwintering of queens, and Terry Huxter has contributed a practical and insightful article on the overwintering of nuclei. So, bee breeding has become established as an important part of beekeeping in B.C. In 2001 and 2002 Sol Nowitz presented a profile of B.C. Bee Breeders, and members of the BCBBA have become a regular feature in BeesCene.

Constants throughout the history of the B.C. Bee Breeders' Association have been contributions by Liz and Terry Huxter, with lectures at courses and Education Days and updates in BeesCene on hygienic behaviour, queen testing for varroa resistance, mite measuring methodology and much more. In reviewing publications, not only in BeesCene, but also in Apiary Branch Newsletters, it is clear that bee breeding has a serious place in B.C. Apiculture. ❀

~ John Boone

An Old Beekeeper Goes Back to School, Part 1: Should You?

by Ron Miksha

Have you ever thought of learning more about bees in a formal way, maybe at university? Perhaps you've been out of school for awhile. You figure that they can't teach an old beekeeper new bee tricks and you don't have the time or energy. Those are great excuses. I used them myself for a few years.

I left university years ago, after learning to be a geophysicist. But through university and my subsequent career, I kept on keeping bees. Finally, I became a victim of too much curiosity, and I went back to school. I wanted to learn more about bees and ecology. I could have signed up to 'audit' a few courses at the local university, but I know myself too well – auditing allows class attendance without exams, marks, and credits. Without the possibility of failure, I'd slack off, relax, miss some classes, and not learn much. I signed up as a regular undergraduate student at the University of Calgary and dove in.

Last year, I was still working in my career as a geophysicist, but I had a flexible consultant's schedule, and I managed to squeeze in some ecology classes. That's how it all started. If you decide to attend university again – or for the first time – and you've been out of school for a while, consider starting slowly and see how it goes. Start by deciding if you really should and could manage school again.

Here are some suggestions and ideas:

1. Figure out how much time you think you can put into classwork. You'll need three hours a week for lecture time for each course. Most science courses require labs. Those may take another three hours weekly per class. If you take three courses at a time, that adds up to 18 hours at university every week. Lab write-ups, studying for exams, and reading papers will double the time you'll spend. So, you need to find at least 36 hours a week to be a student. Then, there's family and your real job, the one that pays the bills. Do you have time for this?

2. Next, consider why you want to be at university. For many folks, it might be a step towards a better job. But that's not enough incentive to keep most older people engaged. You've probably had some good jobs and if you put as much hard work into networking and learning new skills as university will demand from you, you should skip college and pour your energy into finding that better job - if 'finding a job' is your motivation. I had a different goal. Though I'm over 60, I wanted to know more about bees. A lot more. I wanted to study bee ecology, especially how Canadian native bees and our lovely imported European honey bees interact. That's still my inspiration. That's why I'm in school right now.

3. If you are a 'much' older student, you need to develop some learning and memorizing strategies. Especially if (like most of us) you've been forgetting where you left your reading glasses and keys. You are probably older and wiser than most students, but school becomes harder with age. If you are ridiculously competitive, you may need to learn to settle for good marks but not the best marks. The 20-year-olds have more brain wattage. Accept that you are in university because you want to learn something, not because you need perfect marks.

4. Do you have grey hair? Do you have hair? You may be older, but if your experience is like mine, you will find that almost all the students will treat you like one of the gang, especially if you smile a lot and avoid talking about lower back pain. It's hard to believe, but you can fit in – you'll be different, but not totally separate. Just don't reminisce aloud about how things were thirty years ago. Don't tell old war stories about your amazing life accomplishments. Let the youngsters be the heroes of their own legends.

5. Don't look for special treatment. Sometimes the professors will be younger than you, but they deserve to be called Dr Klybnerski, not 'George'. (That is, if the prof's name is Klybnerski.) If you are there to learn, you are there as a student.

6. Accept yourself as you are today, and focus on your motivation to learn. I have the additional wrinkle(s) of using a wheelchair most of the time. Don't be upset or embarrassed if you aren't as quick, strong and virile as you once were. You might be an old gnarly piece of driftwood in a sea of muscular youth, but you probably aren't there to find a mate.

You can see that there's a lot to consider. Intellectual, social, financial, and physical obstacles may be too big to overcome. But if you are motivated by a need to answer a question – neonicotinoids, mite control, bee genetics, ecology – and you find yourself relentlessly resolved to deeply understand the subject, then maybe you should be at school again.

Over the next few issues of BeesCene, I will trace my motions through the university system. I'll write a bit more about my experience as a fourth-year undergraduate after my long break from school. I'll also go through some of the non-university alternatives which I considered and tried. Then, I'll describe how I was accepted to study for a biology MSc which is focused on bee ecology. This series may encourage others who have been away from school to follow a passion. Or it may serve as a warning and save some folks a lot of frustration. All I can do is give you my story, which is still being written. ❀

Ron Miksha is an MSc student researching bee ecology at the University of Calgary. He has been a commercial beekeeper but now keeps two hives behind his house in Calgary. He can be contacted through his blog, badbeekeepingblog.com.

BCHPA CERTIFIED INSTRUCTOR COURSE

The BCHPA will again be offering a course to certify instructors of Introductory Beekeeping in the spring of 2019. Course participants will be given curriculum requirements, lesson aids and instruction on teaching techniques. Enrolment is limited to 12 people.

Course Prerequisites:
1. Successful completion of the BC BeeMasters Course or equivalent.
2. Presently operating an apiary and have continuously kept honey bees for a minimum of 5 years, with preference given to those with more years of experience.
3. Alternate course work and experience can be submitted for consideration by the BCHPA Instructor Committee

Course Information:
Cost: $250
Location: Kamloops
Date: March 2019
Time 8:00 am – 5:00 pm
Info: Lance Cuthill, 250-426-6049

APPLICATION FOR BCHPA CERTIFIED INSTRUCTOR COURSE

Name: _____

Address: _____

City: _____

Province/Postal Code: _____

Phone: _____

Email:_____

BeeMasters Course: _____ (Year)

I have been a beekeeper for: _____(Years)

I presently operate: _____ (# of Colonies)

Teacher training: (__ Yes __ No)

By: February 10, 2019
Please submit this application along with payment of $250 to:
BCHPA Treasurer
P.O. Box 5603
Station B, Victoria BC V8R 6S4

Please include any additional information you would like considered.

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

BBBees
Barry Beadman
Oliver
250-498-3153
barryanddiane@telus.net
Q N

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

Black Horse Apiary
Wendi Gilson
Saltspring Island
wendigilson@yahoo.ca
250-882-2852
Q N

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
heather.higo@gmail.com
604-532-6904
Q N

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

Honey Bee Zen Apiaries
Jeff 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
250-753-9619
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
Kelowna
250-764-2877
cmmcphail2@gmail.com
Q N C

Rod Jo Moody Apiaries
Rodney & Jo Moody
Cowichan Bay
rodjo@telus.net
250-743-1939
Q

Silver Star Apiaries
Richard Springborn
Vernon
rlspringborn@gmail.com
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

Van Isle Apiaries & Bee Products
Grant Stringer
Saanichton
250-652-9834
vanisleapiaries@shaw.ca
Q N B

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

Bluebirds, Beetles and Bees ...

and a few other interesting critters

by Ted Hancock

When I was a boy it was general knowledge that if you handled songbird chicks, their parents would abandon the nest. The rationale for this rule was that songbirds couldn't abide human scent on their offspring.

In 1993, local Williams Lake naturalist Anna Roberts recruited volunteers to place nest boxes on fence posts along rural backroads in the Cariboo. Volunteers continue to maintain and replace these nest boxes. The boxes are placed in pairs so that tree swallows build a nest in one and mountain bluebirds use the other. While these birds have the occasional scuffle, they can coexist as neighbours because swallows tend to eat flying insects while bluebirds prefer crawling prey.

Driving to a bee yard one summer day a decade or so back, I saw someone messing around with one of these bluebird nests and stopped to make sure they knew the rule about not touching eggs or chicks. The bird snatcher I met turned out to be an ornithologist and doctoral student from the University of Northern British Columbia (UNBC). She politely informed me that songbirds have a very poor sense of smell so don't notice if you handle their chicks. I pointed out it was my mother who gave me this advice. The grad student said that my mother was probably more concerned about bird welfare than my education.

Nest boxes along fenceline.
Photo Ted Hancock

That grad student was the first of three grad students from UNBC who spent summers researching bluebirds in our area. From them, I learned other things I hadn't known about mountain bluebirds.

For example, I learned that bluebirds are parasitized by a species of blow fly (*Protocalliphora spp*.). The female adult blow flies lay their eggs in the bird nests each spring, and they hatch into small larvae. The larvae are mobile enough to hide in the nesting material by day, and feed on the blood of chicks by night. Once the larvae have grown big enough, they pupate. Some bluebird nests have over 100 blow fly larvae in them by the time the chicks are fully grown and ready to fledge (the most ever found was 174, or 29 larvae per chick).

The blow fly pupae in turn are parasitized by a small wasp, from the genus *Nasonia*. Upon finding a fly pupa, the female wasp injects it with venom, thus stopping it's development. She then deposits twenty to forty eggs under the fly pupa's outer coating. Fourteen days later, adult wasps emerge. The male wasps chew their way out first and wait by the hole they've made for the emerging females.

The mating behaviour of *Nasonia* wasps is odd. The female is only 2 to 3 mm long and the male is half her size. When a male finds a female (often his sister), he climbs on her back and leans over her head to lick her antenna. As he licks her antenna he releases a pheromone. If the female finds his pheromone acceptable she adopts a mating position. The male then runs to the back of the female and mates with her. Once mating is complete he returns to her head and begins licking her antenna again. The female again

Male and Female mountain bluebirds.
Photo Jeannine Randall

adopts a mating position, but this time, the male just walks away. This second episode of foreplay without any follow up apparently causes the female to swear off males as she then refuses to accept new mates.

Given the opportunity, males not involved in a mating ritual will mate with a receptive female before the courting male can leave her head and perform the task himself. Scientists call these interloping males "sneakers". Such a sneaker is technically the parasite of a parasite of a parasite - of a bluebird chick ... in a nest, on a post, in the Cariboo.

Using antenna manipulation to initiate apparent involuntary behaviour in another insect can also occur when honey bees meet small hive beetles (SHB, *Aethina tumida*). Honey bees recognize SHB as a threat when they encounter them in the hive. The bees force the beetles into a corner or crack of the hive and hold them there by keeping them under constant guard. Once imprisoned, the beetles have no access to food or water. However, SHB posses an innate ability to mimic the begging behaviour exhibited by

honey bees during trophallaxis. This involves a beetle touching a bee's mouth parts and antenna with their mouth parts and antenna.

With practice, beetles become quite adept at soliciting food from their guards. This strategy allows them to survive for up to two months. With no food available they can only live for two weeks.

Researchers suggest that these encounters show that trophallactic behaviour is hardwired into a honey bee's nervous system, and this is the reason they are unable to resist feeding their enemy. However, the attempts of SHBs to solicit food from worker bees are not always successful. When an attempt fails, the SHB quickly adopts a turtle posture as the honey bee will retaliate by trying to bite the beetle.

Scientists are still debating the definition of a "conscious mind", but generally believe that wasp, honey bee and bluebird behaviours are guided by instinct rather than a thought process. So the honey bee does not consciously think the hive beetle is an enemy and has no conflicted thoughts when it is feeding one.

An "unconscious" behaviour of bluebirds is to try and be the first to arrive at their breeding territory each spring. The Williams Lake Field Naturalist Club members have been recording bluebird arrival dates since 1998. Last year, club president Phil Ranson created a chart using the data collected and it showed that on average, the birds have been arriving 0.77 days earlier each spring.

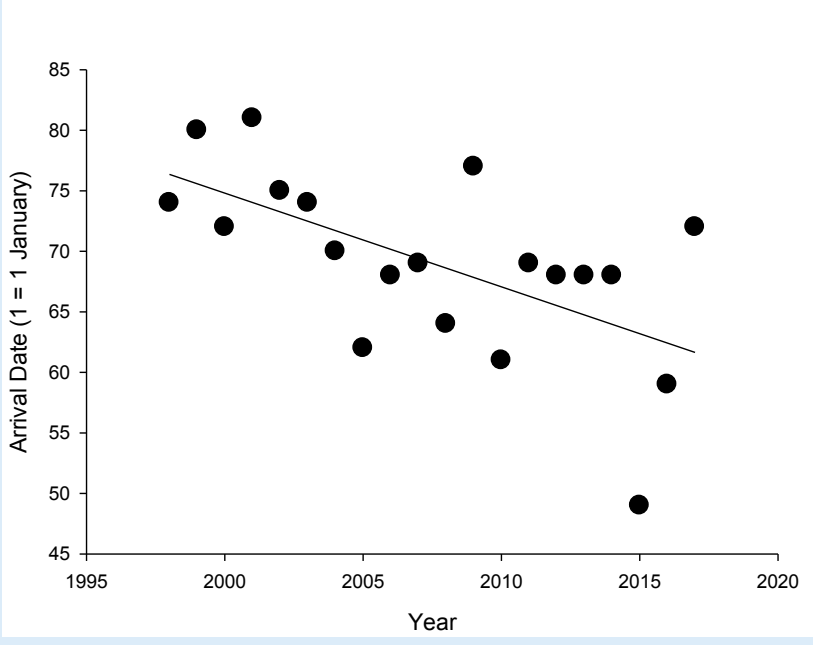
My honey bees also seemed to have noticed that winters are shorter. It is a worrying trend. However, the advantage of their unconscious mind is that they don't have to worry about things.

As the possessor of a conscious mind, I worry about how quickly our climate is changing and how it will affect the meadow larks, bluebirds and honey bees that help make our planet the paradise it is. Mother once told me that worrying about things wasn't a complete waste of time, because the things we worry about never happen. I hope she's right about that one. ❀

Bluebird eggs in nest.
Photo Jeannine Randall

Hatchlings in nest box.
Photo Ted Hancock

Mountain Bluebird Arrival Date



Dates of first arrival (i.e. first sightings) near Williams Lake, central British Columbia from 1998 to 2017 (P. Ranson, unpubl).

BC Honey Producers' Association AGM Minutes October 26, 2018 Victoria BC

Kerry Clark - Call to Order and Welcome; Introduction of Head Table and Guests.

Agenda: Amendments, Approval - Moved by Jeff Lee. Accepted by consensus, no additions.

Approval of Minutes of March 2017 Semi-Annual meeting - Moved: Ed Zurawell. Seconded: Accepted by consensus.

Business Arising from Minutes - None that are not already covered under regular reports.

Reports:

President - Kerry Clark: An exciting year for apiculture in BC. We appreciate the remarkable support we have received from the current administration in Victoria. They have provided us with a grant of $25k to pursue some much needed research into the health of bees in pollination. Beekeeping clubs throughout the province have received grants to pursue community beekeeping projects through the BeeBC program. These are things we have not had in previous years and allow us to pursue some avenues of investigation that we have only hoped to do, in past year.

We want to recognize our ongoing and productive relationship with Paul van Westendorp and the BC Apiculture department. Beekeeping remains privileged to have these specific resources directly related to our industry.

First Vice President - Jeff Lee: Role is primarily to organize the AGM meetings. Organizing committee has done a really good job organizing the event this year. There is a vendors area so please make a point of visiting.

Finances are more difficult in Victoria due to constraints on size of venue, etc. has reduced some of the expenses. As a result we are not projecting much of a profit but are projecting a balanced budget. Still on target.

Organizing for Prince George 2019 is already well underway. Advertising evident and welcome gifts on tables for everyone. A lot of their initial major issues well in hand. Competition for hotel run by Chamber of Commerce. Basic infrastructure underway and seasoned group of volunteer organizers. A number of great names are being approached as speakers. Dan and Jeff also working on refining the standard requirements and practices for host committees to ensure clarity and ease in organizing. Support still provided by BCHPA. One of the things under active consideration is creating a stand alone website that is provided for AGM – the host committee would populate and monitor.

Working to stabilize the financial handling that goes with every host committee. The host currently collects all monies then submits. Considering having conference fees and sponsor fees flow into a BCHPA account from which host committees are reimbursed. An advance would be allowed for host committee.

Question, Brian Scullion: I thought there was already a template in place. Jeff: there is but we are seeking refinement and having a contractual arrangement between BCHPA and the host committee. Question: Are the changes coming into fruition before 2019 event? Jeff: Yes, they are not major changes but making sure everyone is all on the same page regarding expectations and expenses etc.

Second Vice President – Dan Mawson: Primary role as second VP is organizing the semi-annual meeting in Kamloops. 140+ guests attended in 2017. 44 survey responses evaluating event. Overall guest 4.37/5 (goal is 4+ out of 5). 80% evaluated good or excellent. Speakers rated very high. Financially covered all expenses and small profit. Ended in the black for the event.

2019 event in Kamloops, March 22-23. New venue due to renovation at previous site. New site is Coast Kamloops Hotel and Conference Centre. Paul Kelly from University of Guelph will be keynote. Also Les Eccles, Ontario Tech Transfer, Diane Dunaway, Bee Happy Honey. Registration opens December 1, 2018. Price will be $99 which includes lunch both days. Hotel will be $125 per night.

Working on Apimondia graphics for BCHPA – presentation representing who we are as an association, industry and BC. Need HD Video Content and Photographs and see website for list of content sought. If you have people who are recognizable, require name and contact to get permission. Don't need permission of landowner unless picture is personal. Send to media@bchoneyproducers.ca.

Secretary – Christina Rozema: Basic overview of role. Kerry added increasing contact by people seeking large amounts of honey. This kind of puts us in an awkward position so Dan has created a part of website where beekeepers can list their names and products as potential supplier. We then refer contacts to this page. Other part of this section is people seeking producers to register/post their contact information there. Question, Paul van W: The largest beekeepers are not present here this morning. Stressing that people posting here need to be paid up members of BCHPA. Stan Reist stated that this information goes to John Gibeau for his group. A lot of large producers in our membership already and BCHPA continues to state that we represent all sizes of beekeepers in BC, which is different from some provinces.

Role is mainly to keep minutes from executive meetings, ad-hoc meetings, semi-annuals and AGMs. Also responsible for directing enquiries from the website and keeping track of correspondence.

Treasurer – Irene Tiampo: It's been a good year. KPMG is our accountant. Net assets $208k, 750+ members. Wildfire fund $467. Question: Research funds are channeled through BCHPA from government. It is an in and out expense. Irene will have it demonstrated for next year's finances. Jeff: we aren't taking a service fee off of these things.

Motion: To approve financial report as presented Moved: Irene Tiampo, Seconded: Jo Lomond. Accepted unanimously.

CHC Representative – Stan Reist: CHC is a very interesting assignment. Safe food for Canada act only applies for across border sales.

Apimondia 2019 – Sept 8-12, world bee conference. BC will be responsible to run the contest for Honey beer and Liquors. We will need to create a budget line item for the book and the competition - all provincial orgs will share in the profits from the competition. Two issues: how we participate in the contest and what funds are needed, second is having a booth/presence at the trade show. Notice of Motion: At the discretion of the exec we put together a budget for the honey beer/liquor competition – will come under new business.

Stock supply in the event of huge losses – Australia, New Zealand and Chile. Back up needed. Some difficulties in getting people in BC to produce more stock, and some difficulty to get people to believe in local stock produced.

Looking to harmonize health inspection and transportation across the country. Aid in the movement of stock so BC beekeepers could increase stock production and sales.

Brian Scullion: recognizing CHC for creation of bee forage document for farmers. Heather Higo: can we arrange to get a lot of these documents to support local organizations to change what they plant. Currently advertised at $5 each.

BeesCene Editor – Heather Sosnowski: BeesCene advertising doing really well. We are recovering about 80% of the cost of production via advertising. We want to move this up. Mailing costs went up a little due to number of members growing. Encourage feedback. Extra issues available for club meetings. Email Heather and ask for them. Kerry: I think everyone recognizes the quality of this publication for members.

Certified Instructors Course – Ian Farber: Certified Instructors course will be run in Kamloops 2019 – gauging interest in the course training. There is good interest and application form will be coming shortly. 5 yrs beekeeping, Master Beekeeper or equivalent level of training. Question: could the Instructor ourse be offered elsewhere in province. Ian Farber stated if there was a specific interest from a geographic area, to connect with BCHPA/Instructors.

Webmaster – Dan Mawson: Website is used A LOT. Feedback is welcome! Request for "Ask a Beekeeper" section for questions/answers. Continue to use website for advertisements. Gallery photos gratefully accepted. Newly added the nutritional labels to the store page. Honey Bee Pests and Diseases now added in new version. Added a suppliers part of website. Must be member in good standing. Only contact information and product – NOT an ad. Paid ads from BeesCene are replicated on website.

BCHPA Rebranding – Dan Mawson: 170 people responded to online survey. Suggestions from the floor: put bee on top of dogwood; second set of wings on bee; put bee above the dogwood. Is anatomical bee a deterrent to people who are afraid of bees? Stingers eliminated for friendliness.

Does dogwood only have four petals? Kerry responds that BC dogwood emblem was from 1950s there were dogwoods all along coast and the natural dogwood has numerous bracts – the provincial emblem has chosen five. Species also includes variants with 6 bracts.

Is honey dripper too stylized? Could it look more like honeycomb and dripper. Are there modifications that could be made on dogwood that could bring it home even more that

this is a BC logo even if we don't have the words "BC" there?

Dogwood is correct hexagon with petals added to it. Nice clean logos. Taking care of bees is romantic memory that people connect with. Bee logo is very similar to other logos. This is an original bee but hard to have a lot of variation/ uniqueness. 99% of the time the logo will be tagged with the text.

Vote is restricted to members in good standing with voting sticks. Results of the vote at the end of the minutes.

Committee and Task Force Reports

Librarian/Education – Ian Farber: Took over education/ librarian 12-15 yrs ago from Doug McCutcheon. The people who use the library are mostly new beekeepers. The library is mostly visual and only 3-4 textbooks. The collection is mostly old now and most originated as VHS video tapes. People don't use these anymore. Started copying these to DVDs. Shipping far reduced and people using them.

In the past two years, no requests for the library. There is an ad in BeesCene for library. VHS tapes old and brittle. Crossroads point here. Internet is a difficult place for beginners due to variety of quality of information. What should we do now. Ian would like to retire from this position prior to the Semi-Annual. Willing to work with the executive on a plan and reassessing the role. What we had was vital prior to the Internet. Should we be looking at sources online and listing those better resources to point newcomers in the right direction rather than the BCHPA library.

Potential copyright issues with posting material from library onto the website. Need to work with Executive to make a plan to deal with the materials in the library and restructure the role of Education/Librarian in the BCHPA.

How much physical material = 5+ textbooks, and probably 50-75 VHS tapes with 30-35 converted to DVD.

How do we not lose the history there. Can we save onto flash drives and archive?

Boone, Hodgson Wilkinson Trust – Alan Paulson: Who is applying to use the money – no applications this year. BCHPA uses this money to represent Industry Support for other applications. Heather Higo – South Fraser branch presented $1000 in memory of Arne Axen. Langley Bee Club annually donates $1000 to BHW and challenges other clubs to do the same.

Kerry asks people who donate to recognize someone to write up a notice that could be posted in BeesCene to remember them as time goes by.

Leonard Foster – impossible to overestimate the importance of these kinds of grants; 4-100 fold ability to increase research funding.

Archives – John Boone: SFU has our archives and are open to review. Some of the material mentioned by Ian could well be archived. 2018 is an intake year for us. Anything available to enter should be forwarded to Dr. Boone before the end of the year.

Ted Hancock has agreed to take over the archive responsibilities so that Dr.Boone can retire. Kerry has asked Ted to review material in library and if it can be archived.

Research Committee – Heather Higo: Representing the research committee created a year ago to guide our activities. Heather, Liz Huxter, Ali McPhee, Gerry McKee. Input into the BCHPA when considering research requests.

Bee health survey respondents 20-30 reported higher than normal EFB type symptoms and higher losses post blueberry pollination. Phone and in person interview. All rolled into 2018 Bee Health research project. Results will be presented tomorrow.

BHW $2500 to Abigail Chapman – examining honey bee microbiota to determine if treatments (including probiotics) affect gut flora.

NBDC Foulbrood Study – update via Patricia Wolf Veiga. Year 1 AFB/EFB identified and sent in 150+ BC samples to Beaverlodge. 80% of samples confirmed disease presence. Year 1 identifying active agents, antibiotic resistance.

BCHPA gave cash contribution $5000 per year x3 years. Exclusively for sample analysis. In kind from industry estimate at 6k over 3 years.

Honey Authentication Initiative – funding was to be given but funding has not occurred as no matching funds gained.

Bee health in Blueberries study – led by Marta Guarna, Steve Pernal, Jeff Pettis, Leonard Foster. April – June study, 5 beekeepers studied. Julia Common participated heavily, volunteers, Alberta bee inspectors and students all participated. 220 colonies + participated. Confirming pathogens, honey and pollen samples examined for contaminants.

Summary of funding – BCHPA $20,000. CHC $7,500, BC Blueberry Council provided some funding, $12,500 over two years. Project Apis m $30,000. $70k total in cash. Ag council in kind $40,000, NDBC $7,500, Hives for Humanity $5,000, Beekeepers participating (in kind) $30,000.

Social Media Committee – Diane Dunaway: Task force organized to review pros/cons of our organization's social media presence. Presence between our website and our facebook page. We need to continue to give good information.

On FB page, at present no vetted membership, people are not necessarily members of BCHPA for this page and anyone can post anything – not vetted. Sometimes reflects poorly on the organization. There are different ways to set up platform. We don't have rules in place to do this at this time.

Do we use the FB page to drive people to the web page? Beekeeping is pretty local and advice provincially may not help. It should be moderated. A lot of work for volunteers.
Solutions:
1. Put more vetting into place
2. Should it be more of an information page
3. Should we direct more people to the website

Remember the number of volunteer hours when taking on extra social media roles. Seeking input on use/purpose. Does require editing/monitoring to ensure proper information being presented and that conflicts are quickly shut down and not allowed to escalate.

Old Business

Business Reports from Research Projects
1. Hive Health in Blueberry pollination
2. 3 Year Foulbrood Study
3. Honey Authentication Initiative

See previous reports in Update section

Issues addressed over the past year:

1. Recognition of pollination income as qualifying agricultural

income
2. Clarification of value of pollination in farm land classification
3. Clarification on the entitlement for farm class of leased land outside of the ALR used for winter bee yards: property assessment appeal board, appeal was heard - 5 day hearing. A decision will be made public on the board's website.

Regional Representatives Reports
Prince George - Barry Clark: AGM 2019 in Prince George. This summer another hot dry summer. Very smoky in many places. Impact on beekeeping – lower than expected honey yields. A lot of new beekeepers. 50/50 split between buying local and packages from NZ – this year NZ packages were better survival. A couple of great field days. Organizing well underway for AGM 2019.

Peace – Kerry Clark: Another regular year for honey production. Regular moisture. Not much smoke. Sept 10 snowfall. Great Beaverlodge field day.

Northwest BC and Yukon: New Inspectors for this area.

Sunshine Coast – Alan Cobbin: We lived up to sunshine part of Sunshine Coast this year. Reasonably average honey production. Botanical garden nucs sold to new beekeepers. 6th Annual Day of the Honey Bee this year. Float in the Canada Day parade in Sechelt. Big problem with wasps this year. Lost a lot of colonies to wasps in spite of usual precautions. Club plans to take a look at Iotron trip from area. Looking to see if numbers of beeks want to do Iotron trip.

South Vancouver Island – Bill Fosdick: Healthy growth in clubs. No longer group of seasoned veterans with some newbies – many more newbies than veterans. High turnover in new beekeepers. What is happening to the equipment when they leave? Increasing the hands-on portion of the meetings. Establishing sub-groups geographically to meet separately from the monthly meetings. Doing more on educating beekeepers on the extremes of dry and wet and how this changes how we manage our bees. Building relationships with retailers to get new beeks to club meetings/websites/FB pages etc.

West Kootenays – Jeff Lee: Significant impact from smoke – honey yields suppressed. Also questions on how do we move forward. Weather related issues similar to elsewhere in province.

North Vancouver Island – Gerry Rozema: Harvest totals out of Nanaimo looking at limited to 0. Farther north up the island did ok in honey production. Forest land that is private has changed insurance requirements of $2m liability at last minute. Resolution was to get modified policy to increase current amount. Ended up not getting colonies into the bush even though insurance was purchased. Parksville group is struggling to figure out new club issues of Director's insurance etc.

Thompson/Okanagan – Ed Zurawell: Producers posting 200+lbs per hive – best honey flow in 30 years. Spring build up was good and weather cooperated, swarming at an all time high for younger beeks. Rain came at the right time. Kamloops 5 field days, some in excess of 100 people. Mites lower than normal in past 7-8 years.

BC Ministry of Agriculture – Paul van Westendorp: 2018 Production – varied production between regions. Coast below average. Southern Interior average/above average, North ?? Annual production survey – deadline Nov 2. www.gov.bc.ca/apiculture Highlights impacts on beekeeping. This is an anonymous survey.

Mystery Ailment: AFB/EFB incidences 2018 similar to previous years. Look alike but no identifiable microbe. Larval samples to bacteriology and virology, results pending and more testing Spring 2019. Not yet sent to NBDC but have back up samples. Multiple areas of province affected.

Small Hive Beetle: Very little to report. 2018 No SHB reported/found.

Veterinarian Antibiotics – two registered drugs in Canada Oxytet and Tylosin (Tylan). Farm chemicals actually fall under PMRA unlike antibiotics. Impose restriction to Oxytet and Tylosin. Veterinarian prescription required after Dec 1, 2018.

Apiary Inspection Services: list of inspectors and upcoming retirements. Is there a collective desire for Peace area beekeepers for inspector, there may be options. For people who don't have an inspector – some inspections can be when moving hives, can be inspected when reach an area with an inspector.

Request for Sunshine Coast/Powell River inspector by beekeepers from area – question of management and logistics. Review of density of beekeepers, numbers of colonies etc. is what is considered when looking at where to assign inspectors.

Question: Apiary registrations? What does this give us? Is there any control over where incoming hives go? Inspection before coming in to provide certificate. Required by law to register apiary. Not foolproof system. No system of regulatory compliance and policing. No way to restrict access to areas/locations for people placing hives. Challenges to manage mass migration of 40k plus hives from elsewhere to overwinter in BC. Beekeeper services are all free – compared to other agricultural services.

Upcoming Ministry courses: Introduction to Beekeeping – Free webinar series four sessions Saturday 0900-1130 Jan 26-Feb 16. Classroom - Fee – evening classes and field day at Kwantlen in Langley. Mar 27-Apr 24, 2019. Bee Master – tentatively planned for 2020. Information: www.gov.bc.ca/apiculture.

Appointment of Financial Reviewers: Motion: To continue with KPMG as financial Reviewer for 2019. Moved: Jeff Lee, Seconded: Stan Reist. Motion Passes.

Appointment of BeesCene Editor: Motion: Reappoint Heather Sosnowski as editor of BeesCene. Moved: Jeff Lee, Seconded: Gerry Rozema. Motion Passes.

Appointment of Webmaster: Motion: To continue with Dan Mawson as Webmaster. Moved: Jeff Lee, Seconded: Joe Lomond. Motion Passes.

Approval of Honorarium: Motion: To continue honorarium to BeesCene Editor at the level of 2018 for the following year. Moved: Jeff Lee, Seconded: Stan Reist. Motion Passes.

New Business

BCHPA contributing to a booth for Apimondia Conference: Motion: The BCHPA members approve a budget of up to 10K from our general funds to finance a booth to represent BC at Apimondia 2019 in Montreal and that we also look for funding sources from partners – provincial, federal etc. that would reduce this budgeted amount from BCHPA. Moved: Jeff Lee, Seconded: Steve Hasiuk.

Is this for BC or for the BCHPA? Does this include per diem and accommodation for people staffing this booth. Need to make up formal budget. Does this also include the judging and setting up that we need to do? Showcase beekeeping in BC, contest costs. Amendment to Motion: to say BCHPA and not BC: Moved: Ed Zurawell, Seconded: Steve Hasiuk.

Would this exclude other funding partners? Does it exclude the other types of industries related on the island. Are we responsible to collect alcohol from around the world. Is this just to advertise us – is this a vanity issue. The judging is a separate issue from this booth. BCHPA is there to receive, catalogue and display the entry. We are not responsible for the judging. This booth is just to showcase BCHPA.

Voting for blanket $10K – Alan Paulson – need to see a budget. Don't like blanket request for a lot of money. Given the opportunity to put in a booth cost for basic is $2700. Timelines for approval are tight. Delays have occurred so we are needing to catch up. We do not want to trap off other sources of revenue. $10k is what we supplied to the last Apimondia in Canada.

Voting on the amendment: In Favour: 33, Opposed: 22. Amendment passes. Booth will have a BCHPA identity. Amended Motion comments: Will this support both the booth and the volunteers to support the liquor contest we are responsible for?

Amended Motion: The BCHPA members approve a budget of up to 10K from our general funds to finance a booth to represent the BCHPA at Apimondia 2019 in Montreal and that we also look for funding sources from partners, provincial federal etc. that would reduce this budgeted amount from BCHPA. Timelines are tight.

If we defeat this motion now, do we have funding to support the contest we are responsible for. This is separate from the contest. Our participation in the contest makes us eligible for a share of the income total from all the contests. Unknown how much this could be. Amount is 5% of our account. Blaine Hardie – last Apimondia we did make some money. CHC and CAPA: some of its profit went to research. In Favour: 53 Opposed: 2. Motion passes.

There will be a report back on our progress at the Semi-Annual. Decision to proceed can be decided at the Executive level. Motion: Seeking approval from the membership that BCHPA participate in the Apimondia contest program where we are in charge of receiving entries for the honey beer and liquor category. Moved: Jeff Lee, Seconded: Gerry Rozema. Approved by consensus.

Elections:

Treasurer - Nomination: Irene Tiampo, nominated by Jeff Lee. Acclaimed.

CHC Representative - Nomination: Stan Reist, nominated by Steve Hasiuk. Acclaimed.

President - Nomination: Kerry Clark, nominated by Gerry Rozema. Acclaimed.

Trustee of BHW Trust Fund - Nomination: 2 positions open this year. Bob Meredith, Joe Lomond nominated by themselves. Acclaimed.

Confirming Regional Representatives: South Island is currently vacant – Bob Liptrot respectfully declined nomination. All other regional representatives affirmed by acclamation.

Motion to accept: Joe Lomond, Seconder: Henri St. Martin. Acclaimed.

Any other business from the floor

Results of logo survey: honey dripper received 10%, bee received 46%, dogwood 34%, 10% asked to continue the search. 70 valid ballets, 2 were uninterpretable.

Motion: That we accept logo #2 (bee) as the new logo of the BCHPA. Seconded: Jeff Lee. Question: Dan, can you clarify perhaps modifying the bee to add a second set of wings. Is the committee willing to look at this. Willing to look if the current motion is defeated. Motion passes, no review of logo.

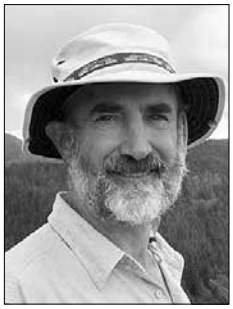
Research Priorities

Group assignment to reflect on what priorities are important for BCHPA to have around research directions.

AGM 2019 - October 2,3,4, 2019.

Meeting Adjourned at 4:33 p.m. ❀

Regional Reports



Peace Region
~ Kerry Clark

As usual, this summer's conditions in the Peace were good for bees. Near normal moisture kept forage sources producing nectar throughout the region. Some areas near Fort St John had excess smoke from wildfires hundreds of km west, but the south Peace had only a few days of smoke-darkened skies. Many beekeepers had good honey crops above the 150 lbs/colony average, some over 250 lbs from established colonies.

Perhaps resulting from large aphid populations in 2017, and mild weather in May of 2018, wasps were very abundant, the most I've seen in 25 years. Strong bee colonies seemed to deal with the annoyance without obvious damage, but some beekeepers report small colonies destroyed by the wasps.

A local Peace beekeepers group is actively communicating through an online Google group. This group hasn't yet decided whether to formalize as a society or a Branch of the BCHPA.

Fall conditions were unusual, with snow in some places by mid-September. After about a month near freezing, mid-October had a week of weather reaching record high temperatures of 17 to 20°C. Even after temperatures of -5°C in late September, some pollen was collected (probably hawksbeard) on a few days after mid-October.

Regarding varroa: In 2017, for some combination of reasons, I had well under a 3% treatment threshold in September, didn't treat, and wintering went well. Perhaps I fantasized about stock resistance and high latitude suppression of varroa, but when I checked in Aug 2018 the mite infestation was up to 10% and I had to scramble to get treatments done, especially when BeeMaid ran out of Apivar. I had a pretty spectacular mite drop with formic acid, and still don't know if I treated early enough to allow enough mite and virus-free bees for successful wintering.

Prince George
~ Barry Clark

Prince George experienced another year of extremes when it comes to weather and beekeeping. The winter was slightly milder than last year, with a healthy snow load, less than average but much better than the winter of 2016/2017.

Spring (March thru June) was wet and cold, which slowed the plant cycles in many areas, and had a negative impact on overwinter colony survival. Willow pollen was pretty much on time but dandelions seemed late in areas. Killing frosts in late May and early June set things back.

Summer was another hot one by our standards, with little moisture through July and August. Hay crops were poor in my area - yields were 40 to 60% of normal. The silver lining for beekeepers was that many farmers held off cutting their hay for a few weeks, hoping for a bit more growth. Nectar sources were available through to mid-August and the goldenrod stuck it out to early September. Another killing frost and 2 weeks of winter weather in mid-September finished any hope for fall foraging. Late September and pretty well all of October saw higher than expected temperatures; really nice weather, but no nectar.

Did I mention wild fires? Oh yeah, we had heavy smoke from around the 3rd of August through to early September. Not good for the bees; they stayed home and ate their honey stores!

It was a bumper year for wasp and hornets, and with the hot summer their focus turned to honey bees much earlier. Weak colonies were lost to wasp/hornet predation, and strong colonies were weakened. With the climate challenges this spring, both grizzly and black bear issues were reported. I lost 6 colonies to hungry bears emerging from hibernation. Other folks reported seeing more bears around and in their yards, and for some, in their bees.

Honey production, as reported at our October meeting, was low to average. Many reported not taking any honey, leaving it all for the bees. Some folks did get a harvest, mind you. One fellow reported 1300 lbs from 18 colonies. The highest yield reported was 120 lbs per hive from 2 colonies.

A delegation led by Dave and Linda DeLeenheer, from the Prince George Branch, attended the BCHPA AGM this past weekend in Victoria to advertise and promote next year's AGM and education days here in Prince George. Mark your calendars - it will be held from October 4th to 6th and promises to be GREAT.

With the warm October not many beekeepers have wrapped their hives. It's November 1st as I write this report and it started snowing today. Guess I better get to it! Merry Christmas and Best Wishes for 2019 everyone.

Thompson-Nicola
~ Amber Michaud

Wow what a summer! Bees in the Thompson-Nicola region had a heyday this summer with reports of an average of 180 lbs per hive. The June rain this summer was not so great for beaches and bikinis, but it was sure good for nectar! Now, it's time to think about the winter. Hopefully, hives are going into winter healthy and without mites (or low levels), with frames packed with honey and they are wrapped or insulated (if you do that).

The Canadian Honey Council magazine published CAPA's annual Statement on Honey Bee Wintering Losses in Canada for 2018 which reported a national loss average of 32.6%. This was more than the 2016-2017 average of 25.1%, and much higher than the long-term acceptable threshold of 15%. Weather, poor queens, and starvation were the 1st, 2nd and 3rd reasons, nation-wide, given by beekeepers that were surveyed. Most reported that bee colonies died in April, which was one of the coldest, snowiest and wettest Aprils in years.

Hives should be regularly checked from late winter onwards, and feed if you think the bees might need it and don't let the food run out! I lost a hive last year in late winter/early spring that I had been feeding, but didn't restock it soon enough because of cold weather.

Based on the old Farmer's Almanac for southern BC, the long-term forecast predicts near-normal winter temperatures, on average, with above-normal precipitation and snowfall. April and May are expected to have below-normal temperatures with above-normal precipitation. Good thing for fondant and food supplements! Now, where are my skis...

We are now meeting at the UBC Okanagan college campus in Kelowna where we are developing a collaboration with the Culinary and Carpentry departments. Our members have supplied the Chef instructors with honey samples to use in their courses. We eventually expect to set up hives on the campus but this is taking some time, as we work out the details of placement of the hives.

There continues to be a steady flow of new beekeepers checking out our club. We recently enjoyed a very informative presentation from Ian Farber on the processing and use of beeswax.

North Okanagan
~ Richard Plantinga

North Okanagan beekeepers continue to enjoy the late fall weather, with bees still foraging and bringing in pollen. After the very hot and dry spell in summer, unexpected fall rains have resulted in some good regrowth. As of the first week of November we have not had frost, but it is sure to arrive one of these days; we'll just trust the stores have not been depleted.

Some members reported wasp problems again while others had high mite levels in August and hope that their treatments took care of them. Some also experienced requeening issues with the weather seemingly not cooperating when needed for good mating. In spite of the very hot start to summer, some enjoyed an above average honey crop.

East Kootenays
~ Lance Cuthill

The fall meeting of the East Kootenay Beekeepers had the majority reporting a slightly above average honey crop. Three excellent presentations were given by local beekeepers: 1. Chris: "Small Size Foundation Disaster," 2. Caleb: "Electronic Hive Monitoring" 3. Mike: "His Video of Bumble Bee Mating."

The heavy smoke and fires were a problem for both humans and honey bees. I observed that most foraging activity was either reduced or came to stop as the poor air quality index rose to higher levels. The good news was that the honey flow was nearly finished before the smoke became a problem. Wasps once again were particularly bad this year, with reports of several hives being wiped out in the Creston area. Very

worrisome are reports of a mysterious brood disease that Axel, our local inspector, sent samples of to Abottsford for analysis.

Beekeepers have also again reported that bears have been a problem in this corner of the province. An incident of a grizzly bear attacking a man on a four wheeler not far from our Wycliffe apiary caused us to make a quick trip out to check our electric fence. In conversation with a local hunter, he reports seeing more black bears than ever before. So it looks like time for us to be more vigilant, and also to replace two of our fencer units that seem to have weak solar panels on them.

Bobby and I had a wonderful day at Amy Woodland Elementary School teaching about honey bees to grade 1 through 5. Such enthusiasm! I learned that not every hand that goes up means a question, but is more likely to be a story. One little guy waving his hand at warp speed responded to my "go ahead" with "My mommy has bees on her pyjamas!" We quickly moved on.

West Kootenays
~ Gavin Firkser

The cool breeze in the air, changing colours of many of our deciduous trees, and of course the wetness has finally marked a true end to our dynamic summer. Speaking to local members about their honey production and bee populations this year going into the winter months, I am pleased to report that despite a blanket of smoke all summer long, honey production was great and populations have remained consistently high. One of our members had asked about stacking three deeps because of the sheer number of bees populating each of her hives!

On the note of honey, the West Kootenay Beekeepers attended one of our local fairs, the Pass Creek Fair, where two of our members entered their honey into a honey-tasting contest. Although only two participants entered the competition, they both received an appreciation award, with the titled winner Ralph holding a trophy, awarding him bragging rights. Categories for the competition included Honey (liquid / creamed), Beeswax Products and Baked goods. A fun and simple way to get some community involvement and spread the word to others about beekeeping and its potential sweet earnings.

Our region has been inundated with amazing reviews about the Bee Awareness Society, run by local members Keith, Linda, Sharon and Henry. Due to their renowned "observation hive", the Bee Awareness Society has received over 20 requests from schools around BC to participate by having an observation hive in their classroom, accompanied by an educational session. One school in the West Kootenays has offered to supply a work space for hive manufacturing, in addition to the donations many local businesses have given for the cause. We at the West Kootenay Beekeepers believe in the Bee Awareness Society's cause with such a strong stance that upon a member vote, we have gladly donated $1000 to promote their endeavours.

For the near future, if in the West Kootenay's, please come by our meeting on Dec. 2nd for our annual candle making party. Party hats not included. Always a great time for all ages..

Lastly, anyone out there still scratching their head over the "best" way to overwinter your hives? Well, at our most recent club meet, a few fancy options came up: Charcoal briquettes, cat litter, Tyvek house wrap and burlap sacks with wood chips. What's your favourite method?! Stay buzzy!

Sunshine Coast
~ Allan Cobbin

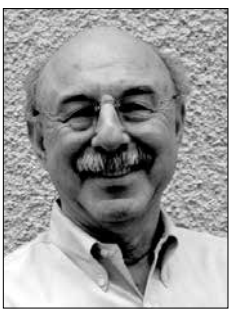
Our Fall weather was generally moderate after a summer which was almost excessively hot. This combination resulted in generating a lower than average honey production for Coastal beekeepers.

I have just returned from our Annual meeting in Victoria and was most pleased with the entire presentation. First, kudos to the Capital Region Beekeepers' Association for their excellent hosting services. Second, for their choice of accommodation at both the Magnolia Hotel and the Union Club and Third, for the excellent luncheons served and of course the Banquet. The choice of speakers on both days demonstrated Jeff Lee's and the Executive's thoughtful and varied selections. On a more personal note, I want to thank Larry Lindahl and Barry Denluck (the Event Manager) for their efforts in presenting the Honey Judging Course. It was most detailed and informative and I know that all participants will pass along valued information to any beekeeper interested in entering their products in any future competitions.

Just prior to our Club's September meeting, we treated our 8 Botanical Garden colonies with Formic Acid, and the type of treatment was of interest and value to some of our newer members. Our next meeting is scheduled for Nov. 11th at which time one topic of discussion will be the use of Iotron. I have just received my copy of the latest *HiveLights* and noticed that our long-time member Harry Meier's photo graced the cover, with a shot of his colonies from Lehigh Materials in Sechelt. Last year one of his photographs was on the cover of our own *BeesCene* and I suspect that this is a most unusual achievement. Kudos to you, Harry!

One major concern in the past few weeks has been the proliferation of wasps attacking our colonies. Almost all members have lost hives in spite of the usual preventive measures being taken. It seems that this problem is occurring throughout the province but it surely is the worst that I have seen in my many years of beekeeping, both here on the Coast and in Vancouver.

In keeping with problems, I am reminded of the adage that, "A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty." Not bad advice for all beekeepers. Festive Greetings to all from the Coast, and let's hope for a mild winter and a gentle spring.



Metro Vancouver
~ Allen Garr

Wasp populations are just now starting to decline as cooler weather sets in, but they have done their damage right across the province. We are in the midst of a multi-year upswing in overall populations and, while wasp colonies are conventionally thought to collapse in the fall, Provincial Apiarist Paul van Westendorp observes that it is no longer unheard of that they will make it through the winter, only to rebound in the early spring, "because we are feeding them" on the trash we dispose of in recycle bins and containers of compostable food stuffs.

If you did not do particularly well in terms of a honey crop this year you are not alone. With a wet, cool June and a drought for July and August, in this neck of the woods honey production proved to be poor.

The fall weather so far has been puzzling. If we can't blame President Trump, we can at least point a finger at climate change. Where we are in the Lower Mainland, as I write in early November, bees are bringing in pollen. Judging from the colours of bright yellow and orange, it is from more than the usual source of English Ivy, and even at that, it is later than usual.

You may also have noticed dandelions popping up in bloom this month: most bizarre. Some have sighted snowdrops in bloom as well, usually a very early spring occurrence, and witch hazel, a mid-winter source of pollen on warmer days, has been spotted in bloom.

That said, at this point most beekeepers have put their hives to bed, and have finished whatever fall treatment they apply to reduce mite populations. By now they have stopped feeding for winter and have placed insulation on top of their hives as well as, in some cases, wrapped hives with tarpaper, and put either granulated sugar or sugar cakes on top of the inner covers.

There has been some grumbling here regarding this year's BCHPA three-day Annual General Meeting in Victoria. It was, arguably, for people on the Mainland in particular, the most expensive event in the organization's history, given that the full freight of ferries, food, hotel, parking and conference fees could have come in easily at a worth of $900. And just imagine holding a beekeepers' gathering in a facility - The Union Club - that has a dress code. Hopefully next year's arrangements in Prince George will be more inviting.

North Vancouver Island
~ Gerry Rozema

The AGM in Victoria is now in the history books, and it was an interesting event with a lot of good presentations over 3 days. For us on the Island, the location of Victoria made access easier than most years, and we had a strong representation from the Vancouver Island bee clubs this time around, including a lot of folks that were attending the event for the first time.

It's November and the bees have been put to bed for the winter. Late summer was productive for those of us in this area, and a general theme the farther north you went on the island, the more productive the summer was. Honey crops were reported as dismal in the Nanaimo area, but average as we moved north into the Comox Valley, with some reports of above average from farther north of Campbell River. We were only affected by smoke from forest fires for a few days, so the fire season was not a major driver for us this year.

I find it interesting when writing a report for the *BeesCene* to look back at reports for the same period from years gone by. Our island version of winter seems to have arrived; we've had numerous systems move through with high winds and torrential rains over the last few weeks, but temperatures remain quite warm. Last year at this time, when writing my report, I was bemoaning the snow falling. This time around I'm looking out the window and it's a rare sunny day, the hawksbeard is showing yellow flowers and a few honey bees are out on those flowers. What a difference from year to year.

Cariboo Region
~ Ann Carter

This "winter" report is always written in November and usually with a little snow to set the mood. Today it is above zero and the ground is bare. The bees have been bringing in masses of colourful pollen during brief flying hours, and dandelions are appearing. Climate change?

Looking back on this past beekeeping year it has been different for everyone. Record breaking rain in June, an old fashioned hot July and early August, then significant cooling due to smoke coverage for the last three weeks of August. Some plants recovered during this cooler smoky period and produced lots of nectar. Others stopped blooming until the sun returned. A wet and cool September followed; the bees

seemed happy with forage. My bees fortunately turned this into a huge honey production season and appear strong and healthy heading into winter. Others in the area with different microclimates and forage had average to slightly below average honey production.

In August, the Central Cariboo Beekeepers Club had a honey extraction demonstration. It is always interesting to learn a few tricks and energy savers even after years of extracting! The club rents out two extractors and a sump to members for a nominal fee. These are in high demand.

September saw the club take part in the annual two day Harvest Fair in Williams Lake. The appeal of bees and the interesting display attracted a lot of very positive attention.

November saw the club discussing grant opportunities for local projects. Members decided to apply for funding to hold a queen rearing workshop locally, as well as to possibly purchase seed to replace forage lost locally to fires and extensive highway four-laning. On this note, we had a "seed bomb" making demonstration, sending participants home with dirty hands and little clay/compost seed bombs!

Next on the agenda is our annual "So you think you want to keep bees" community session. This free session helps potential beekeepers know what the costs, time commitment and equipment needs are for beekeeping and informs them of beginner courses. It also creates an awareness of bee stock ordering timelines, decreasing the late May clamour for bees by new want-to be-beekeepers.

Now that bees are fed and tucked in for winter, we wish each other and all of you success in overwintering, and Season's Greetings!

Fraser Valley
~ Courtney White

The season finished up here in the Fraser Valley with another gorgeous autumn. Mite loads seemed to be higher this year (perhaps because of the early spring?) and additional treatments were needed in some areas. For most of August it was just too hot for Formic Acid, so Oxalic Acid and Apivar were more practical treatments this summer. Syrup feeding finished up in mid October. Wasps continued to be a problem throughout the season. With all the warm fall days, they were still flying at the start of November. ❀

Congratulations to Courtney and her family on the addition of a baby girl, Evera Mae Hawkins, born October 20th 2018, 7 lbs 4 oz. Blessings from the beekeeping community in BC!

Arne Axen

When I first me Arne, I was a hobby beekeeper. Arne had a reputation as an excellent breeder and produced gentle and productive queens and nucs. For about 30 years, I was one of Arne's many customers and throughout that time, I was able to benefit from his vast beekeeping knowledge as well as his passions in life, one of which is the role of government in society. Arne was highly opinionated and most often correct. One of his favourite observations was the joke he often told, "Do you want to hear the funniest joke in the world? Hi, I am from the government, and I am here to help you." He knew that government's role is primarily that of regulating bad behaviour, but he had little patience for overreach.

This leads me to a story about Arne and the New Westminster Bee Bylaw. Before there was a bee bylaw, Arne had about 15 colonies in his small yard and also a number of mating nucs. That many bees was a concern, as the bees flew down Mott Crescent, defecating on cars along the way, and the mayor's car was halfway down the block.

In about 2002, the mayor asked me to write a bee bylaw. She recognized the need for bees in our environment, but she also had concerns about public safety and the potential nuisance caused by honey bees. After researching bee bylaws across North America, I approached Arne and asked him to co-author a bee bylaw for New Westminster. Arne knew that he was the impetus behind the bylaw and although he felt that the municipality was overreacting, he nonetheless agreed to help. Over several days and a bottle of scotch, Arne contributed about 90% of the content of the New Westminster Bee Bylaw, including the first ever provision for urban mating nucs. That bylaw has since been used as a model by at least four municipalities in drafting their own bee laws.

What I appreciated most about Arne was his willingness to share his knowledge and his incredible ability to not answer my questions directly, but instead to ask me a series of questions to help me think of the answer on my own. Arne was a teacher, and a good one at that.

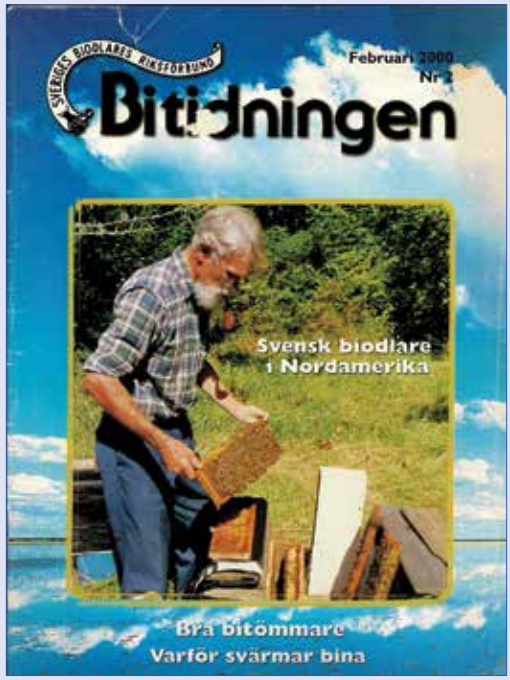
~ John Gibeau

ÅRNE ÅXEN - *"I have had a good run."*

Arne was born in July, 1936 to parents Einar and Greta Åxen.

Together with younger sisters Marie, Birgit, Anneli and Lena the family lived in Mjolby, Sweden throughout his childhood. Arne became deeply attached to nature at a young age. He started beekeeping as a hobby at the age of 6 and continued until he left Sweden at the age of 27. He completed his high school diploma in Motala, Sweden and later went on to attend university at Royal Institute of Technology in Stockholm. He worked hard to save money for university, taking time off school to earn money employed as a high school teacher, a postal worker, a mill worker, a tourist guide, and a honey producer.

At the age of 26, in 1963 he graduated with a Masters degree in Chemical Engineering. In April of the same year he met his wife Laila. They married in November, 1963 and left Sweden for North America to raise a family in early 1964. They settled in BC and had two children, Gustav and Johan. Arne was employed in BC Pulp Mills in Nanaimo, Kamloops and Gold River, and after seven years experience began working as an engineering consultant with several engineering firms. He later started his own company and after a successful few years of being self-employed as an engineer he retired at the age of 55. As Arne approached retirement, he began beekeeping again. He had a passion for queen bee breeding and was committed to continual improvement of the genetics of his bees. His bees were noted for being gentle, and productive honey producers. He continued actively beekeeping until he had a brain injury as a result of an accident at the age of 72, after which he required attendant care.



Classifieds

Honeyland Canada located in Pitt Meadows, British Columbia is seeking 2 apiary technicians (NOC 8431) for the 2019 season, full-time employment ($15-17/hr depending on experience) starting March 01 and 1 honey bee farm manager (NOC 8252) for full-time year-round employment ($23-26/hr depending on experience).Eligible for comprehensive benefits program following 3 months of work. Accommodations available. Preference will be given to candidates with experience in queen rearing/production of royal jelly. Candidates can apply by emailing your resume to **Honeylandcanada@gmail.com.**

100 strong 4-frame nucs for sale with 2018 Okanagan Queen stock. Available in May and June. Also for sale a 4-foot diameter honey wax separator with 1 HP electric motor for $100. Contact: Mark McPhail, **250-718-3028** or **cmmcphail2@gmail.com.**

Honey Onyx Apiary is looking for a general farm worker (apiary) at 3265 97 HWY, Falkland, BC. Temporary position, full time (40 hrs/week) from April-September, 2019. Wage $15/hour, on site housing provided. Job duties include various beekeeping tasks; proven beekeeping and honey extraction experience required as well as driving licence and no criminal records. Send resume to **honeyonyxapiary@gmail.com.**

EARLY QUEENS DIRECTLY FROM CHILE: from Pacific Queens. Mated queens from January until May. Selected by hygienic behaviour, pollen production and gentleness. Contact: **www.pacificqueens.com, (+56 9) 6909 3246.**

DEALERS WANTED: Interested in being a local equipment dealer for Dadant? Inquire at **dadant@dadant.com.**

FOR SALE SPRING 2019 (May 10): Registered Apiaries (Ashcroft BC). Queenright colonies (single super and doubles). Contact: Bob Gook **bjgook@gmail.com**, **250-453-0024.**

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

NUCS FOR SALE: Strong 4-frame nucs, full depth or Dadant. These are B.C. raised bees and queens. Nucs and queens available May thru September. Contact Blair and Cheryl Tarves, Similkameen Apiaries. **(250) 499-2555**.

Beautiful home and Turn-Key honey business for sale near Cache Creek, BC: custom built energy efficient 3 bedroom home and operational honey business, separate 3000 sq. ft honey house with all equipment, 100 active bee hives. Contact Todd Matthews, Century 21 Desert Hills Realty, **(250) 571-5480**.

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