BeesCene

SUMMER 2019 | Volume 35 #2

BC Honey Producers' Association

Promoting and Encouraging Beekeeping in British Columbia since 1920

To:

Letter from the editors . . .

Nobody ever lives their lives all the way up except bullfighters.
~ Ernest Hemingway, The Sun Also Rises

I wanted to share this quote not because I'm a Hemingway fan, but because I like the way he said it, though it's an oversimplification – it could easily be applied elsewhere. I immediately think of my children, little bullfighters both. They don't equivocate, or think themselves out of doing a daunting thing, they just move (for the most part) and if they're nervous, they don't show it.

I think it applies to beekeepers too...are there similarities there or is it just me? Sometimes the things we have to do seem like facing down an angry bull, not because the bees are necessarily ferocious but because it can be tricky to time things right, or to know when to move out of the way. I feel a little like this every time we are putting out one of these journals - bringing together all this information and doing it on time, and hoping it'll come out ok..I get to seeing flashes of red every so often.

I was pleased to discover Valerie Capewell while working on this issue, an artist from Vancouver Island who seems to take a similar approach to her work, and whose painting is on the cover. Now and again I've had requests from members to include more artwork in the BeesCene, and was lucky to have one recommended to me during a conversation at the meeting in Kamloops. Valerie is a real pleasure to work with, her warm personality came through despite the distance and it's been a joy to see her art. I would recommend taking a look at her Instagram account if you're so inclined, which is where I also found the following - another worthy one to share:

> It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat.
>
> *~ Theodore Roosevelt*

As Ian has mentioned in a past issue (on one of the few occasions I've been able to talk him into writing the editorial), we receive a number of bee journals in exchange for this one and it's great to have news from other associations. Recently I was sent a newsletter from the Newfoundland and Labrador Beekeeping Association (The Buzz from Here); they've been working hard on it and it shows. In their spring issue, there was a nice section which thanked all the volunteers which contribute to their association and to beekeeping in their province, all those people who aren't afraid to face down the bull, do the deeds and make mistakes (and if they're reluctant, they do it anyway).

I'll take this opportunity to also thank our many volunteers, all the people who contribute to beekeeping education and bee awareness around the province, all the folks who submit articles for this journal, and especially our tireless executive - an amazing group of people who contribute a great deal to our association. We are grateful for the work you do.

It's never too late for a weather report...! I am also grateful for we are getting some needed rain. The skies are grey and the dandelions are closed up, but the fire risk has abated a little. Best wishes to everyone for a bit of the same, and a successful summer too. ❀

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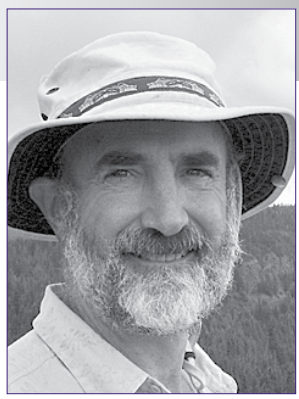
In This Issue

Our cover story:
Birds and the Bees 10, a painting by Valerie Capewell of Nanaimo, BC. Learn about Valerie and see more of her work on pages 16 and 17 in this issue.

From the President



Kerry Clark
BCHPA President

Our BCHPA March meeting in Kamloops was at a new, larger venue, and once again was a great success. I was especially pleased when someone said they had been coming to these meetings for 30 years and they keep getting better.

Just prior to the meeting, another course to certify instructors of Introductory Beekeeping was held. It was great to see Lance Cuthill instructing again, and he told us we now have over 60 certified instructors across the province.

One of the BCHPA programs that we have discontinued is the Library Committee. It used to function as a lending library - books, DVDs, VHS tapes and (years ago) films to be mailed to groups for beekeeping education. We now have a great reservoir of video programs available on our web page, so the physical mailing and lending function has been ended.

Treasurer Irene Tiampo confirmed that our association is in very good financial status, and with much appreciated support from the Ministry of Agriculture, we are supporting, and perhaps triggering, some significant larger research projects (as detailed in the spring BeesCene). The smaller Bee BC projects (funded through the Investment Agriculture Foundation) across the province will no doubt have some interesting and valuable stories to tell over the next year or so.

The summer will be busy for our Apimondia development team led by Jenn Dilfer and Dan Mawson, preparing a display for the big event in Montreal, Sept 8 to 12. We have improved our website preparations for the Annual Meeting; see details in the Semi-Annual minutes in this issue. Information about the October meeting in Prince George, and the opportunity to register, is already available.

We are talking about a new method of sharing information at the fall meeting: poster presentations, to give a summary of projects that may not lend themselves to a regular presentation. If that interests you, please be in touch.

One of our presentations in Kamloops was a report on a study we initated, which is led by Dr. Marta Guarna, on the health of honey bee colonies involved in blueberry pollination. In spite of 2018 being almost ideal weather for bees in the Fraser Valley, the observation of more frequent and more serious incidences of European Foulbrood was still apparent and able to be documented. The BCHPA is continuing to support this research, to analyze samples to be able to make conclusions about the possible beneficial effect of nutritional supplements, the role of chemicals in pollen, and other factors. This continues to be an assessment of the validity of the serious concerns of beekeepers of thousands of colonies: evidence to find answers and solutions, the win-win result. The BCHPA has many partners in this, including the Blueberry Council.

May 29th is Day of the Honey Bee, and again, the BCHPA has been invited to attend the BC Legislature for an event with support from Minister of Agriculture Lana Popham. Stay tuned. Try to find a way of promoting awareness of honey bees in your community, and ways that everyone can make the environment better for both bees and people. There is a lot to look forward to. My Best Wishes to you and your bees for the upcoming summer. Bees be with you. ❀

Beelines

News from the Ministry of Agriculture

PAUL VAN WESTENDORP, Manager, BCMA Apiculture Program
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Winter Successes and Failures

Early reports have indicated higher than normal winter losses. Actual losses have remained confusing because different colony numbers are thrown around and much of the commentary is anecdotal. It appears that the losses that were particularly high are in south coastal British Columbia, while beekeepers in the Central Interior and farther north fared better.

Unusual weather conditions are suspected to have been a major factor. In SW British Columbia, we had unusually mild winter conditions all the way to late January. And then, unexpectedly, the temperature plunged together with strong arctic outflows for six long weeks. The strong winds sucked the life out of many colonies where winter clusters had to abandon early brood patches and where the bees became isolated from remaining food reserves.

To obtain a clear account on where and why these losses occurred, we need actual numbers. In mid-May, the 2019 online spring survey form will be released. I urge everyone to take 5 minutes and submit their data anonymously. A high participation rate offers greater confidence in figures and provides an understanding about the high winter losses. The online survey form can be found on the www.gov.bc.ca/apiculture and select "Surveys".

Wasp Control

It has become popular among beekeepers to vent their frustration about wasps robbing out their colonies. There is no question, wasp populations have been on the rise in recent years, largely because of milder winters and the availability of food through most of the spring and summer seasons. And yet, before everyone runs out and embarks on a wasp-destruction mission, it is important to remember that wasps fulfill a critical role in the environment as they control many different insect populations. Almost all bee-related wasp problems involve Yellowjackets. Bald-Faced Hornets and Paper wasps pose a lower risk to honey bee colonies.

In late summer, when wasp nests reach their maximum size and their insect prey diminishes, weak honey bee colonies become an attractive target. When successful, with the robbing season in full swing, the frenzy often causes larger colonies to fall victim also. Beekeepers can reduce the predation pressure by controlling (not eradicating) local wasp populations before the end of summer. Key steps include:

- Prevent, remove or close off food sources. Open garbage cans, dumpsters and other alternative food sources through the season enable wasp nests to grow to much larger size than would normally be the case.
- Install wasp traps in June. A 2-litre pop bottle with sugar syrup and some fruit juice will attract wasps. These traps will not completely remove the wasp population but at least will reduce their abundance. This trap won't attract honey bees unless your sugar content is very high and there is a dearth. Don't put up a trap if the wasp population is low or not noticeable.
- Install entrance reducers before the start of robbing season; this is generally when the summer honey production period is starting to decline. Before the end of this period is the time to install the reducer. Since the weather may still be hot, a screened bottom board is recommended. When wasps have already started robbing, an entrance reducer may not be sufficient.
- Keep strong honey bee colonies throughout the apiary. Don't allow a weak colony among normal or strong colonies because it will be the first one being robbed out, which subsequently may lead to the loss of larger colonies.

Varroa Monitoring: Start Now!

Every year it happens. Beekeepers call in November onward with a similar story: "In the fall, the colonies were strong with brood and plenty of stores. Now, they are dead, no bees left and still, plenty of food stores. What happened?" Even though other factors may have also played a role, it is highly likely that varroa was not effectively monitored and controlled during the summer season.

Too many beekeepers do a casual check for mites in the spring and then focus all their attention on honey production until late summer. After the honey has been taken off, a mite treatment is applied for good measure. This strategy of incidental checks and treatments is simply not reliable and sufficient. The picture is complicated by the fact that we are not just dealing with bees and mites, but also with viruses that are transmitted by the mites. With the high turnover of the bee population in midsummer, beekeepers are often lulled into complacency by not recognizing the rapid population expansion of the mites and the viruses. Even when the mite population is successfully controlled in late summer, the viruses may have already built up in the all important September bee population. The September bees are the wintering bees that are supposed to live for 5-6 months. High viral levels weaken the bees and make them susceptible to the stresses of winter.

To deal with varroa successfully, beekeepers must adopt the strategy of mite management, instead of an incidental application of chemicals. This requires regular monitoring, data collection, incorporating cultural and mechanical control

strategies and the carefully-timed application of miticides. It also demands a thorough understanding of the biology of varroa and honey bees.

We recommend that you start monitoring sometime in the spring when the bees have begun foraging. Use a standardized monitoring method such as the Icing Sugar Shake or Alcohol Wash Method (refer to Bulletin #222, at www.gov.bc.ca/apiculture). Let whichever one you choose become your standard mite detection method throughout the season. It is important to record the mites you count after each test. Repeat the test every 4-6 weeks. By recording the number of mites counted, you will know exactly when the mite population has started its exponential growth phase. On a graph, it means that the mite population increase is pretty flat in early spring and then suddenly, it goes up rapidly. It is at this point of sudden increase when mite controls must be applied. Not only will it prevent further mite population increases but it will also limit the transfer of viruses into the bee population.

What to do in the middle of a honey flow? Take the honey supers off and if needed, apply a flash formic acid treatment before reinstalling the honey supers. As soon as the honey is taken off during the second half of August, test your bees promptly for mite levels and apply controls when needed.

Braula coeca - a Rediscovered Bee Companion in BC

Braula coeca is a wingless fly. It looks superficially like a varroa mite but its body is less oval shaped and since it is an insect, it has three pair of legs. It also goes by the name of bee louse. *B. coeca* is widely distributed in Canada and is considered endemic.

B. coeca doesn't parasitize bees but likes to take advantage of the food and protective environment the colony offers. It is particularly attracted to the mouthparts of young adult bees and the queen, presumably to steal the nutritious food they consume.

A bee louse on a honey bee.

The reason of mentioning B. coeca is to acknowledge the sharp observation of several beekeepers who received imported queens this spring. They went through the trouble of closely examining the queens to make sure everything was in order. When these "mite-like" bugs were noticed, photographs were taken, closely examined and their findings shared. This is precisely what beekeepers should do; "Be your own inspector!". It is fortunate in this case, no serious pest was involved.

Colony Theft, Again?

It is one of the most frustrating experiences for any beekeeper when colonies have been stolen. It is not only the loss of colonies and equipment that hurts, it is the realization that some beekeepers steal from others, which creates an atmosphere of mistrust. To most beekeepers, the thought is repulsive that some beekeepers feel justified to do this as a means to enhance their own operation. Perhaps we should not be surprised after a winter with high losses, and the price of bees being at a premium.

A number of precautionary steps can be taken to reduce the risk of theft and vandalism:

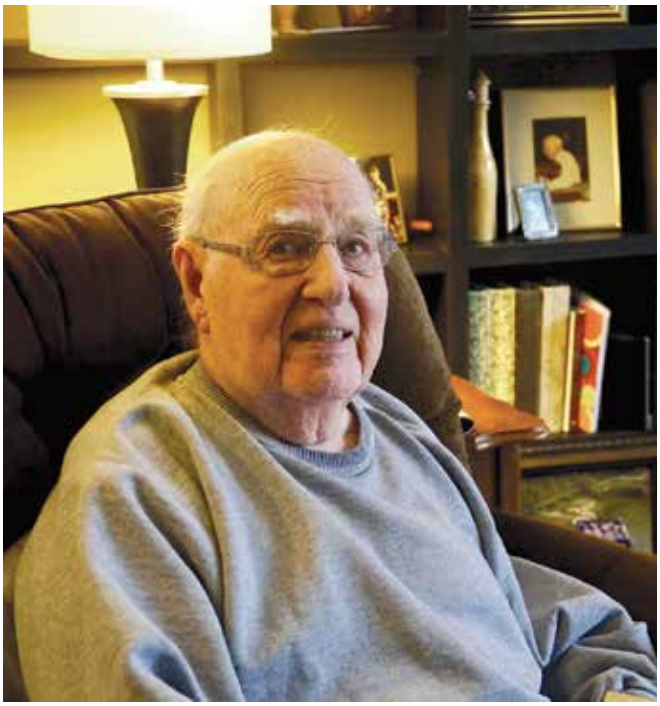
- Mark all boxes and top bars through branding. Many commercial beekeepers in the prairie provinces brand their equipment to reduce theft and keep track of where their apiaries are.
- Take a picture of the apiary.
- Place colonies in secure apiaries. Apiaries on private property and behind gates greatly reduce the risk of theft. In many areas, it is difficult to find secure locations or they may demand a rental fee, but it is worth the effort and cost.
- When theft has taken place, contact local police and public media. The media can often be very helpful in preventing more thefts to take place. While the stolen colonies may never be found, the mere mention of colony theft in the media generates public interest and sympathy which in turn, may be an effective deterrent of future thefts.

Doug McCutcheon at 90

Some beekeepers may remember former Provincial Apiculturist Doug McCutcheon. I first met Doug in the mid- to late 70s when he hired me as a summer student. Doug worked for John Corner of Vernon who was the Provincial Apiculturist at the time. While I had previous beekeeping experience, the job offered an excellent opportunity to learn about bee diseases, managing a larger number of colonies, and to be involved in a wide range of extension projects.

As a former teacher, Doug was an excellent supervisor to work for. In fact, I enjoyed the work so much that I returned for three summers. When John Corner departed for Uganda in 1983, Doug became Provincial Apiculturist and remained in this position until his retirement in 1989. He and his wife Eileen moved to Armstrong for 12 years until they returned to the Lower Mainland in the early 2000s.

It was about 10 or more years ago when Doug decided to take on the task of writing a historical account of beekeeping in BC, a project initially started by John Corner. This project grew larger and became more ambitious as time wore on. Eventually, the task became too large for Doug and he needed



Doug McCutcheon

assistance. With the support of many people including Eileen, Dr. John Boone, Ted Hancock, John Gates, Diane Dunaway and others, *A History of Beekeeping in British Columbia, 1950 – 2000* was published in 2013. This was truly a crowning achievement as it provided a detailed account of the many personalities who contributed and played a pivotal role in the development of beekeeping in BC as we know it today.

Doug turned 90 recently and it was an excellent occasion for a visit. I had not seen Doug for quite a number of years and had expected him to reflect his age. He may be less mobile (thanks to a hip fracture a few years ago), but Doug was remarkably alert, up to date and communicative. It was a true delight to have paid him a visit.

Club Meeting Attendance Through Skype/FaceTime

It is amazing to have witnessed and experienced the way technology has changed our lives in the last 20-25 years. I recall when the first Walkman came out to play CDs. Quite a miracle how a tiny laser would be able to read and interpret dimples on a surface. And then came the fax machine where an entire page could be sent instantly! Hold on, a fax machine? I haven't used one for years. Today, everything is done by Internet. My Kindle/Kobo reader downloads an entire 600 page novel in about 15 seconds and my camera's little SD-card records over 2,000 photographs in high definition, and entire movies are now recorded digitally in super high definition, and can be stored on a memory stick!

While the Apiculture Program continues to provide apiary inspection services to BC beekeepers, we also encourage beekeepers to pull out their smart phone and take a high definition picture of a suspect brood cell, beetle or hive to share with us, so that we can offer preliminary assessment on short notice.

The same technology has made it possible to do Skype/FaceTime and meet each other in real time either next door or on the other side of the globe. In the days of John Corner and Doug McCutcheon, attending beekeeper meetings often involved multiple days of travel, hotel reservations and schedules that required a lot of planning, time and expense. While the value and quality of in-person meetings can't substituted, technology has made it easy to attend producer meetings no matter where they are located. Participation at such meetings fosters support and an opportunity to address issues that affect local beekeeping communities. For any club interested in doing Skype or FaceTime, please email me. ❀

~ Paul van Westendorp
Provincial Apiculturist
British Columbia

APIMONDIA 2019

This fall presents a unique opportunity to attend an Apimondia Congress in Canada! From September 8 – 12, Apimondia, or the International Federation of Beekeeping Associations, is having it's 46th Congress in Montreal, Quebec. After a few years of hard work by the organizing committee headed by Pierre Giovenazzo from Laval University, Rod Scarlett of the Canadian Honey Council, and Stephen Pernal of Agriculture and Agri-Food Canada, the opening of this distinguished event steadily approaches. This conference represents a one of a kind occasion to learn about current beekeeping research from around the world, meet a wide variety of industry representatives, and explore topics of interest in beekeeping from many different perspectives.

In recognition of the close relationship between pollinators and farming, the health and productivity concerns that these areas share and opportunites for knowledge transfer and collaboration, the theme of this year's Congress is 'working together within agriculture, Canada's answer to sustainable beekeeping'.

Attendees will be given a warm welcome in Montreal, a city known for its hospitality. The Congress is being held at the Palais des congrès de Montréal, a beautiful convention and exhibition centre in the heart of the city with some of the city's most popular sectors only steps away, including Chinatown, the business district, Old Montreal, and the Quartier des Spectacles, or the centre for Montreal's cultural events and festivals. Within walking distance to the Palais des congrès are many hotels as well as restaurants; the culinary scene is part of what draws visitors to the city, which is known for its diverse and delicious food.

The opening ceremony of the Congress will take place on the evening of Sunday September 8.Along with welcoming addresses from the organizing committee, Apimondia officials and representatives from the City of Montreal, a short film showcasing beekeeping across Canada will be presented.

Key areas of interest which will be covered at the Congress are organized around 7 Scientific Commissions related to apiculture: Beekeeping Economy, Bee Biology, Bee Health, Pollination and Bee Flora, Beekeeping Technology and Quality, Apitherapy and Beekeeping for Rural Development. The 4 keynote speakers, well known scientists and researchers in their fields, were chosen for how their individual work aligns with current concerns in beekeeping as well as for continuity with the 7 commissions.

Gene Robinson, a professor of Entomology at the University of Illinois at Urbana-Champaign, is also director of the Carl R. Woese Institute for Genomic Biology, and director of the Bee Research Facility. His lab has been doing groundbreaking work developing large scale genomic resources to address questions around eusocial evolution in bees and wasps in an effort to understand the maintenance and elaboration of social life. Dr. Robinson's keynote speech will focus on the evolution and mechanisms of social behaviour, and in related symposia following this keynote, current work in honey bee genomics, biology and semiochemicals will be covered.

Rufus Isaacs is an extension specialist in the Department of Entomology at Michigan State University whose team focuses on insect pest and pollinator management in farming. He has also been helping to guide the Michigan Pollinator Initiative which works in pursuit of research-based solutions for beekeepers, growers, land managers and policy makers to provide economic and ecological stability. Dr. Isaacs will deliver a keynote speech on Integrated Crop Pollination, an agricultural project in Michigan that investigates the performance, economics and farmer perceptions of different pollination strategies in various fruit and vegetable crops (icpbees.org). Related symposia following his talk will include honey bee and non-apis bee pollination, as well as pollination and flora with environmental change.

The work of Peter Rosenkranz has included research on the host-finding behaviour of *Varroa destructor*. His interest in honey bees comes from a scientific as well as a practical perspective, as Dr. Rosenkranz runs his own beekeeping business. He is the director of the Apicultural State Institute at the University of Hohenheim, and has also worked in applied research in bee pathology, extension work and honey bee breeding. His presentation, Worldwide Perspectives on Bee Health, will be followed by symposia which include breeding for mite and disease resistance, as well as issues concerning emerging diseases and pests which will be delivered by the World Organization for Animal Health (OIE), the intergovernmental organization responsible for improving animal health worldwide.

The final keynote speaker will be Thomas Seeley, Horace White professor of Biology at Cornell University. He teaches animal behaviour and studies the behaviour,

social life and ecology of honey bees. He is highly regarded among beekeepers for his popular books on honey bees which are indispensible texts for those interested in this field. He is also well known for his research on feral honey bee colonies, how they differ from managed colonies and how they are able to survive and adapt to pests and disease. Recognizing that honey bees have a long evolutionary history, he applies this perspective to beekeeping to account for their ability to adapt by way of natural selection, and calls this Darwinian Beekeeping. This the focus of his keynote speech, and a related symposium on natural and forest beekeeping will follow.

The 7 commissions will be covered in a wide variety of symposia which take place throughout each of the 4 days, following these keynote presentations. Over 940 abstracts from scientists engaged in cutting edge research around the world have submitted their work to be considered for inclusion in this year's Congress; some of these will be chosen for oral presentations, while others will present their work through the poster presentations. The poster presentations will be located in an area easily accessible from the main conference rooms, and by many are considered to be the heart of the Congress, offering the opportunity for presenters and participants to interact. There are also several Round Table discussions being held concurrently with the symposia, offering participants to discuss current issues with visiting experts and scientists, as well as 'cross-cutting' symposia, bringing two or more commissions together where areas of interest overlap.

The submitted abstracts have been rated by the 7 Scientific Commission Presidents of Apimondia as well as the Canadian scientific program committee, which is comprised of 28 members from across Canada (many of whom are members of the Canadian Association of Professional Apiculturists or CAPA), and a few from the U.S. Leading this local scientific committee is Stephen Pernal, who has brought 25 years of experience in apicultural research into putting together an extensive scientific program which is representative of current research and popular areas of interest.

The local scientific committee includes sub-chairs, specialists in their fields, who have played key roles in rating abstracts for each of the 7 scientific commissions. These include Gard Otis from the University of Guelph, in charge of Rural Development; Johan van den Heever, an analytical chemist with Alberta Agriculture and Forestry in Edmonton, Alberta, for Technology and Honey Quality; Shelley Hoover, Apiculture Specialist for the Alberta Ministry of Agriculture and Forestry, for Pollination; Ernesto Guzman, Professor and Director of the Honey Bee Research Centre at the University of Guelph, in charge of Bee Health; Stephen Page of Agriculture and Agri-Food Canada is working on Beekeeping Economy, Rob Currie at the University of Manitoba for Biology, and Stefan Stangaciu, President of the Romanian and German Apitherapy Societies, in charge of Apitherapy. As a group, the local scientific committee has brought a wide array of experience and knowledge to designing a high quality scientific program to this year's Congress.

The organizing team has placed more emphasis on the inclusion of workshops the year, most of which are being held in the evenings after the regular symposia, with a few being held concurrently. Some of the topics of these workshops and their presenters include: Honey Sensory Analysis with Raffaele Dall'Olio, Opportunities for Youth in Beekeeping with Dr. Robyn McCallum (sponsored by CAPA), Bees in the City: Biology, Regulations and Thinking Big with Dr. Andony Melathopoulos (sponsored by the Canadian Honey Council), and How to Create a Successful Beekeeping Development Project with Dr. Gard Otis (sponsored by VITA North America). These workshops are a unique focus at Apimondia 2019, an opportunity for learning in the atmosphere of a small group with recognized experts.

Another Canadian touch to this year's Congress is a focus on successful beekeeping businesses from around the country from a diversity of operations and geographies. These will be presented in two separate symposia during the Congress, and will include an Alberta operation with thousands of colonies, Ontario honey packers, queen and nuc producers, a focus on beekeeping in Atlantic Canada and a honey producer in Saskatchewan. There is also a focus on three Quebec beekeeping operations in the technical tours, through which participants can visit these successful businesses to discover their beekeeping traditions, expertise, and products.

The World Beekeeping Awards is a global contest of all things related to beekeeping, including beeswax, meads and other honey beverages, cosmetics, medicines and of course, different types of honey. There are contests for best innovations and inventions for beekeeping, and for books and magazines. Honey quality is a theme of the conference, and as something new to this year's Congress, all honeys which are brought to be evaluated as part of the World Honey Competition will be tested for authenticity using NMR. Honeys will also be tested acidity, moisture and presence of antibiotics, among other qualities. Contest rules are posted on the Congress website under the "World Beekeeping Awards". All honey classes that are required to be sent for laboratory analysis must be received by July 20, 2019.

Information about this year's Congress, including the schedule of the scientific program, workshop and technical tour information, information about entering products in the World Honey Competition, travel details and hotel accomodation can be found at www.apimondia2019.com. Here you will also find information about the host city, registration details, and a list of exhibitors (over 200 and growing) which will be attending the ApiEXPO – the biggest beekeeping trade show in existence. The deadline for hotel registration is July 24, and the deadline for registration for the Congress is July 31. We hope to see you there!

Bee Research Update from UBC

Alexandra Nastasa

My name is Alexandra and I am just finishing up my Bachelor's degree at UBC this year, majoring in Biophysics. I spent all 16 months of my co-op during my degree at the Foster lab, where most of these updates come from. The focus of my personal research on bees was on improving the number of protein-coding genes we can find in their genome. In the long run, knowing more of the proteins playing a role in honey bee health can help us better understand how their biology works on a molecular level. I also spent a lot of time in the field and lab helping with projects such as the MSP project, the BeeOmics project, and the Blueberry Pollination and Bee Health project. I'll be contributing to these updates from UBC, and I'm very excited to have this opportunity to keep in touch with my colleagues and friends about their work and also write about the fascinating honey bee.

MAS and BeeOmics Update

Many of you will remember that both of these projects revolve around improving bee breeding. The MAS (Marker Assisted Selection) project specifically looks for protein indicators that a particular colony has good hygienic behaviour, which leads to a healthier hive, while the BeeOmics project takes a wider view, using many technologies to look at a variety of characteristics such as aggressiveness, honey production, and overall survival rate.

The MAS project has been somewhat adapted this year. Alexandra Sébastien ran some tests last year to see whether the antennae protein detection protocol could still work using alcohol-preserved bees rather than those immediately frozen using dry ice. As a result, this year's breeding will be influenced by mass spectrometry results from bees preserved in 70% isopropanol, a chemical readily available at pharmacies and much more accessible to the casual beekeeper. The samples are useable for up to three weeks at room temperature, and eventually, it's possible that beekeepers may be able to take advantage of such a service to make breeding decisions for their own hives.

The BeeOmics project data has all been collected, and it's time to look for correlations. Renata Borba in Alberta is currently trying to draw connections between traits in the field and genetic, proteomic, gut microbial, and pathogen-related data. Other groups are looking for trends within their own data and between the genetics, proteomics, gut microbiota, and pathogens. Amro Zayed in Ontario is working on the genomic data, while Alison McAfee and Alexandra Sébastien are processing the proteomics data here in BC. The goal for the BeeOmics project as a whole is to present their findings at Apimondia, an international bee conference taking place in Montréal this September.

Gut Feelings

It seems like people on the Internet are constantly talking about human gut bacteria; how they affect our metabolism, our health, and even our emotions. But did you know that bees have gut bacteria too? These tiny communities (formed of microbes, called microbiota in the plural) have been shown to grow in very similar ways in European honey bees raised across the planet, with the same species of bacteria regularly popping up and in relatively similar proportions, and these microbiota aren't pests. Research shows that healthy microbiota, in both humans and honey bees, can mean healthier hosts. Two students in the Foster lab are trying to learn more about how these honey bee microbiota work, and how we can potentially use our newfound knowledge to help our hives. Learn more about their projects below.

Probiotic Pros and Cons

Abigail Chapman is an undergraduate at UBC who is graduating this May. She has been working and volunteering in the Foster lab for years, and next year she will be starting her Masters degree in the lab, hoping to switch to a fast-track PhD. Her undergraduate thesis project, which she hopes to extend, explores the effects of probiotics on European honey bee microbiotic communities and immune systems.

For her project, she treated some bees with oxalic acid (an antibiotic known to kill both helpful and harmful bacteria) and some with Super DFM, a commercial probiotic marketed for honey bees. This part of her project had a focus on method development, and her results are not yet conclusive, but she did notice a few things. Most of the claims made about honey bee probiotics are dubious, so she wasn't expecting to see much of an effect. However, microbiota composition results showed that the bacterial species in the probiotic did increase its colonization of the guts of treated honey bees. This particular species is not one of the 8-9 most common species found in the honey bee gut, however, so whether its presence is helpful to the bees remains to be seen.

Her preliminary results on the effects on the immune system didn't show any significant trends in the expression of antimicrobial peptides (AMPs). AMPs act like the bee body's personal antibiotics and help protect against pathogens; an activated immune system should show increased concentrations of AMPs. A more general trend so far in Abbi's research shows that bees treated with oxalic acid, a common commercial antibiotic which kills some of the gut microbes, did have lower AMP expression overall. This supports previous research that says that the presence of microbiota in honey bees helps to activate their immune system.

Her next steps include more trials, this time including bees which have been treated with an antibiotic and then re-exposed to either their hive mates' microbiota or a probiotic. She will

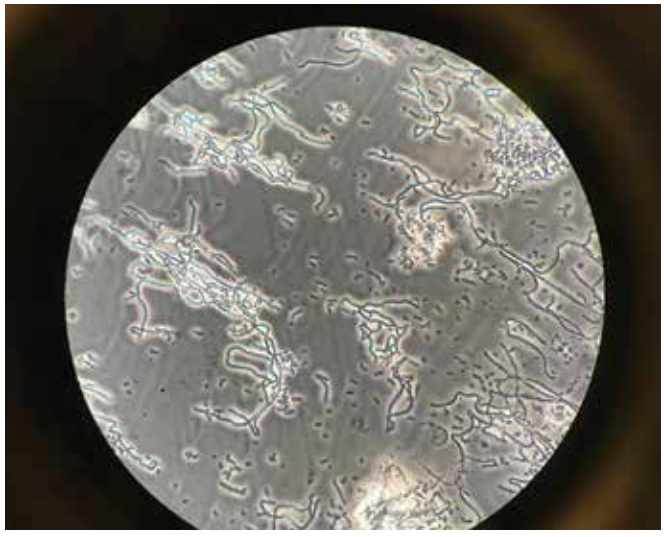
also try a different analysis method for the AMP data which should give her higher confidence in the trends she observes. Abbi will be presenting at the BCHPA annual general meeting in October, and at Apimondia. Her suggestion for beekeepers, in the meantime, is to wait a little longer on the verdict of whether honey bee probiotics are worth the investment.

Helping the System Along

Atenas Sofía Romero Guzmán (Sofía Romero) is a Masters student in the Foster lab who is working with the common honey bee microbiota species themselves. She is trying to create something like a living medicine for honey bees: a bacterium which can fight alongside the honey bee's immune system against pathogens, in particular American foulbrood.

Sofía has isolated and cultured species of honey bee gut bacteria and she is now testing different AMPs, such as defensin and jellin, against both these helpful bee bacteria and American foulbrood. She is looking for an AMP that will kill American foulbrood, but not hurt the honey bee's core bacterial species too much. Her eventual goal is to use molecular tools to make some of the honey bee's healthy gut microbes produce the AMP she has found most effective. This would create a different kind of probiotic that could use one of the honey bee gut's native bacterial species to help bolster the honey bee host's immune system by producing these helpful AMPs, resulting in better protection against American foulbrood.

Even without the bacteria producing AMPs, the effect of AMPs that honey bees produce on both their microbiota and pathogens can be useful in developing new medications for honey bees. "[Beekeepers] can see if naturally occurring antimicrobial peptides in bees can be used for treating disease without harming the core microbiota," Sofia says. "Or [they] can see whether the intrinsic microbiota can be used therapeutically." ❀



Liquid culture of Paenibacillus larvae (American foulbrood), showing both vegetative and active spores. Image taken by Sofía Romero using a microscope.

References

Romero S. et al. (2016). The honey bee gut microbiota: strategies for study and characterization. Insect Molecular Biology. Jan:1-18.

Honey Bee Hobbyist

The Care and Keeping of Bees,
2nd Edition, 2019 by Norman Gary, PhD.

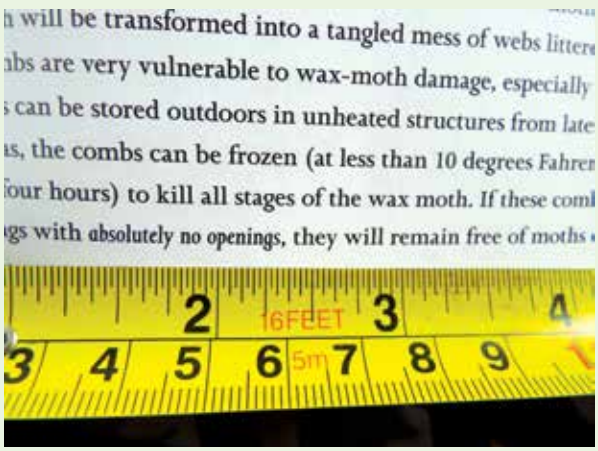
by Kerry Clark

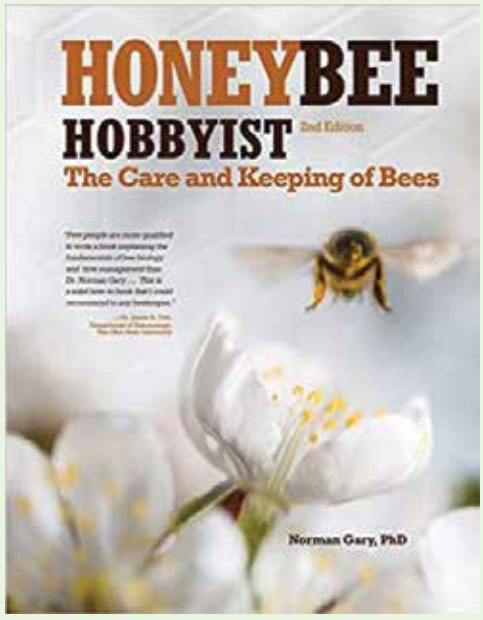
First, a disclosure: I have long admired Norm Gary the bee man. I was very impressed with him as a guest instructor at the 1969 Bee Masters Course, where I developed an enthusiasm for bees. A couple of years later I and 3 friends flew in a small plane to his weekend bee course at University of California, Davis. He had recently been able to film the mating of drones with a queen, on a tether 40 feet above the ground, and as well as the classroom info, he gave us a field demonstration of attaching a tiny streamer to a drone (so it could be easily seen when released) and added some queen pheromone.

I had great expectations of this book from him, and I was not disappointed. The 15 chapter contents show the topics beyond biology that beginning beekeepers or enthusiasts often search for:

To Beekeep or Not to Beekeep
The World of Honey Hees
The Bees' Home
Getting Started
Reproduction
Activities Inside the Hive
Activities Outside the Hive
Colony Defense and Sting Prevention
How to Manage Colonies
Honey and Other Hive Products
Beekeeping Clubs
Formal Beekeeping Education
Urban Beekeeping
Entertaining with Bees
More Fun with Bees

The book has lots of great colour photos and I kept thinking "Yes!" as he made points in each chapter; these points were very nicely put, just what I would say if I was explaining beekeeping.





I do have a couple of criticisms: varroa to me is a major factor in current beekeeping. The book has less than 1 page on it, essentially, "Hobby beekeepers must learn to identify and monitor populations of these mites as well as to use contemporary preventive and control measures." I suppose that saves a whole chapter of info that might be out of date within a couple of years, but I can imagine many starting beekeepers not realizing what a challenge varroa will become to them. More emphasis needed!

A second criticism is about "harvesting honey from the hive." The description of removing frames and shaking/brushing the bees off is fine, but I didn't see enough discussion of when harvest is appropriate, and I imagined an inexperienced beekeeper having trouble in their hobby without some added advice.

Oh, and the headline that first brought the book to my attention: *Bee Man' Urging Limits for Home Honey Bee Hives* (from the Daily Democrat, published last December). Yes, it is there in the Urban Beekeeping chapter. But as he makes the point he writes that his comments "are more applicable to larger cities" and explicitly excludes "smaller cities where bees can forage several miles..." His recommended number of hives? Not defined, but 5 is mentioned in the excess category. Any urban beekeeping bylaws in BC are already following such a scale, with limits of 2 hives and 2 nucs being usual in the bylaws I've seen.

One more point: personal preference I suppose, but my older eyes found the font a bit less easy to read than I would prefer, and what's with this practice of emphasizing a word by making it smaller? I've noticed it in other places since..what's with that? I include a photo of the font. It looks pretty clear in the photo. The paper IS nice. Maybe I'm just too used to non-serif fonts or dim light.

Overall, I really like the book and I think it would be interesting and useful for anyone wanting to get good information on beekeeping on a small scale. Just get more details on varroa management. ❀

Nanaimo Artist Valerie Capewell Paints the Birds and the Bees

I was born and raised in Smithers, BC, and now live in the Linley Valley in North Nanaimo. My first memory of making art was when I was about 7 years old. I had drawn a witch (of all things) and my parents and grandparents stood in the kitchen at my grandparents home overlooking the Bulkley River in Smithers; they thought it was great. From then on, my life was all about creativity.

When I graduated from highschool I attended the Emily Carr College of Art in the Foundation program. I then went to Ryerson University in Toronto, attending the fashion design and illustration program. I met my future husband in Vancouver and following that attended Vancouver Island University (then Malaspina College) in the graphic design program, where my graphic design business of almost thirty years began. I was formally trained, but much of my training happened on the job. I was a communications designer and was able to do most of my own illustrations - technical or whimsical and everything in between.

I once had an art teacher who said, don't think - just begin. That has stuck with me and works for the type of artist I am. As a deadline-driven designer and artist, I do not wait for inspiration, I just start and it comes. I am definitely inspired by beauty in nature; that comes through in my work. Colour is definitely what I am known for, regardless of the subject. There is a saying of mine, "I begin with the end in mind and always land in a different place. Mistakes happen and that moves my art forward."

Experiences and travel also influence my work – but not intentionally, as experiences have shaped what I see and how I see it. I work very hard to be original, I do not try to emulate anyone. I find that art is meditation as well as problem solving. Every brush stroke or colour that is laid down creates a new environment, questions that need to be solved and new opportunities to be explored. In design as in nature, you change one thing and everything else changes.

I started doing architectural paintings about 20 years ago, but eventually I got tired of them as they offered no freedom. One day as I started another, I could see that it was not going to be a labour of love, and I threw paint at it. On that day my abstract world opened and I haven't turned back.

The Birds and the Bees are a series of 12 paintings that were done about 3-5 years ago. I have increased my production over the last 5 years, and the Birds and the Bees are a part of that. I recognize the importance and

significance of bees and other pollinators, and their connection to the health of our environment. I love bees and included them in these paintings because they are a quintessential part of the natural world. I also love flowers and gardening, so it seems fitting for them to be in my work as they play a big part in everything that grows.

My daughter Veronica and I made friends with local apiarist Sol Nowitz, of Jinglepot Apiaries in Nanaimo, and he gave us a tour of his bees. It was amazing and so is his amber honey! It tastes rich and full of goodness; this is what I think, feel and taste when I eat it. I adore Sol, was super keen to learn about bees. I knew he would be very interesting.

I was nervous about being stung. Actually, I was a bit twitchy. I gave my daughter and her friend a look, because they were laughing while Sol began his presentation. In fact they were laughing at me swatting at bees while fully suited (I think they were exaggerating). The bees were super cool. The thing that stuck with me was how calm and gentle Sol was when he pulled the frames out, and how little protective gear he was wearing. I admire the fact that he raises queens, the passion that goes into caring for the bees and all the work required to keep them. Whenever I saw Sol at the gym, which is where I met him, I always asked him how his bees were.

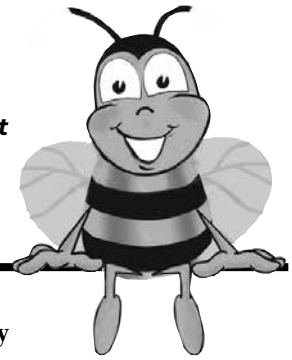
I have basically opted out of graphic design at this point. Most of my work in that area was in government communications, and I was given a lot of freedom to solve their particular communication challenges. When that freedom ended, so too did my passion and motivation. I loved designing and the creative problem solving part of the job.

Over the last 7 years I had carved out a day from my weekly schedule to paint, and my clients understood that. Then I started painting about 1/2 time, without a big reduction in my workload, otherwise known as burning the candle at both ends. I pulled the plug on almost all design work and am now fully focused on painting.

With this new commitment has come representation by an art gallery in Ottawa located 2 blocks from the National Gallery, as well as at a gallery in Vancouver. I have also just finished a show at @Artvancouver. The best place to follow me is on www.instagram.com/valeriecapewell and I have a website, valeriecapewell.com. I have a show this June at Petley Jones Gallery in Vancouver, and another in September at the Vancouver Interior Design Show.

I am not interested in getting my own bees, but I am interested in painting them. I was impressed with the bees in Sol's apiary, as they seemed to be as calm as Sol was. It would be fun to go back another day to do it all over again. ❀

Ask the Buzzers...



As the saying goes, if you ask three beekeepers a question you'll get four different answers, so advice should always be carefully considered, especially in terms of location. Always consult experienced, successful beekeepers in your area.

Please send questions and responses to the editor at BeesCene@bcbeekeepers.com.

Q: In mentoring a new beekeeper, how do you encourage them to research their questions in ways other than crowd sourcing information on FB, YouTube, etc.?

A: LOCAL success and experience are valuable guides to what will work for any new beekeeper. Not a guarantee: things have changed since some beekeepers became comfortable with their standard practices, and some of us may have success in spite of the things we do. *~ Kerry Clark, Dawson Creek*

A: Over the many years of my community beekeeping (running a beekeeping organization and co-op and teaching classes) and the constant requests for sources of info, I decided to create a beekeepers' library which is a compilation of the many sources available. Initially it focused on local info but as increasing requests came in from international beekeepers, particularly from developing countries, I attempted to fill the need: http://strathconabeekeepers.blogspot.com/p/the-beekeepers-library.html *~ Bruce Little, Vancouver*

A: Caution them that using online sources as the advice may be coming from a totally different geographical region. Suggest joining a local club to build local beekeeper friendships that they can call if they have an issue. Also that they use a local Facebook page to post and ask questions so they get local answers. *~ Keith Rae, Vernon*

A: Join a local club and talk to the beekeepers there, especially those who are more experienced. I put a lot of emphasis on the concept 'beekeeping is local' and tell them to pay attention to the location of folks giving advice online. Also important is to filter YouTube based on location and the experience level of the presenter. I think Zac said it best during one of the presentations at the AGM in Victoria, his mantra is 'don't let the Internet kill your bees.' *~ Gerry Rozema, Campbell River*

A: I have 2 excellent books, *Beekeeping in Western Canada* and *The Hive and The Honey Bee*. I encourage others to seek answers in them. I also advise new beekeepers to have more than 1 colony. *~ Peter Christie, Dawson Creek*

A: I like to have new beekeepers help me work bees...nothing like hands on experience. *~ Steve Clifford, Sunshine Coast*

A: Official websites of recognized experts rather than FB or YouTube where anyone can post anything. I still encourage books and if a person is serious, I suggest both *The Hive and the Honey Bee* and *ABC and XYZ of Bee Culture* (and if cost is a consideration and one can get an older edition at a modest cost that's probably satisfactory to begin because the basics haven't changed). Also, work a few times with an experienced beekeeper and join a club. *~ John Boone, Vancouver*

Q: What are buzzer opinions on what changes, if any, need to take place for improved honey bee health in their regions?

A: Pesticide and chemical usage in agriculture and forestry must be looked at very closely as I believe they have the greatest effect on bee health. If we are creating an unhealthy environment for the bees to forage in then it is making it almost impossible for the beekeeper to maintain healthy yards and colonies. The current system of approval for pesticides in Canada is outdated and is detrimental to all pollinators.

~ Theo Fredrich, Nanaimo

A: One change I'd suggest is better knowledge of the target nectar flows in each region. I know we all have concepts based on what we see in bloom or (less clearly) in colonies, but I'd like to see real-time weight records of colonies (like Gerry Rozema has on his website). I expect it would improve our concepts of what drives colony health and growth locally, and guide us to better management. *~ Kerry Clark*

A: We need to develop a large scale, local, hygienic, survivor stock bee breeding program to take the place of our reliance on package importation from the southern hemisphere. Presently most of the bees in BC are employed in pollination (primarily spring) and the economic equation does not allow for a concentration on bee breeding. I think government financial incentives would be required to change the financial equation. A 30 year old study from Mark Winston and E.N. Punnett concluded that both package and nucleus production would be economically feasible in the Fraser Valley: https://hal.archives-ouvertes.fr/hal-00890801/document

~ Bruce Little

A: To reduce the influx of outside bees being imported and movement of bees in and around the region. Having a constant flow of outside genetics will never allow any population to achieve genetic stability to the location. It is nearly impossible to select for anything when random genetics are thrown into a population annually. Next would be for beekeepers to learn how to work collaboratively on this specific goal. Without collaboration, beekeepers as a whole can show little direction; being involved in a goal as a group means everything if improvement is a desire. *~ Garret Wilkinson, Parksville*

A: Understanding the conditions in your region, first spring pollen and nectar, spring buildup timing, when the main flow starts and when and how it ends. Managing your hives to take advantage of the resources in your area, and above all start your mite treatment early to have your winter bees as clean from mite caused viruses as possible.

~ Keith Rae

Q: What do you do when you end up capturing a swarm (an "afterswarm" some call it) with a virgin queen? Aside from the fact that it can be a challenge to get them into a box, what are the chances of her going out on a mating flight?

A: You can put in a frame of brood with eggs less than three days old and monitor the hive to make sure either the virgin queen has been mated and is now laying, or that this allows them to raise another queen. You could also combine the swarm with a weak hive that has a laying queen (after removing the virgin queen). *~ Theo Fredrich*

A: I would say that chances of her getting mated are quite good, particularly if there are other beekeepers within 10 km.

~ Steve Mitchell, Duncan

A: We treat an afterswarm no different than a prime swarm, other than possibly going into smaller equipment. Our success rate in growing a new colony from an afterswarm is on par with those that are prime swarms. *~ Gerry Rozema*

A: More commonly referred to as cast swarms. If the accommodation that is supplied is liked by the bees they will stay. You can block them in for a day to improve the odds of them staying, and if you add a frame with some brood they are unlikely to abandon the brood. The success should be about what you would get when mating queens in mating nucs. That being said, mating nucs are decorated in different colors and oriented in different directions and placed randomly so as to lessen the chance of a queen entering the wrong nuc. Hives arranged by beekeepers tend to be placed is a straight line facing one direction. *~ Keith Rae*

A: My limited experience with afterswarms is that they have been tiny, I have found the queen and dispatched her and reunited with the parent colony, which may need to have a new queen introduced. *~ John Boone*

A: I haven't had problems getting an afterswarm into a box and having the young queen mate, most times successfully. I think it is important to hive any swarm in a box that will be their final home, or at least one that they will stay in for a month or more. Having a comb or two of worker comb, if you have extra, placed in the box will encourage the swarm to stay. Leave them in that location where you caught them until nightfall, so that all bees of the swarm are in the hive, then move. The next morning, those bees, including the virgin queen, will orient to their new home. *~ Garret Wilkinson*

A: I think a virgin queen will always do her best to get mated. *~ Steve Clifford*

Q: Does checkerboarding discourage swarming?

A: Not sure. Equalizing a strong hive with a weak hive is a good way to discourage swarming, or making a nuc or split. Probably takes the same amount of time as checkerboarding but the benefits seem to be more.

~ Theo Fredrich

A: It depends on colony strength and environmental conditions...beekeeper judgement. Too much splitting of a brood nest when weather is (or gets) cold will reduce swarming, but may also result in loss of brood by chilling.

~ Kerry Clark

A: In my experience it does. Simply relieving the swarm trigger of a full honey house has worked for me as it did for Walt Wright: https://beesource.com/point-of-view/walt-wright/

~ Bruce Little

A: The term 'Checkerboarding' has gained a lot of online popularity over recent years, originating from a paper by Walt Wright that discusses nectar management by 'checkerboarding' frames above the brood nest in the nectar storage area. I have heard of folks mistakenly applying this concept

to the brood nest frames in a colony and declaring success in preventing swarming. My opinion is, with such a massive disruption to the brood nest during spring buildup they have prevented the colony from building up to a strength that allows for swarming. *~ Gerry Rozema*

A: Or encourage it? It is a timing in relation with conditions out in the forage area, the hive population, and the active brood nest. Too early, without an adequate population, checkerboarding can set the hive back. Done properly it will give the bees something to do rather than drawing out queen cells. *~ Keith Rae*

Q: When is the best time to reverse double brood supers to discourage swarming, and what are important considerations when doing this?

A: When you don't have time or can't add a box, split, make a nuc or equalize with another hive. In my experience this is only a temporary solution and steps will still be needed to make sure the hive doesn't swarm within a week.

~ Theo Fredrich

A: It's debatable whether reversing is essential/beneficial, or if it just gives a beekeeper something to do (ha). At least sometimes, if a non-plugged excluder and supers are put on before honey gets capped above the brood in the top box, a 2 box colony will do fine in storing honey. *~ Kerry Clark*

A: April would be a good time to reverse brood boxes in my area. It is important to know what nectar sources are available and if necessary, do some light feeding.

~ Steve Mitchell

A: Michael Palmer suggests that reversing should happen at the onset of the dandelion bloom, and that this practice reduced swarming in his apiary by 70%.

~ Gerry Rozema

A: Before the bees start building queen cells. But if the brood chamber is too congested reversing may not suppress the swarming instinct for long. *~ Keith Rae*

A: In our area, reversing of brood boxes is done in May, in order to double up on brood. We don't see reversing as a swarm prevention measure, but it probably helps in preventing swarms in stong, overwintered hives. The risk here is that of reversing too soon and suffering a cold snap, resulting in chilled/dead brood. Typically, I wait until the queen begins laying in the upper parts of the frames in the lower box before reversing. *~ Peter Christie*

A: I have found that reversing brood supers in the spring is a good thing providing the colony is reasonably strong - i.e. has 5 or 6 frames of brood. There is no point in doing so if it is a weak or even a moderate colony. Timing is important - if the season hasn't warmed up yet the brood will chill, and it's good to put on some feed at the same time. Also, it's a good time to cull old comb and add foundation (of course, an alternative with a strong colony is to make a split). *~ John Boone*

A: For me the only time to reverse brood chambers is when a colony is reluctant to expand the nest down into the bottom box in spring, when buildup is strong. The timing can be different depending on how well the colony is building up, coupled with strength, so there shouldn't be a set date to do this manipulation. The whole point of reversing is to add space for an uninterrupted spring buildup that does not set the colony back. *~ Garret Wilkinson*

Q: Will new queens swarm?

A: YES. I have seen new queens swarm, we have had this in our own apiary.

~ Gerry Rozema

A: Yes. It is not the queen that decides to swarm but the bees in the colony, so they will swarm if they have the swarming urge.

~ Keith Rae

A: Sure new queens can swarm if the circumstances are right (it's happened to me when I have been negligent about providing sufficient space), but they are less likely to swarm. *~ John Boone*

A: Perhaps, but it depends on how crowded the brood nest is with larvae, pupae, capped brood, nectar/honey, and pollen.

~ Steve Mitchell

A: Yes a new queen's colony will swarm even though they are less inclined to start swarm prepartion compared to a colony headed by an older queen. Overcrowding can easily set off the swarming impulse, something the beekeeper needs to pay attention to. *~ Garret Wilkinson*

Q: Will clipping the queen's wing prevent the colony leaving the hive?

A: We have never clipped a queen's wing. *~ Theo Fredrich*

A: Harry Laidlaw frowned on wing clipping as it "disfigured" a queen. The colony will still try to swarm (the workers won't realize she can't fly). When she leaves and can't fly, she may get stuck or lost outside the hive (or can't walk back in). Even if she is OK, a virgin may emerge and swarm within hours. I wouldn't rely on clipping as swarm prevention. *~ Kerry Clark*

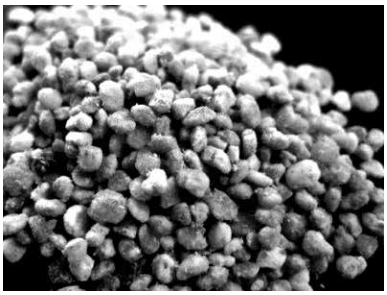
A: Some say it does but my experience is that it does not stop the swarm impulse. The queen may attempt to fly and flounder in front of the hive (often fatally). It may buy some time, but the colony will probably swarm with a virgin queen which has a low probability of survival. *~ Bruce Little*

A: It won't prevent a queen from leaving, but it will prevent her from flying when she does, so she will end up on the ground in front of the hive. Clipping is not really a viable way of trying to prevent swarms, it's primary purpose is as a way to identify a queen if the paint wears off. *~ Gerry Rozema*

A: Clipping a queen's wing does nothing in stopping a colony from sending out a swarm. What it does accomplish is when a swarm is issued the queen is unable to fly so goes directly

onto the ground outside the hive. The swarm bees will either cluster around her or they may return to their hive. What's accomplished is not losing a swarm of bees to the trees or off into the wild blue yonder. *~ Garret Wilkinson*

Q: What is the best pollen supplement on the market? Is it worth it to try to make my own supplement? Should I be supplementing my bees this way in the spring?



A: Global Patties makes a great pollen patty with a number of options that change the price per unit. Each hive in our apiary gets a patty every spring, sometimes 2 if the weather has been poor and they are unable to get out to gather pollen. These have been great for us and they really encourage brood rearing. We tried Ultra Bee this year and the bees also seemed to like it. Making the patties from the Ultra Bee powder is a fair bit of work and I'm not sure it's that much cheaper in the end than ordering pre-made patties.

~ Theo Fredrich

A: The Peace is a high pollen area (as of May 1, we've already had great pollen foraging (willow) even if it is snowing again) so I feel supplements aren't necessary. Maybe if your bees have less pollen forage opportunities (a lot of colonies in one spot?) or you have warm temperatures without pollen forage, and want to have more brood for splitting, etc. From what I've seen, a "best" brand isn't clear. *~ Kerry Clark*

A: If you are a commercial beekeeper I think you benefit from pollen supplement but for backyard beekeepers it's not necessary, and if you did use them most will decide the effort to make them is not worth the bother. They are readily available and not that expensive. While brewer's yeast (expensive) and soy flour are good I believe the inclusion of pollen makes a significant difference as revealed in Bulletin #411 on the BC Apiculture website. *~ Bruce Little*

A: Best to trap your own pollen and feed that in spring. I nornally feed it loose, on top of some newspaper, on top of the frames in the upper box. *~ Peter Christie*

A: This can be a regional geographical consideration, how far north, elevation, pollen stored under honey the year before, weather conditions in your area for the next few days. But before feeding, asking yourself what you want out of your bees. If you do not have a need or a use for a bunch of early bees, then don't overstimulate them. Overstimulating them without a use for the extra bees produced will just cause more swarming issues. *~ Keith Rae*

Q: (From one of our younger readers)..Why is there no King honey bee?

A: Nice question. I'd say, once upon a time many years ago, people called the unique big bee in a honey bee hive they saw a 'king', because the people felt the big bee must be a 'powerful ruler' like they thought they should say about their human king. Only later, through good observation, did people realize that the big bee laid eggs. It might have been better if they had just called her the 'mother' bee, but people often follow what they have heard, rather than figuring it out for themselves. *~ Kerry Clark*

A: In humans, the males of our species are considered almost as important as the females, but in a bee society the females are much more important. Other than mating (making babies) and thermoregulation (adjusting the thermostat) the males don't do much except eat twice as much as the females, which is why they are kicked out in the fall. My favourite children's bee book: The Travelling Beehive. http://apolo.entomologica.es/cont/materiales/The%20travelling%20beehive.pdf

~ Bruce Little

A: Great question...there's no real queen bee – she's just the egg layer, and she lays where and how much the bees can manage to care for. I like the theory that the oldest house bees make the decisions. *~ Steve Clifford*

A: That's a good question. Humans have made observations of honey bees for millennia and early on, observed one larger bee that seemed to have dominance, assumed it was male. There we go again with the notion of male dominance! It wasn't until early in the 17th century that the large bee was recognized to be female and also responsible for egg-laying. In fact, Shakespeare (who wrote in the 16th century) referred often to honey bees, made reference to "the King bee" in his play Henry V. *~ John Boone*

Q: For those of you that attended the semi annual meeting this March, did anything presented pique your interest, or surprise you?

A: I was surprised that in the great weather conditions during 2018 blueberry pollination that bee colonies still showed higher EFB problems, and it made me wonder if protein supplements made a difference. I expect that we will hear the conclusion, since the information is being analyzed.

~ Kerry Clark

A: The presentation by Mike Campbell around *Nosema ceranae* was enlightening. *~ Gerry Rozema*

A: What a great job the Kamloops club did on their beekeeping calendar. Great information and timely advice all in one place. Thanks Kamloops Club and also for hosting the semi-annual meeting. *~ Keith Rae*

A: Paul Kelly presented so many interesting tidbits relating to practical beekeeping that it was refreshing and it is hard to identify a specific one that stands out over the others.

~ John Boone

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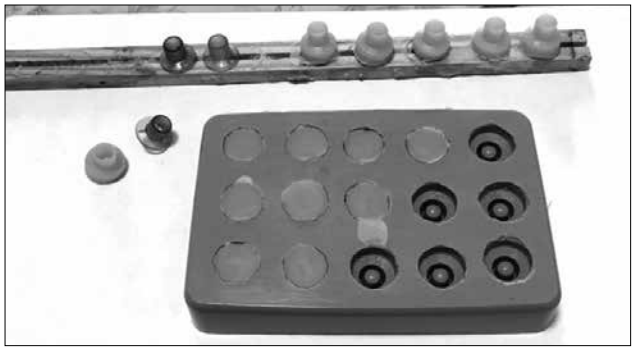
A Modern Approach to Producing Beeswax Queen Cups

by Ian Kennard

I have wanted to use beeswax queen cell cups in my queen rearing for a while now, in the belief that beeswax cells help make better queens, as the bees can reshape the developing wax queen cell. When using plastic cups, the worker bees can't expand the plastic cup to accommodate the growing queens. When you look at swarm cells they are quite a bit larger, in general. Queen and queen cell sizes vary, depending on the amount of food and number of young bees that the cell builder has available.

I have used JZ-BZ plastic queen cups to avoid the work of rounding off 3/8" wooden dowels to form a bullet shaped jig, and then dipping them into melted wax to form grafting cups, or go hunting for an electric fry pan to melt the wax for dipping the dowels. This older system is still being used successfully by queen breeders today. If you do not have this system set up and your work space is limited, then a more modern approach may help. To this end, I decided to use a mold-making technique used in the movie and jewelry industry to make a queen cup mold out of silicone rubber.



Mold with some cups already poured, and a grafting bar with plastic cups and wax cups for comparison.

The mold is ready for the OOMOO silicone.

There are other reasons for wanting to use beeswax queen cell cups. One, the JZ-BZ cups do not biodegrade in the field. When they are pulled from the mating nucs, you invariably drop them on the ground and lose sight of them, only to find plastic cups years later strewn around your mating yards. Two, reusing the JZ-BZ plastic queen cups is not suggested as a good queen rearing practice. I have tried boiling the old cups so I could reuse them, but it is a time-consuming endeavor and a royal pain. Three, when you are using multiple queen grafting sources, keeping track of the queen source is fine until you run out of color coded plastic cups. Being able to write a queen source code on the back of the wax cup with a Sharpie seemed very appealing. Four, the bees dismantle the wax queen cup in the mating nuc after the virgin queen has emerged - the bees do all the cleanup for you!

I used a two part silicone mold system using a product called OOMOO. You have to make individual cup mold blanks for the number of queen cups you want to produce each time, but you have to make individual rounded dowels for the older system where fifteen dowels fit on the jig to create fifteen wax cups for the grafting bar. Some prebuilding has to take place regardless of what system you use. One important consideration when producing the silicone mold is that your queen cell mold blanks can't have any undercuts. All sides and bases must be straight and smooth, as the molding solution mimics any defects that you introduce.

In the old system, your cups are formed by dipping the dowel jig into melted wax. The wax adheres to the dowel and takes the shape of your bullet shaped jig ends. You then place your dowel jig against the grafting bar and pour melted wax onto it thus allowing the cups to adhere to the grafting bar. This gives you a chalice shaped cup which produces undercuts where cup and base meet. You wait for the wax to cool and harden, then gently loosen the dowels so you can work the next grafting bar. Three bars of fifteen cups can be produced per frame with this method.

With the silicone mold, one just pours liquid wax into the individual molds, waits a few minutes, then removes the cups and the mold is ready for the next pour. With this silicone mold, I produced 1500 cups in a relatively short period of time. You can spend part of your winter producing all your grafting cup needs, and store them in a container until needed. When you are ready to do your grafts, all you need to do is heat weld the cups to the grafting bar. I use a heat gun on wooden grafting bar, place the wax cups on the heated wood and let them harden in place.

For the queen cup molds, I used JZ-BZ plastic queen cups as the mold blanks. Because they are designed for injection molds, they have no undercuts. The base of the plastic cup is tapered with a nipple on the back that is used to fit into a groove in the grafting bar. This nipple can be ground down allowing for a thinner base, or left in place. Some work is required to form the bases of each queen cup

mold blank.

The base can also be built up with either wax or plasticine to hide the nipple. You can use any sculpting tools you can find or make your own; plenty of mold making ideas can be found on the Internet. You need to have one queen cup mold blank for the total number of cups in your finished mold. I made a fifteen-cup mold because that is the number of cups I put on my grafting bar, but you could produce a mold that would make a full frame of forty-five cups in one pour.

I then made a second fifteen-cup mold because in the first mold I did not seal the base of the cup mold blanks to the bottom of the mold container, and the OOMOO solution seeped under parts of the bases and left the dreaded undercuts. These left flaps of silicone skin which had to be trimmed off with cuticle scissors, leaving a jagged edge. In the second fifteen cup mold, I heat-welded the base of the cup blanks to the container base so there were no undercuts, and no trimming was required. This left a clean transition from the base of the cup mold blank to the bottom of the mold container.

Spacing the cups in a 1" or 2.65 cm centre to centre grid pattern allows enough OOMOO material between cups. The container that you use for your mold can be any plastic container that allows you to pour the OOMOO solution to a depth of 1" or 2.65 cm. This gives a decent

Mold with some finished, trimmed wax cups and the bent spoon used for pouring wax.

amount of mold material over the cup mold blanks.

I used just over two thirds of the OOMOO product I purchased. It comes in two 1 litre containers and is a two part mixture, mixed in a 1:1 ratio. If the system were scaled up to produce cups for a full forty-five cup grafting frame,

Finished wax cups.

that would use up this amount of OOMOO product. The cost of the OOMOO is about $50, so not a huge expense. However, the time spent making the mold involves many hours for either the old or the new system. Once made, you can produce wax queen cell cups at any convenient time for your queen rearing.

The amount of wax needed per cell works out to approximately one tablespoon. I save all the wax from my hives and old frames and melt it with a solar wax melter during the summer months. This leaves me with clean wax blocks. I then re-melt the wax using a second-hand slow cooker. When pouring the melted wax into the molds, use a bent tablespoon as a ladle, as this gives more control of the melted wax.

I highly recommend this system because of its environmental reasons both in the field and the hive. It means no plastic in the hive or on the ground and clean wax for queen cells from your own hives, with little to no chemical residues.

Ian Kennard is a beekeeper on Bowen Island, BC, owner of Howe Sound Bees and Honey. He's been a member of the BC Bee Breeders Association for four years, has been beekeeping since 1999, and currently raises 200 to 300 hygienic behvaiour queens per year.

Kamloops Beekeepers Field Day

Joe and Marg Lomond.

Joe marking queens.

Catching queens.

Bob Meredith had a birthday.

Bob Meredith and Margaret Jones, long time beekeepers.

Ed Zurawell building supers.

Good friends make the best field days.

Ed Perszon and Bob Gook.

Keith Rae teaching.

The Kamloops Beekeepers' Club puts on 5 field days per year and the one at Joe and Marg Lomond's is the one you don't want to miss. In late April, despite the cold weather, over 80 people came to learn from 5 outside presenters and in the Lomond's Honey House, Joe showed us how easy it is to mark queens. Also inside you could see demonstrations on equipment assembly. We even surprised Bob Meredith with a birthday cake, sang him Happy Birthday and he loved it. The Lomond's place is for sale, so this might be the last year for this event. A Big Thanks to them for all the years of beeing there.

~ Murray Willis;

photos courtesy of Murray Willis and Nancy Burkholder

Nosema Studies in the Foster Lab

by Mopelola Akinlaja

I became interested in honey bees fairly recently, right around the time I was looking into grad school. After reading about the fact that at the Foster lab they use mass spectrometry to study how diseases impact honey bees, I grew very interested in participating in a study of that nature, and coming to work in the Foster lab as part of my graduate degree. Of course, to do that I had to learn a little bit about bees and the more I learned, the more fascinating I found honey bees to be.

I study host-pathogen interactions in honey bees - specifically, the aim of my project is to understand how *Nosema* is able to successfully infect the gut cells of the honey bee. To do this, I am using mass spectrometry as a tool that can enable me identify key proteins in the honey bee that might be implicated upon infection. *Nosema* is one of the major pathogenic problem beekeepers have and also one of the least understood. Because of this, I thought it would be pretty cool to gain more insight into this pathogen, and hopefully discover information that can help improve honey bee health, specifically in the case of *Nosema* infections.

I chose to look at *Nosema* and at the same time I was guided into it. I knew I wanted to work with bees after speaking to Leonard, I just didn't know exactly what yet. When I arrived in Vancouver I met with the current grad students and post docs and chatted with them about what they were doing, and I also met with Leonard to talk about ongoing projects and ones I'd like to get involved in. I saw the gap in knowledge on *Nosema*-honey bee relationships, and what had been done so far, and I wanted to carry on the work.

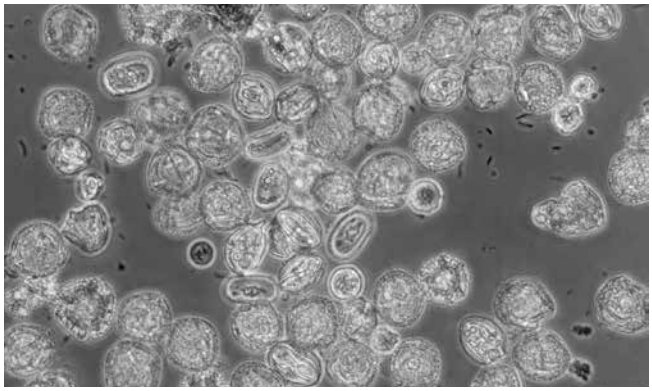
Before coming to grad school, I studied chemistry for my undergraduate degree at Indiana State University. I then worked for a little over a year at Dow Agrosciences (now known as Corteva) in an analytical chemistry lab, and we used mass specs there, mainly for analytical purposes of simpler analytes (chemical compounds). The company makes agricultural products like pesticides and herbicides, and when these formulations were made, my department would test them with chromatography and mass spec to essentially ensure that the components and amounts of mixtures in a formulation were accurate and met regulatory requirements. So, we almost always knew what we were putting in the mass spec (except for occasions where we had an unknown that we can also identify by mass spec). In the Foster lab, we use mass specs to analyze complex protein samples, but at the company we used the mass specs more for validation.

Mass specs are able to probe unknown things, which in and of itself is fascinating to me. This instrument allows you to break up a compound into it's tiny component pieces, and then put them back together in a way that enables you to use the mass to charge ratio to find out what the unknown is. Even crime shows highlight the importance of mass specs when they use them in their "crime labs", which helps them link an unknown blood sample to a suspect, for example.

I was interested in working in the Foster lab because mass spectrometers are one of the greatest inventions of our time in terms of analyzing both biological and chemical materials; mass specs make accurately analyzing large amounts of samples attainable. Before coming to the Foster lab I was more familiar with using mass specs for analyzing chemical compounds that weren't necessarily in a complex mixture. Using mass specs to learn about biology was new territory for me, and I like learning new things.

The idea of my experimental design is to infect bees with *Nosema*, and then analyze the proteins I isolate from their gut cells. This is where the mass spec comes in, to help me identify and quantify the proteins found in my sample. This data will be compared to proteins found in healthy bees' guts (which is my control). My hypothesis is that the way proteins interact in the cell of a healthy bee will be different than in an infected bee, so for example, I expect that if protein 'A' was in a complex with protein 'B' in a healthy gut, in an infected gut, I would see protein 'A' now interact with another protein 'C' or just by itself (this is a simplified analogy - it's not that exact but that's the general idea).

I've been working on trying to establish honey bee gut primary cell culture, so I am essentially trying to grow bee cells in a Petri dish. I am doing this because it provides a controlled biological environment for me to do my studies in.



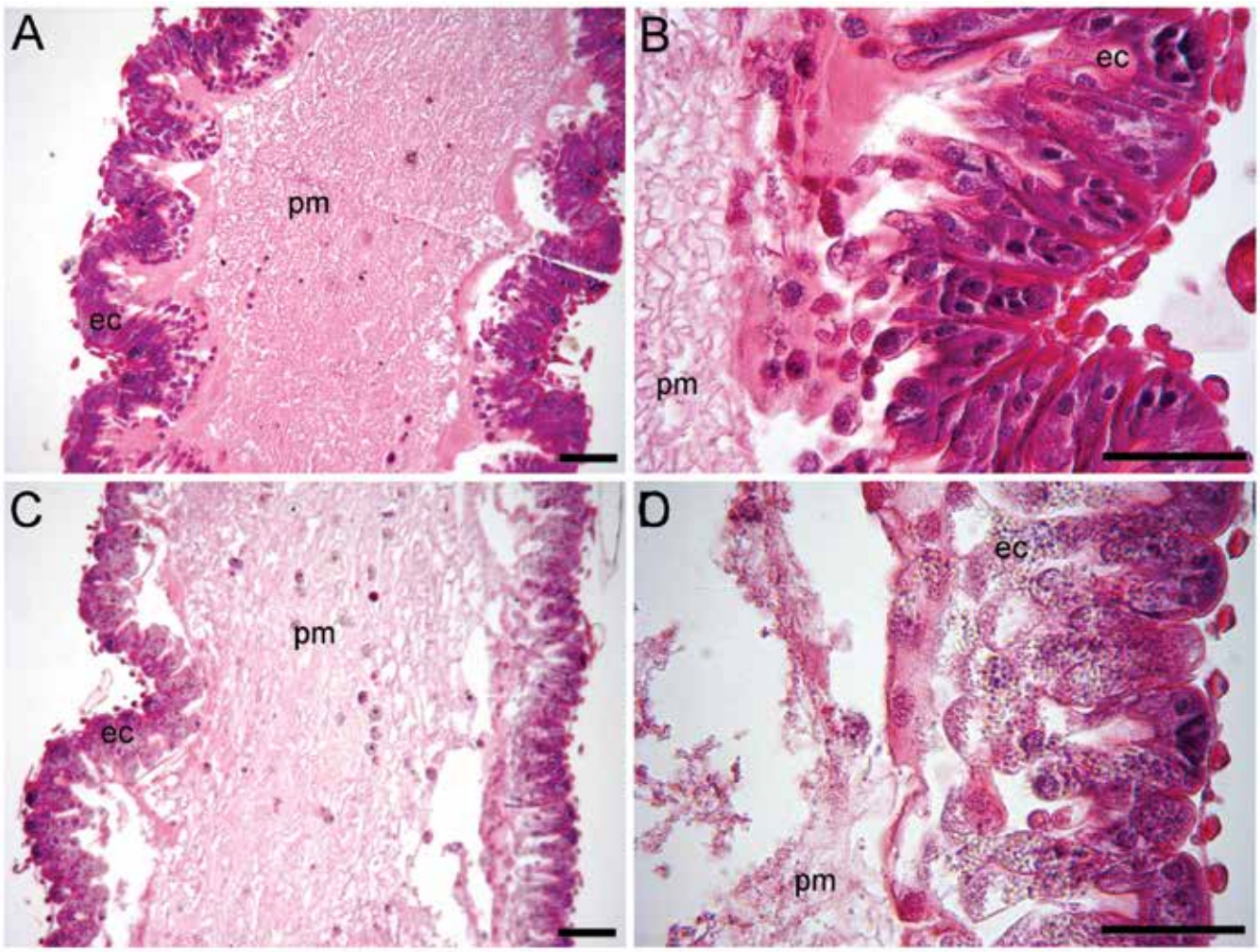
Bee gut cells at high magnification (400X) under the microscope.

Nosema spores under the microscope, from when I was purifying spores I want to use for infection. This is the same magnification (400X) so you can see that Nosema is really tiny relative to the bee gut cells, and a whole lot of them replicate in the gut cells.

My hope is that my research, along with the work of others, can provide sufficient information to enable people (scientists) understand more about how this pathogen infects its host. More molecular understanding of honey bees and their parasites is very important, as relatively very little is known about them at the moment.

The images below show uninfected honey bee gut cells compared with infected ones, from a paper discussing gut pathology and responses to *Nosema*.

I find honey bees interesting because they're so dedicated and organized, and how instinctive they are in their activity is really fascinating to me. I used to be scared of bees because I'd never worked with them (and their stings hurt!) but the more I've learned about them, the more respect I've developed for them. I think people can learn a thing or two from honey bees. ❀



A and B are images of an uninfected gut (the control), B is just a zoomed in version of A. A shows peritrophic membrane (pm) + epithelial cells (B) which are the cells lining the gut.
C and D are like A and B but for an infected gut. You can see the lesions and degradations that have occurred in the bottom two.

Reference:

Dussaubat, C., Brunet, J., Higes, M., Colbourne, J., Lopez, J., Choi, J., . . . Alaux, C. (2012). Gut pathology and responses to the microsporidium nosema ceranae in the honey bee apis mellifera. Plos One, 7(5), e37017. doi:10.1371/journal.pone.0037017

An Old Beekeeper Goes Back to School, Part 3: The Undergrad

by Ron Miksha

Two years ago, I decided to try to go back to university. I was semi-retired, and although I was still working on occasional geophysics projects, contracts had slowed. I was over 60, so I expected that less work would be just fine. I could spend more time reading and writing about bees and caring for my backyard hives, but it turned out that these things weren't very challenging. I finally realized that I needed to get out of the house when I overheard my wife tell a repair guy on the phone, "You can do the repair anytime. My husband never goes anywhere."

I live in Calgary, so the local university seemed like the place to go. It would get me out of the house, and I could learn a little biology. My last biology class was in Grade 9, fifty years earlier. I was confident that the biology of creatures hadn't changed since I had dissected a (dead) frog in Mr. Anderson's biology class. So, I went online and found a list of a thousand courses being offered by the University of Calgary. There was Canadian Studies 337: Introduction to Folklore: The Canadian Context, and Software Engineering 401: Software Architecture. Interesting, but not quite what I had in mind. Then I noticed that there is an entire program in Ecology! I had found my people.

I soon encountered my first obstacle. To take classes, I needed to be a student. To be a student, I needed to register. I couldn't register as a freshman because I already had a degree, albeit in geophysics. Then I discovered that the university offers "Open Studies", allowing full-credit, full-participation without degree aspirations. Just take a course, or two...or ten. No one would care – unless I keeled over from exhaustion during a lecture, so I registered at the University of Calgary as an Open Studies student.

The next obstacle was more challenging. Open Studies students can only enrol in a course after regular students are finished signing up. I waited patiently while course after course filled up. Then I noticed Ecology 425. No one wanted to take Ecology 425. There were plenty of seats available. The full name of the class, Quantitative Biology II, or QB2, should have been my exit ramp sign, but I thought, what the heck? It's just fourth-year university mathematics for future ecologists and physicians. Could it really be that hard?

Then I discovered that I couldn't actually register without 'prerequisites' – I had to take Quantitative Biology I to earn a seat in Quantitative Biology II. I checked QB1. It was a required course for biologists and already filled with regular students. I felt I was starring in Kafka's unwritten short story, The Mature Student. I sent an email to the profs teaching QB2. I received a reply, "Sure, sign up if you want to try it. But you really should take the first course." OK, I was warned. But I was in.

At the appointed time and place, I rolled my wheelchair into the small lecture room in the Maths building, eager to learn how to apply statistics and mathematical modeling to bacteria growth, hare populations, species competition, and the spread of viruses and campus rumours.

There was wheelchair access at a long desk near the front of the room (the ultimate disabled parking spot). This partially integrated me among my classmates. They looked tense; they looked young. Their eyes were bright and their skin tight, but there was nervousness among those 38 students. This was an important class for them. They had recently launched into the great sea of uncertainty. Their performance in Quantitative Biology II would partly determine their futures as physicians, ecological researchers, or agro-chemical sales reps.

So there I was in my first class. I was curious whether going to university after the brain had retired was a good idea, or not. A math-biology class seemed as good a testing ground as any. Would I be comfortable leaving the house almost every day? Could I navigate the university in my wheelchair? Could I compete against young people (most of whom were one-third my age)? Could I, after thirty years away from school, still learn anything? Was there anything of value at the university for me?

Halfway through Quantitative Biology II, the professor explained graphic "ecological systems models". Public health folks use these blocky-box drawings with lots of arrows to fight epidemics: If a virus lasts five days and a person is contagious during days three and four, and meets six people each day, three of whom will get sick but can't get re-infected, how many days will it take until the whole population of Scratcher's Bay will be sneezing? Except for the names and a few other changes, this could be Varroa destructor invading a colony. So, when the prof asked us to independently investigate some ecology puzzle using a systems-model, I knew what I wanted to do.

I didn't discover anything new to science, but I ended up understanding varroa better than I ever expected I could. Varroa is much like any epidemic. A mite arrives

at a hive, clinging to bee fuzz. In the hive, the mite quickly disappears into a cell next to a 5 to 5 ½-day-old larva, and hides in bee food at the bottom of the cell. Sixty hours after the cell is capped, she lays her first egg (always a male mite). Then, every 30 hours, she lays another mite egg (this time only females) until the adult bee emerges. Meanwhile, the male, the first offspring, has mated with his sisters and died (this guy needs to get out more). As soon as the brood cell opens, his two or three sisters escape and engage in the work of population-explosion.

To model this, you draw a bunch of boxes and arrows, account for the typical 20% mortality among phoretic mites and for the length of time a brood cell stays sealed (longer for drones), then estimate things like seasonal changes in the drone/worker brood ratio, seasonal rate of brood rearing, virus levels, colony size, and emigration of mites as they hitch rides to new colonies. Then, you convert your picture into an equation. Mine had eleven variables but I still probably forgot some factors affecting mite population growth. That's OK because you can add more components once you code your equation into a computer program. I discovered that this is the part that scientists in other fields, like epidemiology, find particularly useful. Epidemiologists look for vulnerable points in the cycle where they can choke an epidemic. In the case of varroa, natural mortality is highest when mites emerge from a brood cell or travel on the back of a bee. Mites are safest when buried in a sealed cell of comb. Bees which groom frequently may have an edge. Timely breaks in sealed brood abundance in a colony might also disrupt mites (when a hive is broodless, mites are exposed and vulnerable).

Modeling mite population growth simulates the effectiveness of chemical and natural treatments. It gives us new ideas. I turned all my boxes and arrows and equations into a game on a computer screen. Deep inside virtual reality, I infected a colony of 50,000 bees with a single mite, then watched varroa kill my imaginary hive. Tinkering with parameters, I eventually controlled mites without chemicals and kept imaginary bees strong for many imaginary years. Perhaps this sort of work will lead someone to an innovative mite control idea that can work in a real hive.

This series – an old beekeeper goes to school – will continue in the next issue of BeesCene when I face my first big exam after being out of school for decades. ❀

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.

Wanted: Used Queens

If you are requeening any of your colonies this year, we invite you to participate in project "Queen Forensics" led by Ali McAfee and Leonard Foster. We are conducting a queen stress survey in BC, where our goal is to look for molecular signatures of heat and cold stress in queens throughout the region. We know this kind of stress happens, but we have no idea how big of a problem it is. To find out, we need your old queens for testing. We are especially interested in failing queens 0-2 years old, but any age, lineage, location, and health status will be useful for this survey. Shipping or queen pickup will be covered by us. Our goal is to collect 200 queens, and right now, we have only a handful. Please email Ali if you think you can help - alison.n.mcafee@gmail.com.

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Friday, June 21st, 2019

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10:00 a.m. - 4:30 p.m.
Beaverlodge Research Farm
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Featured Speaker: Dr. Kirsten Traynor, Flickerwood Apiary (Maryland)

Invited Speakers:
Dr. Shelley Hoover, Alberta Agriculture and Forestry
Samantha Muirhead, Acting Provincial Apiculturist
AlbertaProvincial Apiculturist – British Columbia
Researchers from Agriculture and Agri-Food Canada,
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**This event is open to the public free of charge, and a free BBQ lunch will be served.*

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Honeydew – What's in a name?

by Richard Jones, Chairman of the Eva Crane Trust

These days just about the first thing we all do when we want to "look something up" is to turn to Google and there in milliseconds come thousands of answers. Take the first one and, for some, the matter can rest. But such easy satisfaction and acceptance can be misleading. In spite of this, Google was my starting point when I wanted to find more information about the sweet, bee-related product called "honeydew":

Answer 1: A small town in the US state of California - home to less than 1,000 residents. Honeydew is located 15 miles (24 km) from the Pacific Ocean in an area that is known as "The Lost Coast". (No, that is not the honeydew I had in mind).
Answer 2: Dr. Bunsen Honeydew, a Muppet from the Muppet Show (wrong again).
Answer 3: The honeydew melon is thought to have originated in Persia and was also prized by the Egyptians.

The infinite information of cyberspace was not proving very helpful so it was time to resort to a book. Brewer's Dictionary of Phrase and Fable seemed a good place to start and at first the answer looked promising:

> A sweet substance found on lime-trees and some other plants. Bees and ants are fond of it but it is a curious misnomer, as it is the excretion of the aphids. The way it is excreted is this: the ant beats, with its antennæ, the abdomen of the aphid, which lifts up the part beaten and excretes a limpid drop of sweet juice called honeydew.

An aphid with strong mandibles gets sap from a stem. The residue of an excessive intake will be excreted as honeydew.

Photo: Franc Sivic, Silva Apis, Slovenia

Now things seemed to be making sense although the words "curious misnomer" ring some alarm bells, as the Oxford English Dictionary says "misnomer" means the use of a wrong name or the use of a wrong term. So this implies that honeydew is neither honey nor dew.

When I had enough of these generic reference works, it was time to consult a specialist, so it seemed natural to turn to the research of Dr. Eva Crane. Here, the first thing we learn is that the word "honey" is older than the word "bee". The reason for this is that honey was the object of value to us, and the bees just got in the way. Therefore, it is probable that the word honeydew is also older than the word bee. Honey, and therefore its derivatives, may have various meanings - not just honey from bees, or honeydew gathered by bees, or the crystallized honeydew sometimes known as manna.

Exudate on a lime tree (*Tilia cordata*) being collected by a bee as honeydew.

Photo: Franc Sivic, Silva Apis, Slovenia

Crystallized honeydew, sometimes referred to as manna, on the leaf of a Fig tree (*Cotinus coggigaria*) which flourishes on the karst (limestone) areas of Slovenia and Croatia.

Photo: Franc Sivic: Silva Apis, Slovenia

The story gets further convoluted because manna itself is another misnomer, being a corruption of the Hebrew "man-hu" meaning "What is this?"

> When the children of Israel saw it [small round things like frost on the ground], they said to one another, what is this? For they knew not what it was. (Exodus Chapter 26, Verse 15). And the house of Israel called the name thereof manna. It was like coriander seed, white; and the taste of it was like wafers made with honey. (Exodus Chapter 26, Verse 31).

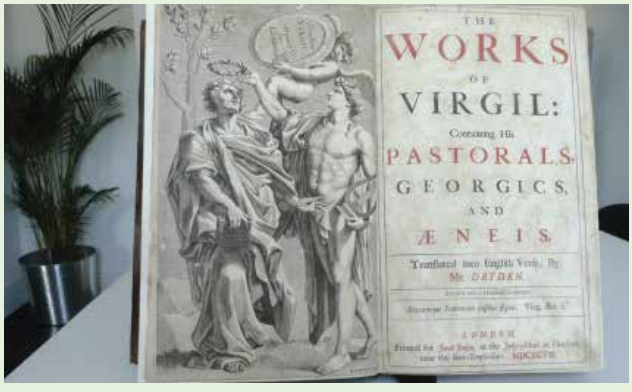
In all, the word "honey" occurs over sixty times in the King James Bible, but it is likely that only five or six of these refer to the substance produced by bees that we know as honey today. The word often refers to just about any syrup made from dates or other sweet fruits. So it can be seen that precise definitions are very difficult, and vary widely through history and with different cultures. Likewise, in early literature, honeydew describes just about any sweet, desirable liquid and it is used particularly in reference to nectar.

It was just a guess by early man that bees obtained nectar from flowers and trees; it was not until the late 1700s that it was realized that this was the case. Up until then it was assumed to be some exudation from the heavens falling on the earth beneath – honeydew. In the first century BCE Aristotle wrote:

> Honey falls from the air, principally at the rising of the stars and when the rainbow rests upon the earth. (Historia animalium Verses 22 -24).

The opening of Virgil's epic Georgics and Aeneis, which he wrote around 29 BCE, is as follows: "The gifts of heaven my following song pursues, Aerial Honey and Ambrosial Dews."

Remember, at this time nectar was not recognised as a plant secretion, but rather as a substance that came down to earth as a gift from the gods above. Later, Virgil refers to Manna, which he calls "the heavenly gift of honey". However, his main interest in the poem is in bees, not honey.



Virgil's Georgics and Aeneis written around 29 BCE. The illustration is John Dryden's English translation of 1697.

Not surprising then that honey was considered to be the food of the gods which man was privileged to share. This idea was perpetuated internationally through literature. In English, Samuel Coleridge's poem "Kubla Khan", written under the influence of opium, was published at the beginning of the 19th century. The lines mention honeydew but could also apply, covertly, to his use of drugs:

> Weave a circle round him thrice,
> And close your eyes with holy dread
> For he on honey-dew hath fed,
> And drunk the milk of Paradise.

In Hindu mythology the moon had the epithet Madhukara, or honey-giver (madhu = honey in Hindi). Followers believed that the heaven-born honey which fell on the leaves and grass sweetened even the milk of cows and goats. Other cultures and mythologies take up the theme of the moon as the controlling influence in the supply of honeydew.

It was an ancient Germanic belief that the moon was supposed to be a huge cup, filled with honey and mead, and the stars were swarms of bees whose honey fell to the earth upon the oak and sweet ash. Furthermore, it is interesting that Melia (Μελια) is an ancient Greek mythological name referring to the daughter of the Greek god Okeanos. However, the name is also applied to the ash tree in Greek and is a derivative of μελι (meli) meaning "honey".

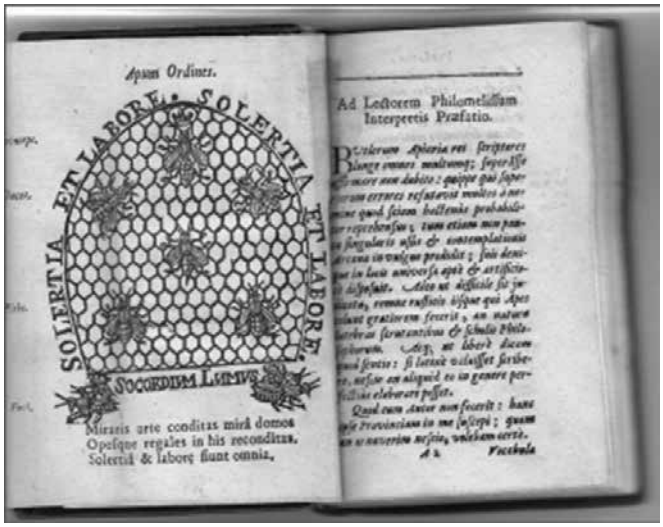
In Hindu mythology the moon had the epithet: Madhukara, honey-giver. Madhu means honey in Hindi.

The first major text published on the honey bee in 1609 was *The Feminine Monarchie, or a treatise concerning bees* by the Reverend Charles Butler. He wrote: "The greatest plenty of purest nectar cometh from above; which Almighty God doth miraculously distil out of the air,… and condensated (sic) by the nightly cold into this most sweet and sovereign nectar, which thence doth descend into the earth in a dew or small drizzling rain."

Thereby he perpetuates the idea that all honey is honeydew in that it condensed out of the heavens onto the plants. In other words, it occurred in the same way as the moisture, brought about by temperature fluctuations and inversions, found on plants at the start of the day - morning dew.

We have to wait until 1879 when Gaston Bonnier put forward his thesis on nectaries, most of which are within the flower, but some can be extra-floral – on a leaf or a stalk. We have only known for certain the exact source of nectar and therefore honey for less than 140 years.

That then establishes the source of honey, but what about honeydew? In 1739 French entomologist René



The Feminine Monarchie, or a treatise concerning bees by The Reverend Charles Butler (1609). The illustration is the 1673 Latin version.

Antoine Ferchault de Réaumur (1683 - 1757) first noted the occurrence of aphids and honeydew together, and realized that the honeydew was excreted by aphids. In 1763 Pierre-Augustin Boissier de La Croix de Sauvages (1710 - 1795) described the nature and production of honeydew. Similar observations were being made and recorded in Dutch and German literature at this time.

A large commercial apiary in a huge oak forest near Tzarevo, Bulgaria the sole purpose of which is to produce honeydew or forest honey.

Scientists have continued to investigate these substances with increasing diligence and using ever more sophisticated methods and equipment. In addition to classifications based on the highly developed sensory perceptions of skilled tasters, analytical methods using latest gas chromatography techniques, electrolytic analysis and other chemical and physical tests give added precision to our classification. But all this science is let down badly by the vagueness of the word "honeydew". If our literature and oral communication is to reflect the precision that the scientists are offering then we need at least four separate words for:
Plant secretions;
Aphid excretions;
The bee produced product from nectar in the comb;
The product the bees produce from non-nectar liquids and place in the combs.

After all we jar these products and sell them! At present no language in the world, including English, offers this degree of precision. ❀

Dr Eva Crane warns that the word "honey", and therefore its derivatives, may have various meanings.

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Builder's Corner
Modified Wheelbarrow Cart

by Murray Willis

I have been a beekeeper for just over 5 years now and enjoy all aspects of beekeeping. I am always trying to look for an easier way to work with my bees. I enjoy building all parts of the hive and helping others do the same.

I attended the BCHPA semi annual meeting in March, and Paul Kelly, Apiary Manager from the University of Guelph Honey Bee Research Centre, was one of the speakers. He talked about getting a flat deck truck for beekeeping and how useful they are; I also have one and love it. He also showed a picture of his flat deck wheelbarrow and said how handy it was. Right away, I said I need one!

As soon and I got home I started looking for an old, used wheelbarrow. A friend of mine has a scrapyard, and had one which he was willing to give me for free. I brought it home and stripped it down to the bare frame, then added a wooden frame using reclaimed wood. I then added a couple of cross pieces and some uprights, which made it a level platform.

The deck is 48" long and 22" wide. I used 1" X 4" lumber to make the deck, and added the front stop. The metal supports that were on the front of the old wheelbarrow were re-used as supports, bolted through the deck and front panel.

I stained and varnished it and its ready for use, and it is even handy around the shop. It will make working in my bee yards a lot easier and quicker, and it makes an excellent work platform as well. A two wheeled wheelbarrow works best, as they are more stable. Looking forward to using it. Thanks to Paul Kelly!

Original two wheeler.

Wooden frame and cross pieces.

Finished flatdeck.

Murray Willis is a Kamloops beekeeper who was born in Sherbrooke, Quebec. He was at the PNE about 6 years ago where he saw a demonstration on honey bees and decided to begin beekeeping the following spring. As the President of the Kamloops Beekeepers' Club, he always has time to talk about bees.

Kelowna Bee Breeder Circle
an Example of how to Organize Local Stock Improvement

by Bill Ruzicka

We are a group of beekeepers in the Kelowna area who wish to keep and rear Vernon stock honey bees, and the following is an outline of how we have set up this bee breeder circle.

My cardiologist told me that my heart is fixed and can last another 10 years, but he also toId me that I have to give up physical labour while keeping my mind busy, so a group of us in the Kelowna area have begun a bee breeder circle to recreate the Vernon stock improvement project. For many years several of us have been maintaining Vernon stock, under principles that I learned in that project and followed for 50 years.

In past years we relied on me to produce breeding stock. This year I will provide some but participants will select the best of Vernon stock from their own hives.

Participants include **Hive Lenders** who lend up to 18 hives: 2 story standard deeps, with queen excluders & empty dadants on top to prevent swarming. Hive lenders are entitled to 30 cells per hive donated or 60% of cells they graft (grafting can also be done by experienced grafters). Lenders donate 3 combs: one of open honey, one of pollen, and one of graft; they will be replaced by frames of foundation.

Learners/Students/Helpers will have the opportunity to learn the process, and if they want to learn to graft, they will get the instruction and training. As all other aspects will be under my control and their bars will be in same frame with those of 2 experienced grafters, the number of successful cells will be the true result of their ability to graft.

For my part as the organizer I keep all surplus cells, virgins, and starters/finishers to convert into nucs, and will rear queens and sell them to pay for yard maintenance, tractor, cell cleaning and replacements, frames, feed, medicines, and treatments.

The following dates are a reference for the man only. We select day zero by Mother Nature's calendar: usually this falls on the weekend after the last bloom of apples is gone. I have 50 years of records and we try for the weekend as it is usually better for participants.

In mid- April for our area, **36 days before day 0,** we meet to unpack colonies and select possible breeder mothers by evaluating how well they wintered; we also factor in last summer's performance (honey production, brood pattern, temperament). The father breeders will be given drone combs to produce drones for mating our virgin queens. Participants can bring their own drone combs and have them laid in Vernon stock, and then take them home when they are capped to produce mature mating drones in their hives for mating with their queens. Hives will be marked accordingly and treated for mites with MiteGone formic acid treatment. Hive lenders are expected to do the same to their hives.

By mid-May or **10 days before day 0,** or earlier, we move colonies to the breeder circle location. For many years, Bob Chisholm has been providing most hives and bees for

In front of the picture is the breeder circle with rotating crane. At left is the incubator circle with hives incubating the brood from the starter/ finishers.

conversion into starters, finishers and incubators. For this year and for future years, participants will bring their strongest two high colonies (lender hives) to the common bee yard, placed on pallets in groups of 4 to establish colony location and flight patterns. Hives will be inspected for strength, disease and quality of queen; if accepted they receive preventative AFB treatment.

Hive lenders get these back one day before day zero with their queen and with swarm control done, and they are ready to produce honey.

By about May 21, in the afternoon, **5 days before day 0,** the lent hives will receive nice fully drawn comb with the Lender's name tag placed into their mother breeder hives, and the queen transferred to it in the proper place, removing one unused comb which will go to the one who supplied the perfect comb. The eggs deposited into those combs will be used on the grafting day to produce virgins.

One day prior to day zero, or May 25 by this schedule, and in good flying weather, two donor hives facing the same direction in each four pack will be removed, and in their place (in the middle), we put the equipment to create the starters. From the bottom up, the starters consist of a single bottom board, a queen excluder, a wet honey Dadant box, and a standard box that will contain 6 combs and 2 inner feeders with thin feed (1:1 syrup). The field bees will soon start populating this new starter.

Meanwhile, the queens are found in the donor hives, stored on the comb where they were found, and placed in a screened nuc box. Then, each donor hive gives one comb of open honey and one of pollen to the starter. If that hive has a graft comb, it will be placed in between honey and pollen. Then 60% of the nurse bees are shaken from the donor hives into the starters. All of the combs except for the one honey, one pollen and graft comb are put back into the participant's hive. 2 or 3 frames of foundation are placed in the top box of the lender hive to replace donated comb, and the queen is returned to the lower box. The donor hive is screened and moved immediately, to be loaded for transport back to the

Hive configuration in groups of 4 to prevent drifting.

lender's home yard.

In the end, the starters will have bees from two different colonies and two combs of honey and two combs of pollen. The remaining two comb spaces in the starters will be filled by graft combs on the same day, from my breeders or from those of the lender. On each pallet where there were four lender hives, there will now be two starters.

Day 0 (May 26 for us) is grafting day. Three years ago, I converted my honey house into a temperature and humidity-controlled space that can accommodate up to 6 grafters in comfort. Participating grafters bring a headlamp, two Chinese grafting tools, and glasses to see well. Magnification glasses or lenses are also helpful. I will teach participants how to graft, and also help improve grafting skills. There will be experienced grafters there so participants are guaranteed a successful graft. I have had two people who have never grafted and after one "test and show" bar, were able to graft 15 out of 15 cells consistently. Bob's wife Kay improved from 9 to 14 out of 15 very quickly!

A few of our Vernon queens are bright yellow to black and anything in between. My daughters call them 'yellow and black tigers' depending on whether a yellow or black stripe prevails, 'negritas' if fully black.

GRAFT RULES: The graft comb and grafted frames with 3 bars of 15 cells are stored and transported to and from the yard in heated and humidified boxes, ensuring success. We graft only 3 bars of 15 cells from each GRAFT comb to eliminate inbreeding. Frames are numbered and bars named so that the results of each grafter are accurate.

When we distribute the mature cells, we take a maximum of 10 cells from each bar, ensuring there cannot be more than 10 sisters. (If a participant has just a few, we make sure that they don't have any sisters, because we have 18 mothers).

Also in our system, we have organized to do the following, with dates appropriate for our area: **May 25 & 26, on both days in the afternoon, Artificial Swarms will be produced.** Learn how by reading "selling and buying bees in 21st century" on www.MiteGone.com. Participants may choose to sell their hives as artificial swarms. As some want to learn this method, it will be part of this year's program and may also be next year, too.

Day 4 (May 30 for us): Queen cells are ready to go into nucs, in cell protectors, at the same time as nucs are being made. This happens until **June 3rd.**

Day 6 & 7 (June 1&2 for us): we do swarm shaking and nuc making. This is how I will sell my colonies, make nucs and rear the new queens and populations for next year. I will invite all participants to come and join me to learn.

Day 8 (June 3 for us): All unused queen cells are caged and placed in frames that accommodate these cages. The virgin queens are born on day 10 or 11. They can be sold direct or mailed for mating in anyone's nucs. Also, on this day, a virgin bank is created to store any excess caged virgins, and the starters are converted into mating nucs and can be sold. This is where payment for my involvement comes: 1/3 of proven stock cells will be available to all beekeepers to buy, and they can rear their own new queens for wintering at a reasonable cost.

Day 11 (June 6 for us): On this day all nucs are checked to make sure the queen has emerged from her cell. If she has not, we will replace the cell with the caged virgin.

Day 13 - 16 (June 8-11): By now cells and virgins must be used.

Day 17 (June 19): The virgins are ready to mate. Watch for a nice calm sunny afternoon.

Day 24 (June 19): If there was nice weather they should be mated and laying, but give her another week to prove it.

Day 38 (July 3): If not laying she is stale and its time to unite it with mated one. ❀

Ninety percent of Vernon stock will be "mellow yellow" queens. These are actually a light brown color but bigger than normal queens.

The Bee Trailer, a BCHPA Beekeeping Display

by Keith Rae, with large parts from Doug McCutchen's book 'A History of Beekeeping in British Columbia, 1950 to 2000'.

Bee trailer at the PNE

In 1990, the Pacific National Exhibition (PNE) took a completely different approach to the Honey Show. They decided to develop a beekeeping display space in a forty foot semi-trailer obtained for this purpose. Doug McCutcheon was appointed to head a committee to develop the display, and other committee members were Dr. Mark Winston, Jack Caunce, Sue Katz, and Carol Davis. The committee decided on what would be included in the display, pull-out sections increased the inside space and a 'skep' style entrance was attached. Sue Katz was hired to do the artwork inside the display area which became known as "The Hive".

The interior of The Hive contained a variety of beekeeping exhibits which explained many aspects of bees and beekeeping, and a recording of bees over the sound system enhanced the feeling of being in a hive.

This display was a major attraction. Large murals had been painted on the outside of the trailer, depicting hives in the canola fields of the Peace River area, and there was also a display of an extractor and extracting items. By 1998, the PNE Honey Show was changing again. PNE officials no longer wanted The Hive, and rather than let it be destroyed, arrangements were made to have it transported to Armstrong.

Interior Provincial Exhibition Honey Show

The Interior Provincial Exhibition (IPE) at Armstrong is the second largest fair in BC and has been operating for over a hundred years. It is an agricultural fair with livestock, horticulture, a rodeo, crafts and much more. Honey competitions have been a part of the fair for many years.

Feral hive display.

The book, *Our Fair: The Interior Provincial Exhibition: It's First 100 Years* by Shirley Campbell provides some information on early honey exhibits. The earliest is a photo of a large display by the Department of Agriculture during World War II, with Bill Turnbull, then the Senior Bee Inspector, in front of the exhibit visiting with an onlooker. Grace Fuhr of Vernon began exhibiting honey at the fair in 1948, and continued to exhibit for more than thirty-five years.

There is also a photo showing honey judge John Corner in 1959 discussing honey preparation and judging with Ken Simons, a leading beekeeper from Salmon Arm. They would have discussed colour, density, and the many aspects of show honey. Another photo shows an educational display of honey, beekeeping products, and beekeeping at the 1974 fair. In 1985 the Honey Show became Division 15 under Grace Fuhr, who was the Honey Division Director for many years. Grace retired in 1986, after which Dianne Wells took over the work of the Honey Division.

At the 1994 fair, John Gates and Denys Parsons presented a popular demonstration of extracting honey inside a screened enclosure. I was the honey judge for many years in the 1990s, and still judge at the IPE.

4 frame observation hive.

Beekeeping equipment.

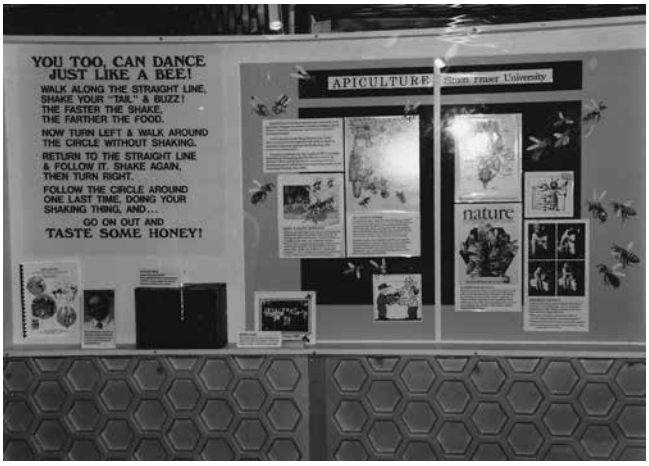
When the PNE in Vancouver decided to take the Bee Trailer (otherwise known as The Hive) out of use, the IPE decided to move it to Armstrong. Lindsay Blackburn, the IPE president at the time, arranged the move to Armstrong where the trailer was set up by Doug McCutcheon, John Gates and IPE staff, adjoining the Horticulture Building. Ramps were built from inside the Horticulture Building to the trailer, a roof put over it, and power hooked up.

These improvements to refurbish the exhibit were carried out by IPE staff at a cost of five thousand dollars, according to the IPE manager. The cost of moving the exhibit to Armstrong was paid for partly by surplus funds from honey sales at Vancouver, and partly by the IPE.

In 1998 the Armstrong committee began to develop an exhibit inside the Bee Trailer with Rhonda Neufeld taking the leading role, assisted by Doug McCutcheon. Since the 1999 fair was the 100th for the IPE, the exhibit focused on The History of Beekeeping and there was old equipment and lots of photos of beekeepers and their bee yards, especially in the Okanagan.

One year, the theme of the exhibit was international beekeeping, and another year it was hive products. New displays and large photos were used each year. It was necessary to have many volunteers to look after the exhibit, which always included an observation hive. Every year many beekeepers have stepped forward to help. The exhibit is popular, drawing ten to fifteen thousand visitors each year. Eventually, the roof began to leak, the exhibit became damp and the IPE looked at placing a roof over the trailer and skirting in the bottom, but for logistical reasons the trailer was removed and instead, the IPE built a 12' X 50' addition onto the Horticulture building to house the Beekeeping Display. The panels with the hex pattern on the bottom were moved into the new display. The new room provided a lot more space and made it much easier to move around inside and avoided congestion that was an issue in the trailer, and it allowed us to have more free standing displays in the center. In 2012, it was the Honey Division's turn to be the theme for the fair, with the slogan 'Catch The Buzz at the IPE'.

In 2004 Armstrong built an new ice arena, Nor Val Sports Centre, next to the fairgrounds. Due to it being across the street from the fairgrounds, it doesn't attract as many people. Over the years, most of the display divisions from 13 through 19 have been moved to the Nor Val.



More displays at the PNE.

Stephanie Rae selling donated honey at the IPE to offset the cost of refreshing the displays.

In 2014, the fair rearranged things to maximize the number of commercial spaces in the Horticulture building, and this resulted in our display finally being moved to the Nor Val Centre. The fair looked after the moving and setting up, removal and storage of the panels, so all we needed to do was to set up the display. By 2014 the plexiglass covering the displays had some small cracks and chips and the screw holes into the wood frame were stripped, so some repairs were attempted, but once the panels were being moved, large cracks and pieces of plexiglass were broken and by 2017 the display was looking in poor shape.

The displays were taller than the door they needed to be fit through to be stored and the plexiglass stuck up even higher. In talking with Larry the fairground supervisor, I suggested that I could help him cut down the panels so they would fit through the door and then trim the plexiglass so that they would fit into channels, instead of needing to be held in by screws, and by doing this we could salvage some of the plexiglass that had small cracks and broken corners. Larry and his crew cut 4 inches off the displays, the fair bought new plexiglass and aluminum channels for the display, repainted the displays, and also convinced the fair that we should remain in the Horticulture building, which sees heavier traffic. The displays are now looking clean and new, and the interest in bees and beekeeping has never been higher.

In 2018, the provincial fair board set a theme of promoting local products and buying locally. To this end, I developed a hexagon shaped insert to feature local products. In 2018, unsure if I would get everything put together, I decided to promote local valley meads, and I had 4 meaderies showcasing their products. This year we are inviting local beekeepers to submit their honey, with attractive labels, to be put on display.

We have been blessed to have such a great display tool over the years. It defines the space we are provided and makes putting up a large display possible. It was the BCHPA and the PNE fair committee, with a lot of work by students from SFU, that brought this display together. A big thank you to the IPE for saving it from destruction 21 years ago, for continuing to support us by investing thousands of dollars into the display over the years. A big thank you also to Doug McCutcheon who was there in the planning stages, who was instrumental in getting it moved to Armstrong, and continued to be on The Hive committee with John Gates and Rhonda Neufeld.

Lawrence Bergstrand and Murray Willis from Kamloops working a shift.

Sale of donated honey to support the cost of displays.

Armstrong Fair BCHPA display.

Honey color display.

The BCHPA Display at the IPE - Armstrong Fair and Stampede

Featured Product Display

In 2018, BC Fairs sent out a directive that fairs should be promoting 'Buy Locally'. In keeping with this theme, we built a hexagon display grid to show off locally produced products and company brands. In 2018, we featured local commercial meads that are produced in the Okanagan Valley.

This year, we will be showcasing local honey from apiaries in the Interior of the BC. If you are a beekeeper from the Thompson, Shuswap, Okanagan or Similkameen, please send in a jar of your honey with label so it can be put on display. There is a shelf at the bottom for business cards to be set out so potential customers can take your contact information with them.

The fair has over 150,000 people through the gates each year, with guests coming from across the province, and country. We get lots of requests of where to buy local honey so add your honey to the display and receive some free advertising and promotion.

Rules

Must be your own honey produced in your area.
Needs to have an attractive label; Avery address stickers for labels will not be displayed.
Should be in clear containers so that the honey is visible around the label.
Honey should be free of crystallization unless it is creamed.
Size of jar: 500g to 1kg.
Only one of each type of honey (liquid, creamed, etc).

Contact Keith Rae for information on reserving your space and sending in your honey to be displayed.
We will set up dropoff places to facilitate getting the honey to the fair.
Phone: 250-540-0227, email: K_S_Rae@hotmail.com ❀

BCHPA Semi-Annual Business Day Minutes
March 22, 2019, Kamloops, BC

Welcome and Call to Order by Kerry Clark
Additions to the Agenda, approval and adoption of the Agenda Motion accepted as edited: Ed Zurawell – approved by consensus.

Minutes of the AGM of October 2018: Motion to accept as distributed in the BeesCene magaine
Moved: Ian Tait, approved.

Executive Reports
President: Kerry Clark
Bee BC funding program was new this year from the Ministry of Agriculture – over 20 of these small projects underway. BCHPA not responsible for the projects but beekeeping in the province benefits from them. Very good line up of speakers for education day tomorrow, great turnout for business day.

First Vice President: Jeff Lee
Successful AGM in Victoria from both financial and educational aspects. Barry Denluck: Financial update from AGM in Victoria. Revenue $56K. Expenses $46K. $10,472 profit ($3000 from fundraisers). Some outside funding to help support the speakers: $5000. This is not included in the reported amounts. Donation will be forthcoming to the Boone Hodgson Wilkinson fund. Found that soliciting donations for the fundraising was most successful when saying the funds go to bee research. CRBA now has a dedicated bee research fund and their funds will got to that.

Jeff: This process of conferences has been reviewed because of the size of finances now at these events. We have made some changes for preparations with structural management. In the past, clubs have been responsible for setting up and managing all the financial obligations of the events. Host clubs were spending a lot of time creating budgets, opening accounts, etc.

This situation has grown and now the organization's events are dealing with significant funds and expenses to manage. We are trying to figure out ways to make it easier to organize. New process returns financial responsibility to the BCHPA and reduces the amount of financial work by the host clubs. This will be trialled at the AGM in Prince George. Budget will now include line item for speaker fees. Also some proposed and accepted changes: new permanent website for events (so we don't build them for each event). BCHPA will still provide advanced funding for events to host clubs.

Prince George AGM, speakers booked: Kirsten Traynor, former editor of American Bee Journal. Amina Harris, ED for Honey and Pollination Centre, UCDavis "Descriptive flavours in Honey". Sarah Red-Liard, funded and runs the BeeGirl foundation. Karen Pederson, Pederson Apiaries of SK. Kathleen Suddes, Sunshine Coast Beekeepers Assn President. Sunday session will likely include a session on 'best beekeeper hacks' and 'best methods for dealing with wasps'.

2020 AGM will be hosted by Langley. This will be celebrated as our centenary - 100th AGM and 100 years of service to beekeeping in BC.

Barry Denluck: Thanks to Jeff and Dan for moving forward to making hosting an even better experience. Dan's recordings are all on the BCHPA website and viewable from Vimeo app. Big kudos to Dan for this.

Second Vice President: Dan Mawson
One of the responsibilities for host clubs used to be accepting registrations. Dollar amounts for these used to be small but are now getting quite high so adjusting these processes we are reducing the risk to host clubs by having BCHPA doing that.

Online registrations now fully supported and efficient. www.BCHPAConference.ca – standard platform for each event rebranded based on host club and location. Will save significant funds and be consistent. It will be live shortly and showing the AGM in Prince George.

Modified the conference manual and put online for ease of access for host clubs.

Has fully taken on the organization for the semi-annual meetings and this is where main focus has been. This is the largest semi-annual business meeting we have had in the history of the organization. Continued effort to improve and expand. Vendors invited to the semi-annual this year. Please support their continued participation.

Networking social this evening as response to comments that beekeepers want an opportunity to connect at the semi-annual. New this year. Continuing to enhance communication via website updates, online registration etc. Vision to make business days more value added by bringing in speakers in the afternoon.

Recruited to help out with Apimondia presentation. Encouraging people to send photos, videos etc that represent our area, what we do and highlight how beautiful this province is. Will be compiled within CHC opening session video. Special thanks to Heather Higo for collection of images.

Now working with Prince George AGM team - David and team doing a wonderful job up there and are getting additional grants to enhance the experience. Oct 4-6, 2019.

Treasurer: Irene Tiampo
Advertising incomes very good! Comes through the BeesCene

magazine. Nutritional labels for sale and doing well. Memberships up to 525 people so far. Branch DOLI insurance has been paid. Certified Instructor course held yesterday. Several books on sale at registration desk. Financially looking very good.

The Branch refund of $10 per member costs are brought up at the AGMs – this has helped increase the memberships in branches. Second insurance policy for forest fire protection at $2 million cost of $130 (only $30 more than $1 million policy).

Secretary: Christina Rozema
Submission made for Archives.

Canadian Honey Council: Stan Reist
Since last October been very busy. Down to American Honey Producer's Association meeting. Simon LaLonde was voted onto this board – first time ever a Canadian serving on this Association.

Promoting Apimondia. 2004 – 17, up to 10k beekeepers. Honey production down to 123lbs per hive. Projected $121 million in 2024. 188 million tonnes in 2017.

AB 11% of beekeepers and produce 42% of honey. AB, SK and MB produce bulk of honey in Canada. Hives by province: BC 5%, ON 16%, BC 27% beekeepers, ON 27% beekeepers, 2009-18 33%, 16%, 25 % losses. Hearing reports this year of VERY heavy losses – will be a while to find out final totals.

Fumigillin update – CHC working to transfer DIN numbers and paperwork for fumigillin to keep it a Canadian product. Looking at two labs in Canada that could build the product. The factory in India has significantly increased the cost of raw materials from $1500 to $9000 per kilo. Still working on this with Vita Europe.

At CHC website – Bee Health Roundtable has a lot of reports, workbooks etc. including Canadian Best Practices Management. Industry growth issues: successful in avoiding "added sugar" to our labels, partial success to identifying country of origin on labels, work on differences between "product of Canada" and "made in Canada" - asking before reading the backgrounder document prior to responding for call for survey. New format of nutritional labels now accepted. There will be an overlap time for use of old labels.

Antimicrobials – not all provinces are the same. SK likely 9 months ahead of everyone else and things are in place for small scale beekeepers. Not all vets are qualified. Implementation was Dec 1, 2018. Public trust/social license: does this pit small vs large operations. How to do this work without alienating the farmers in prairie provinces.

Huge growth in urban beekeeping. Industry growth issue: biosecurity. interprovincial movement of bees and harmonziation of hive health inspection. We import $11 million annually of queens and bees. CHC would like to see as much of this money going into Canadian beekeepers.

Safe food for Canadians Act came into effect 1 Jan 2019. CFIA licensing determined via taking their online survey. Development of a National Surveillance program – coming out of NBDC to identify what we have got across Canada. Price will be based on hive count. CHC has applied to Costco to be used to offset cost to Canadian Beekeepers.

Biggest international issue – adulterated honey. US packers are significantly under offering price for CDN honey. Looking at Asian markets to deplete significant inventory on prairies.

NMR – system set up by Peter Awram in Abbotsford. Honey testing to determine if it is adulterated. BCHPA also supporting Leonard Foster lab for mass spectrometry. At some point in time food retailers will likely be asking for NMR results on products (also includes food oils). CFIA has stepped up their testing protocols to detect adulteration.

Labour is significant issue for large prairie operations. Introduction to biometric testing of labour (ie. retinal scan and finger prints). New processes for getting applications approved.

Diversifying markets: CHC focusing on getting more markets for our honey. Big food show in Dubai and CHC is there talking to importers. Why are there such high import amounts when there is a surplus on the prairies.

Program Reports
Boone Hodgson Wilkinson Fund: Brenda Jager
Trustees will be reviewing applications for funding. Presentations: Capital Region Bee Club $1000 donation. BCHPA Membership donations $657.

Certified Instructors' program: Lance Cuthill
Presentation of successful new Instructor Certificates – exceptional marks. Full course again this time. Marks all above 80% Over 60 Certified Instructors across the province. Thanks are due to Paul van Westendorp as one of the first instructors in 2013. Mandated curriculum that instructors will teach so there is consistency and accuracy. 16 hours of instruction including 4 hours in a bee yard. Working to give beginning beekeepers the best possible start.

Thanks also due to Ian Farber and Axel Krause for their part in teaching with Lance. Over 100 years of beekeeping experience between the three of us. Thanks also to Irene to managing the funds from applicants. This year over 20 applications and could only choose 12. This year we had an applicant from the US. Lance will be retiring from the course and BCHPA is looking for a third instructor to join.

Old Business/New Business
2019 Prince George AGM plans: David DeLeenheer – "Bee Friendly" plans are well underway. Coordination committee revamped to address new conference planning process. 5 meetings already and people are keen.

Dan and Jeff supporting. Templated webpage and registration cmplete, BCHPA managing. Website will open immediately after semi-annual. Time frame is a bit forward to ensure weather is good for travel. PG Tourism has been very helpful and will be providing some speaker gifts etc. Coast Inn has been secured as venue with good room/meal rates.

Sponsorships will be contacted after semi-annual. PG is a very supportive community.

AGM 2020: Elaine Garry
Langley hosting the 2020 AGM.

BeesCene: Heather Sosnowski
Going well financially. Big jump in advertising in the past few months. The more we improve the content the more we encourage advertising. Content is collaborative effort of all submitters. Article submitted with some advertising and was not accepted – advertising is always separate from articles. Advertising within an article will be edited out. Several kudos and request to highlight some of the other research happening across the country – tech transfer teams and research. A suggestion from member to submit it for the publication competition for Apimondia.

We do offer subscription only option for people who don't want to be members. And there is an option for electronic only.

Ad revenue is almost meeting cost of production, all advertisers get a copy of the issues. Question: is there an advertisement for non-members to get subscription only.

Archives: Ted Hancock
New archivist this year after Dr. Boone's retirement. Met together last fall to review archives and tour. Visits to Archives can be arranged. Two sections: BCHPA and Beekeeping in BC in general. Personal records are welcomed as well as association records. Thank you to Dr. Boone for all his work in preserving this information.

Research: Colony Health in Blueberries: Heather Higo/ Julia Common
Presentation: How to keep strong bees in blueberries: presentation given at Blueberry Council in January. Gained better understanding of their issues and they in turn gained a better understanding of ours. Review of issues leading up to research question, research team (large team spring of 2018). Blueberries are Canada's top fruit export, $400m Canada-wide – value attributed to honey bee pollination: $186m. 30,000 total acres in blueberries – 20k mature and 10k upcoming.

Should have 2 hives per acre = 40k hives needed for BC. Really good feedback from blueberry growers and they learned about issues with bees. Growers had very poor fruit set in 2018. Very warm spring (and no irrigation done) and previous winter/fall temperature effects on plants. We need to learn what challenges growers have. Still work to be done on chemical analysis for the project, overall and individual colony health.

Not aware of any particular fields that felt they were understocked. When we engage with our growers conversation can be 'can they spray at night' or in a way that doesn't impact bees as much. We need to be aware of chemicals that are being used.

Supplemental feed differences didn't appear visually – still to be correlated amount of pollen eaten with health of hive.

Research committee consists of Heather Higo, Alison McAfee, Gerry McKee, Liz Huxter. See allocated projects below. Also see BeesCene magazine.

Five projects allocated in 2019 for funding by BCHPA
1. Bee Health in Blueberries $10,000
2. Honey Authentication Dr. Leonard Foster Lab $8,000
3. Mystery Brood Disease $5,000
4. Novel varroa control compound Dr. Erica Plettner (SFU) $2,000
5. Queen and drone quality testing by BC Bee Breeders $1,000

Website update: Dan Mawson
Website continues to be main communication focus and a few months ago we started monitoring traffic – averaging 5K visits per month. In January 6200 visits! Our email distribution website has 1100. We continue to renew memberships and insurance via website. Nutritional labels purchase now online. Classified ads solicited for BeesCene are replicated on the website as a value add web exposure. "Bee Informed" newsletter sends out via website and mailchimp.

Quite a few enquiries about 'hacked' emails....these emails provide access to executive but hackers can use them. If you receive anything from this that looks suspicious check the return email address to ensure that this is an email from Executive. Don't send money without confirming via phone if you receive an email from BCHPA.

Due to increase in visits, we need to increase capacity and move website to new server. This will add some security, increase speed, allow for backups in case of downtimes/ hacking, multiple domain names/addresses. Cost is additional $75 per year.

Bee Friendly AGM 2019 website up and accepting registrations. BCHPAConference.ca reusable and rebrandable with new registration system which allows multiple registrations at once.

Sponsors can also sponsor online at multiple levels including advertising.

Honey, wax and mead competition rules will be standardized and posted on website for conference competitions. Back end of website allows for tracking and accounting. Will be applying new branding and logo to website and conference site. Server is 100% Canadian.

Re-branding and Honey Quality Assurance: Dan Mawson
Last March, proposal to re-brand the BCHPA particularly focusing on the logo.

1 year project broken in to four phases: brand discovery, personality of organization, creative and how it would be used, apply concept. $6k budget. 5 member team worked on the committee. Designer chosen, Membership survey was sent out to all members. 170 responses.

3 possible choices presented at AGM and vote held. Now in process of applying the brand. To date spent $3623 on this process. Goal to create a positive mental perception between a symbol and our product and services. Motion passed to move on with the bee symbol. Reviewed comments post vote and tweaked the design – keeping integrity of design. Executive reviewed and passed the tweaked design. Next steps are to begin applying this to club products like website, letterhead, BeesCene etc.

Mock up of banners and posters that we could use for conferences etc. Not only at Apimondia but also other conferences etc.

Paul suggested a slight modification and they were brought up with designer but this is not supposed to be an anatomical bee – it is an icon. Logo would need to be used with permission. Branch affiliates could use on their website etc. No exact policy for individual members at this time.

"Proud Member" supplementary contract for people to sign for use suggested. Full branding package available for administrative uses.

Quality Assurance project: 100% BC Honey? Should we have some kind of brand as an association that identifies us as members and producing 100% BC honey. Could we use the VQA model (simplified) to identify this? Use sticker to identify. The former certified producer program started off well but ended up not used – so we need to consider why this one to use.

What is enforcement? Who would be monitoring? Producer declaration? Validation of product etc? Could we have these included in nutritional labels? What would organizational liability be if we created this kind of program again. Should be signage and entire package of resources to implement right away. Could participants be required to go through NMR prior to being involved in the program.

Buy BC Program could accept application from the organization. Getting the public aware – consider this as a way to show you are BC. Federal government has a 100% Canadian survey and what you need to consider to put these items on your labels.

Apimondia: Stan Reist

Last fall motion approved for $10K tied to a budget. We have it in draft. Seeking approval to go ahead. This money is outside of our annual budget but we have the Hurt Fund that was assigned for improvement of the industry. Use Hurt Fund to support this $10K fund for Apimondia. Re-read motion and agreed this fund expenditure.

September 8-12 in Montreal. Contest rules still being changed at this time. Proceeding in putting everything in place. Steve Pernal is putting together scientific panel and professional organizing company working very well.

Motion last October for $10K to host a booth in the display section. Spoken with Minister of Agriculture and she is open to supporting $20-25K and she committed to support. We have been working with other industries: Cranberries and Raspberries on board, letters out to Blueberries and Tree Fruits. Budget close to being presented to Ministry. Management team being created to push work forward. Farm Sustainability – core work of organization – 2018 focus on land use and tax/ business policies, farm status, labour.

Communication/Social Media: Diane Dunaway

Heather Sosnowski reporting for Diane. Reviewing BCHPA FB page and how it is working. Over 500 members, many of which are not members of BCHPA. Questioning what the mandate is and policy on advertisement that is not BCHPA. Some structure is being designed for the site.

Michelina Hunter has some suggestions. Social media impact and possible membership increase. Sees big potential in the BCHPA Facebook page. This is a Facebook group as opposed to a business page. As this was created as a way for BCHPA to communication – agree with having posts all approved prior to posting. Change to a page instead of a group.

Summary – there is value to this page. Low maintenance page could do this work better.

Michelina will forward recommendations to the Executive.

Insurance Task Force: Ian Farber

Kamloops branch new treasurer, reviewed insurance line item $400 for two field days for liability insurance. Other clubs also struggle with the cost of liability insurance for field days. Contacted our BCHPA insurance broker to ask questions. What we are looking for is coverage for the branch or club. This is especially important if field day is on non-member land.

BCHPA (Irene?) to ask Cooperators to have something in writing about what we are covered for and not covered for, whether we have to get club insurance.

Questions:

1. Do clubs need specific liability insurance for field days or is this covered by BCHPA organization liability policy?
2. Do members who host field days on their property have coverage via their own personal liability (through BCHPA) AND club or just individually. And if host club, must we restrict this to members only.
3. Are members covered when presenting at schools?
4. How do we get all participants covered by liability (members or non-members)?
5. Is the strategy of naming another address on insurance enough to cover participation at that site?
6. How are the Certified Instructors covered as they MUST include a field day with their students. This has a potential to require insurance. Ask executive to see about coverage for all certified instructors.

Also instructors having Errors and Omissions coverage – but opinion is no for this. Directors and Officers Liability Insurance - Branches have this paid for by the organization. Clubs need to find their own. Ian is asking BCHPA executive to do this work and publish the results. Need to get this out there before field days begin. Possible presentation by Co-operators at next AGM?

Education committee: Ian Farber

Working towards winding down the lending library.

Provincial Apiculture Program: Paul van Westendorp

2019 Winter losses: Coastal/S interior 48%, not across the

board. Annual Spring Survey: all beekeepers with 10+ colonies, anonymous and confidential.

Mystery ailment: EFB/AFB-type of issue (look alike), more testing Spring 2019. Larval samples to bacteriology and virology.

Braula coeca fly: Bee Louse, imported on queens from Australia, identified quickly by local beekeepers. Wingless fly and larger than varroa, endemic in BC for many decades, non-pathogenic, feeds on pollen and royal jelly. Larvae live in hive and spread by adult bees; FA/OA/Apivar reduce prevalence.

Veterinary Antimicrobials: registered vet drugs in Canada. Oxytetracylcine- oxytet/terramycin and Tylosan. Dec 1 2018 no more OTC. All antimicrobials now fall under Health Canada, veterinarian prescription now required.

Process: Establish a relationship with local veterinarian, must be familiar with bee diseases. 60+ vets were on recent online class for beekeepers. PvW designing guidebook for vets. Club develops relationship with veterinarian, with or without apiary inspector. All suspect samples to Animal Health Centre.

No accessibility to veterinarian: contact Apiary Inspector. When sample found positive and no other vet service, Ministry can write out a prescription. Need to have an up to date apiary registration.

Significant support for Bee Inspectors.

Stock and queen producers – get your stock inspected. Change to California protocol due to AHB. Minimum distance to Africanized honey bees 80 km.

Introduction to Beekeeping course: webinar series. Free and not competing with other local beekeeping courses. Bee Master course, Feb 10-14 2020. Details/registration this fall. Send Paul an email to be put on the list.

$25k annualized grant from Minister of AG to BCHPA. Paul being sent to Apimondia, Minister is planning to go as well and will be supporting $20k for booth. BEE BC program – administered by IAF. $150k over two years to support projects in bee health.

Questions: have you been able to quantify reason for losses? Too speculative at this early stage of the game. Unusually mild winter til end of January then super cold and exceedingly windy. Is there any effort by Ministry to pinpoint some of the causes? Survey has set of questions on demise of colonies. This is in line with National Survey. Standardized, internationally consistent survey.

Samples going to NBDC – are you still accepting samples from lost hives to send to NBDC (mystery ailment related)? Not sure about availability of lab that does virology in particular.

Inspector for Nanaimo south – is it Wendi or David? Call either depending on availability.

Situation on kiiji selling nucs – beekeeper reporting 15-20% mite load and "survivors" is there any way the ministry inspector could do a mite count on these hives? Yes, it is clearly defined in the animal health act that if there is cause to believe that there are bees that could pose a health risk the inspector has a right to inspect.

Can we have a list of vets that have taken the bee course for beekeepers to contact? There isn't a list identifying them. Contact Veterinarian College.

Bee Master – person who took the course. Master Beekeeper – significant life experience of bees (40-50 yrs). Should the program change the name – NO -- this was created in 1955. Confusion between names/meanings but loathe to change the name.

Are *Braula* flies a stressor? - no the prevalence is so low and only incidental impact. Wanting to do a comparison between the flies endemic and the ones just recently coming in on queens from Australia.

Technology Transfer projects: Les Eccles

Operation of a tech transfer team:
- need a good administration person to keep all the projects/ people organized
- knowledge transfer and training
- research
- supporting industry priorities
- workshops at various skill levels
- tailor efforts to issues specific to provincial need
- strategies to demonstrate industry support (cost recovery etc.)

Question: what would be an early goal to aim for and how long do you think it would take to create a start up tech transfer? Public support is necessary. Political environment must be right. At least a year of planning and try to start in fall/winter. Create a business plan.

Question: approximate percentages in funding – all depends on the projects. Bare bones 80% government, 20% industry. Core funding is all provincial of OBA.

Notice of Motions

re: Bylaw Changes Irene Tiampo/Kerry Clark To change a clause in our bylaw to allow a deficit in yearly budget if it

is approved via vote of membership (eg. around paying table officer expenses).

Jeff Lee: To separate election of Vice Presidents to different schedules to ensure sustainability and succession planning, particularly for filling the role of President.

Wording and a notice of motions will be advertised prior to the AGM.

Any other reports, members motions
Agri-Stability report: Ted Hancock
Agri-Stability in BC is a governmental organization to offer two programs – Agri-Stability and Agri-Invest. Agri-Stability created a reference margin for income over five years – so for years when you have a catastrophic loss they can help to provide income. This is disaster insurance program. Agri-Invest is matching funds for an immediate disaster plan.

Agri-Stability is a bit slow for payouts – 2 year wait with a small advance. Committee is looking at tweaking. Doesn't have a lot of enrolment as it doesn't have a payout so changes are being reviewed. Due to forest fires, emergency enrolment is allowed for 2019. Would only cover 80% of eligible losses if approved.

Provincial and Federal fire relief programs for fires – conflicting processes. Would smoke issues from fires take into account loss or failure – Red Cross did provide funding via their federal relief funds with top up in 6 months. Agri-Stability now deducts Red Cross payouts.

Provincial government also has disaster relief but does not acknowledge bees as livestock. Have said they will review.

Agri-stability for commercial beekeepers is something to enrol in. Minimum number of years for income claim is 5 but this year 1 time emergency – rules might be different.

BCAC Report: Cassie James
- BC Farmer's Card updates
- Code of Practice for Agricultural Environmental Management
- Ground Water Licensing
- Protection of Species at Risk
- BC AG day in November to meet with Senior Govt staff.

Bee Forage Committee: Liz Huxter has expressed suggestion to have a bee forage committee – Kerry will take to Executive.

Agriculture Canada: New pamphlet on all AG Canada programs. Email to get electronic or hard copy.

Any other business: Yellowjacket wasp damage, Kerry Clark 2017 late great aphid population which means lots of food for wasps. Produced big colonies with many queens going into winter. 2018 lots of queens survive and start to reproduce mega nests. Warm May 2018 good for varroa, bees and wasps. Summer 2018 good crop and hives seemed healthy. Fed, treated, wrapped.

Record cold in February and hives dead. Inspection shows destroyed comb but not mice damage. Wasps had chewed apart brood nest and killed the hive. Weeks of below zero temperatures meant clusters couldn't reorganize and move slightly over food patches. Starved in place.

Winter 2018-19 BC Peace Region losses look to be 50% anecdotally.

Regional Representative Reports
Miscellaneous comment for west coast that wasps are also ground nesters and these hives are very hard to find.

Gerry Rozema: North Vancouver Island
Simon Lalonde (SK) previous year low levels mean following year increases. Wasps were worst we have ever seen. Ground wasps everywhere. A lot of reports from beekeepers of late fall deaths due to wasp invasions. Losses not yet tallied for whole area.

Alan Garr: Lower Mainland
Lots of losses, partially wasps, *Nosema ceranae*, number of people with spring strategies for this year. Several queens already showing in traps. Wasps seen now overwintering.

Heather Higo: Wasp issues reflected everywhere. Ground nests are buried so difficult to find. Sept-Nov losses 40% then lost another 40% between then and winter. Even ones that didn't succumb to wasps initially died from low populations. Trap EARLY. Hive entrance modifications can be done. High top wasp trap outlined in BeesCene. Bees clustered upward into hive leaving entrances open.

Jo Lomond: Seeing wasps under pillow lids on the inner cover. Need to become more familiar and comfortable with checking hives for overwintering wasps.

Mike Campbell: Started wasp research with Contech 10 years ago. Pheromone-based attractants needed – new species from California now here and 10X more aggressive than native wasps. They are also ground dwellers.

Kathleen Suddess: Sunshine Coast Bee Club - Wasp queens predate initially in spring. Pheromone traps in spring are important. Not interested in meat until fall. Put traps close to the ground. 70-80% losses this year. Some at 100%.

Keith Rae: Armstrong Club - Request for locally produced honey jars with labels for Armstrong Fair – last week of August.

Meeting adjourned at 5:04 pm. ❀

Bumblebee on agastache hyssop.

Hover fly on cosmos

Pink and white cosmos and phacelia.

Bee Friendly Forage

by Megan Cowling, all photos courtesy of Megan except where noted

I have three different areas in my yard: a fenced raised-bed vegetable garden, a south-facing and dry front yard trafficked by deer/pets/kids, and a small area where I am trying to establish better perennials/shrubs/trees (the garden equivalent of "good bones") and native plantings. The type of bee and pollinator activity is different in each one.

I notice the honey bees are resourceful and tend to love whatever is flush with bloom in the early and late season. Favourite early bloomers for the honey bees are hazelnuts, heathers, crocus, and my neighbour's flowering red maple. Late season honey bee foraging favourites are the asters, asclepias (orange milkweed), goldenrod, sedums, yarrow, Joe-Pye weed, and my one sourwood tree.

I plant flowers among my vegetables and because the vegetables are being watered, the dearth effect seems lessened. Alyssum, ammi, borage, cosmos, cornflowers, bee balm, dahlias, marigolds, phacelia, prairie coneflower, runner beans, squash flowers and zinnias are all usually blooming in my garden from summer through September and honey bees will often make use of these if it's dry everywhere else. They also love the clover, dandelions, yarrow and daisies I have let come up in my lawn. If you want to find a middle ground between pollinators and neighbours, try setting your mower on the highest or second highest setting and only mowing every two weeks. Too short and nothing can bloom. Too long and they stop flowering because the grass outcompetes. When you find that sweet spot you'll notice the plants concentrating their growth outwards instead of upwards and that you're almost just deheading with the mower.

I've noticed the other pollinators have their favourites too. Bumblebees in my garden love the Oregon grape, sneezeweed, goldenrod, lupins and borage. Leafcutter bees love the roses and the cosmos, especially an orange variety of cosmos I added this year. I've noticed many of the others (most I can't identify reliably) favour the umbellifers like fennel and dill, and the patches of black-eyed Susan. Also particularly plants in the mint family like Agastache hyssop, bee balm, dead nettle and common mint.

Leafcutter bee on orange cosmos.

Last year I created a deer-proof border mass planting of lavender, euphorbia, echinacea, poppies and globe alliums. The biggest surprise was the foraging popularity of the alliums: the bees were on them all day, and often there were three bees to a flower head. When the drumstick alliums (*A. sphaerocephalon*) came up later in the summer, I noticed the same trend - each bloom had multiple bees at a time from morning until night. Our honey is just enough for my family, friends and neighbours so I wasn't concerned about alliums adding a garlic flavour.

The most important things I try to do when planning my garden and planting for bees and pollinators: add native plants, plant in clusters or swaths, add flowers that attract beneficial insects to my vegetable garden, get my seeds and plants from BC growers and as local as possible (I love the bulb packages from Costco though), and see the conditions of a growing area as an opportunity to try new plants like native varieties and drought-tolerant early and late bloomers. See the life you attract to your garden as the objective, challenge yourself attract more each year and teach your family to "beneficial spot."

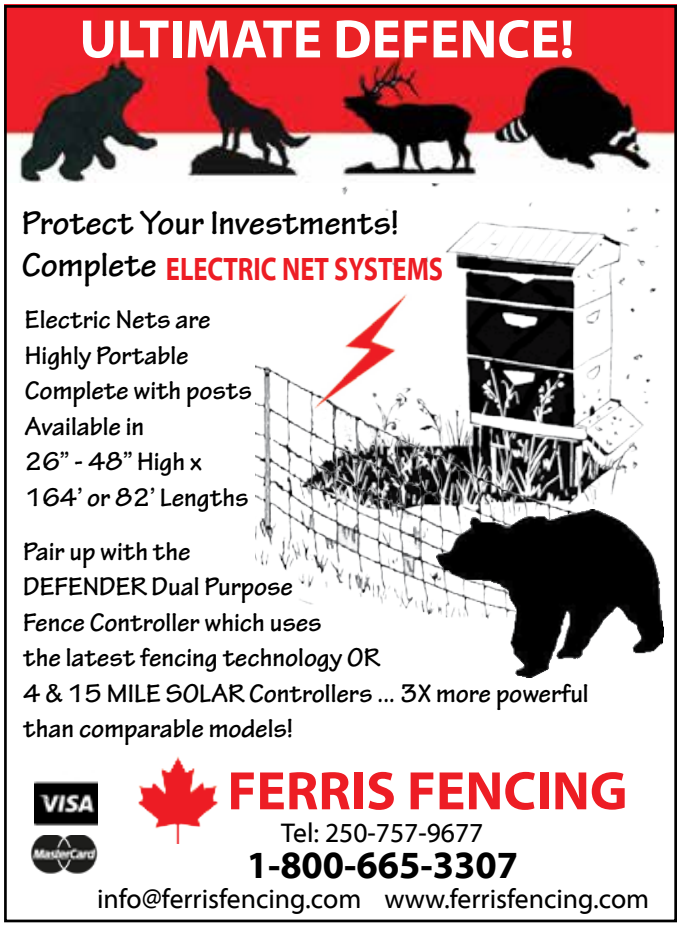
The white flower is a Pale Evening Primrose (*Oenothera pallida*) which is a BC Wildflower that is endangered in the wild, but I managed to grow it from seed in my yard. It's naturalizing nicely and smells intoxicating. It's fairly drought-tolerant, deer-tolerant and blooms repeatedly for most of the summer. I was beyond thrilled when it bloomed. My front yard is south-facing, dry and frequented by kids and deer, but it's a great test plot for what can survive.

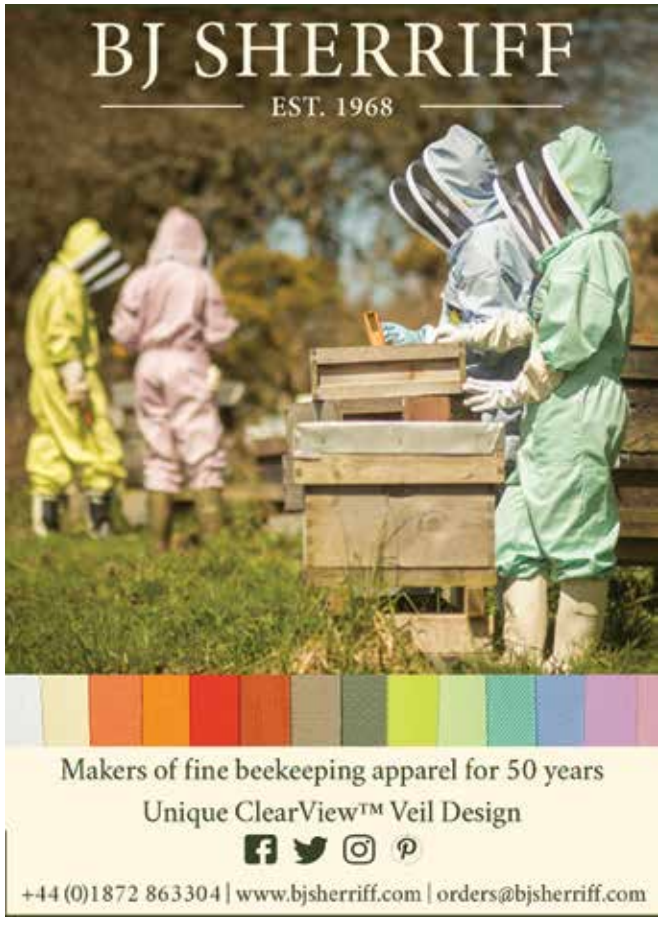
I have many plantings of thyme, lavender, echinacea, sneezeweed, mahonia, crocus, alliums and poppies. I'm really focusing on adding more native plants and wildflowers because of both their natural beauty and the life they support and bring to the garden. This summer I plan to plant more wildflowers throughout my front yard along with two types of phacelia, Lewis flax, cleome and sea blush. I am also excited to add a relative of sea holly called *Eryngium agavifolium* (Agave-leaved sea holly) as it's one highlighted by Joe Dlugo's Bee Safari as a great plant for attracting unusual native pollinators. https://www.rhs.org.uk/Plants/6777/i-Eryngium-agavifolium-i/Details ❀

Bumblebees on 'Autumn Joy' sedum.

Honey bee on sea holly. *Photo by C. Vincent Ferguson*

Pale Evening Primrose





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

Remembering Michael McLennan

Our Mike McLennan passed away April 12, 2019 after having bravely coped over a long period with a relentlessly progressive lung condition. He was born in 1942, a grandson of one on BC's pioneers who founded the McLennan & McFeely Hardware Co. in 1885, which was later widely referred to as "the Mc & Mc" by those who shopped in their stores.

One sometimes hears the expression "he's finding his place in the world" in reference to a young person growing up and leaving the familiar. This certainly could be applied to Mike. His sister Liz states that in his early manhood he spent seven years traveling and working in the Middle East, Greece, India, Israel, Zimbabwe (then Rhodesia) and South Africa, all the while studying comparative religion; this included studying Yoga in India where he lived in an Ashram.

It was while working on a Kibbutz in Israel that he had his first experience with honey bees, following which he helped to manage a beekeeping operation of 2000 hives in South Africa. Before bees, his other jobs included work on a sheep farm, prawn fishing, and work as a roughneck on a drilling rig. Before his extensive travel he took basic training in meteorology in Ottawa, then worked for the National Research Council in Port Harrison, Quebec, and later in Fort Churchill, Manitoba, studying activities in the upper atmosphere – much to do with surveillance during the "cold war".

His serious interest in bees led him to work for Howard Weaver and Sons in Texas in the 1970s, where he developed skills in queen rearing and package bee production. One of his colleagues there, Barrie Termeer, recalls that Mike was being paid with package bees, and another colleague, Peter Hakvoort, recalls accompanying Mike with a truckload of package bees heading for Spruce Grove, Alberta. They had planned to drive nonstop, but in New Mexico with the gas gauge registering low, and in pouring rain and darkness, they decided to turn around on what they thought was a paved parking lot only to find it was a freshly ploughed field! With the truck up to its axles in mud, and the bees restless, it required the farmer (rather grudgingly) and his tractor to get them on their way. Both colleagues warmly recall Mike's generosity which included cooking meals for

Mike and his honey house in 1983.
Photo courtesy of Barrie Termeer

Mike at Grand Forks in his early beekeeping days.

them, though they were surprised when they discovered he was a vegetarian, and used cooking techniques developed in India with spices they had not heard of!

After having kept bees for a short period in Alberta, in 1977 Mike tried a location near Cloverdale but it didn't suit him; he then settled in Grand Forks where he established Flower Power Apiaries. The operation increased to 500 colonies at one time and he produced queens and packaged bees that he shipped to Alberta. He was proud of his Flower Power honey (and also of the name!) and exhibited at the PNE, which won him a raft of prizes in 1991 when he swept the competition with two gold medals and numerous ribbons.

Mike with his awards from the PNE in 1991

Much of his honey was sold locally, but he made an annual trip to Vancouver and could be seen on the corner of 41st and Dunbar attracting customers with his eye-catching sign, "10,003 bears can't be wrong!"

He was committed to the beekeeping community, was an active member of the BC Honey Producers' Association and attended the Alberta Beekeepers' conventions as well. He was often vocal at meetings, and without going into details, he was an active participant in the fun after hours gatherings in members' hotel rooms.

A couple of decades ago he took on the task of selling cookbooks published as a fundraiser by the BCHPA. Those who were around at the time recall that no-one escaped his greatly successful sales pitch. He insisted they would make great gifts, thus encouraging several copies per customer!

His sense of humour emerged from time to time in the form of a practical joke. Bobby Cuthill recalls the AGM dinner in Nelson a few years ago when those at the table next to Mike had gone to fill their plates, and when they returned all the cutlery had disappeared from their table – and Mike was all innocence!

Mike's generosity has been recalled by many. Paul van Westendorp remembers that when Apimondia was to be held in Vancouver, there was a need for funds, and it was decided to purchase some bee colonies for honey production to raise some money. Mike quickly donated a large sum for that purpose. More recently, he contributed a large sum to the Boone Hodgson Wilkinson Trust Fund (established in 1965 for education and research on honey bees), and he requested that those who would read his obituary be invited to contribute to this Fund.

It can't be overstated how courageously he dealt with his lung disease, becoming increasingly dependent upon oxygen delivered through several meters of tubing that allowed him mobility in his home. He always had an oxygen source strategically located. I recall riding with him from Vancouver to a meeting in Kamloops while he drove, connected to an oxygen bottle throughout the journey!

Mike in a bee yard, 1983.
Photo courtesy of Barrie Termeer

Mike will be fondly remembered as one committed to the beekeeping community and to paraphrase a sentiment expressed by Barrie Termeer: "It is sad that he did not have more years doing what he loved, with his unique take on his vocation and life in general."

Michael was much loved by the McLennan family, who saw a link between his spirituality and his devotion to his bees. It will take time for them to adjust to his passing.

Thanks to Mike's brother Jim, his sister Liz and to Ted Hancock for their help in gathering information for this tribute. ❀ *~ Submitted by John Boone*

Bee Friendly

BC Honey Producers' Association

BCHPA Annual Convention and AGM
October 4 - 6, 2019 ❀ Prince George, BC

AGM ❀ Workshops ❀ Trade Show
Banquet and Social
Honey & Hive Products Competition

Guest Speakers

Sarah Red-Liard
Founder and Executive Director, Bee Girl Organization

Kirsten Traynor
University of Maryland, College Park Department of Entomology

Amina Harris
Executive Director of the Honey and Pollination Center at the University of California at Davis

Karen Pederson
Pederson Apiaries
Cut Knife, Saskatchewan

Kathleen Suddes
President, Sunshine Coast Beekeeping Association

Medhat Nasr
Retired Alberta Provincial Apiculturist

Ian Steppler
Manitoba Commercial Beekeeper

COAST inn of the north

Business Meeting ❀ Friday the October 4th
Education Days ❀ October 5th and 6th
www.BeeFriendlyPrinceGeorge.ca

For room bookings at the Coast Hotel, call 866-238-4218
Reference: Beekeeping Conference
to receive an 'early bird' $119/night room rate
For more information visit www.bchpaconference.ca

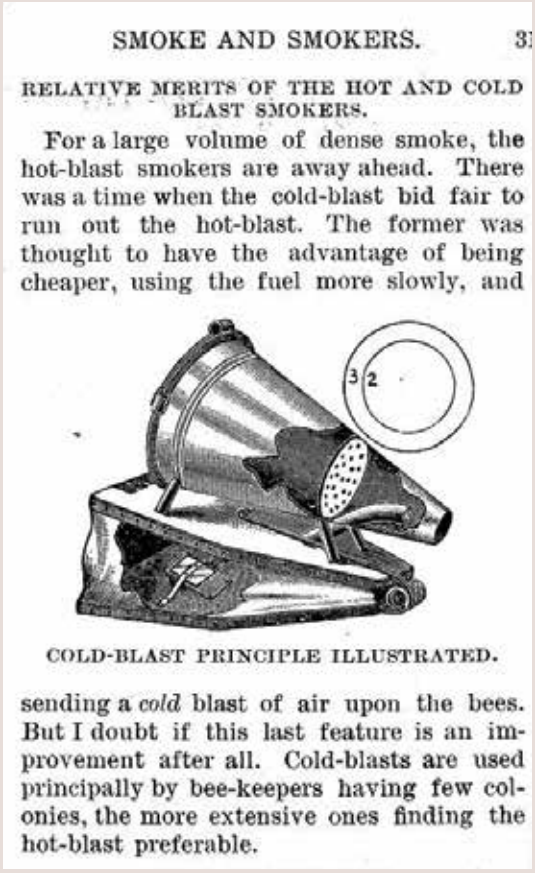
CLIPS FROM THE PAST

by Ted Hancock

It has been a long term ambition of humans to determine what a honey bee is thinking. During each era of our history, a few exceptional individuals have been able to transport themselves into a bee's brain for just this purpose. Two notable examples of this are J.G. Corey of Santa Paula, California, and Norman Clark, of Sterling, Illinois.

Back in 1879, both men, working independently of each other, found themselves inside the head of a bee. After waving their antenna around for a bit and taking in their surroundings, they each looked up to see a hot-blast of smoke bearing down on their hive. The smoke came from the first bellows bee hive smoker invented by Moses Quinby in 1873. Corey and Clark each knew instantly that a bee would much rather be hit with a cold-blast of smoke. Hence, the cold-blast smoker came to be invented simultaneously in California and Illinois.

The bellows of the cold-blast smoker forced air into the smoker chamber above the fuel. This caused smoke to be pulled up through the fuel where it



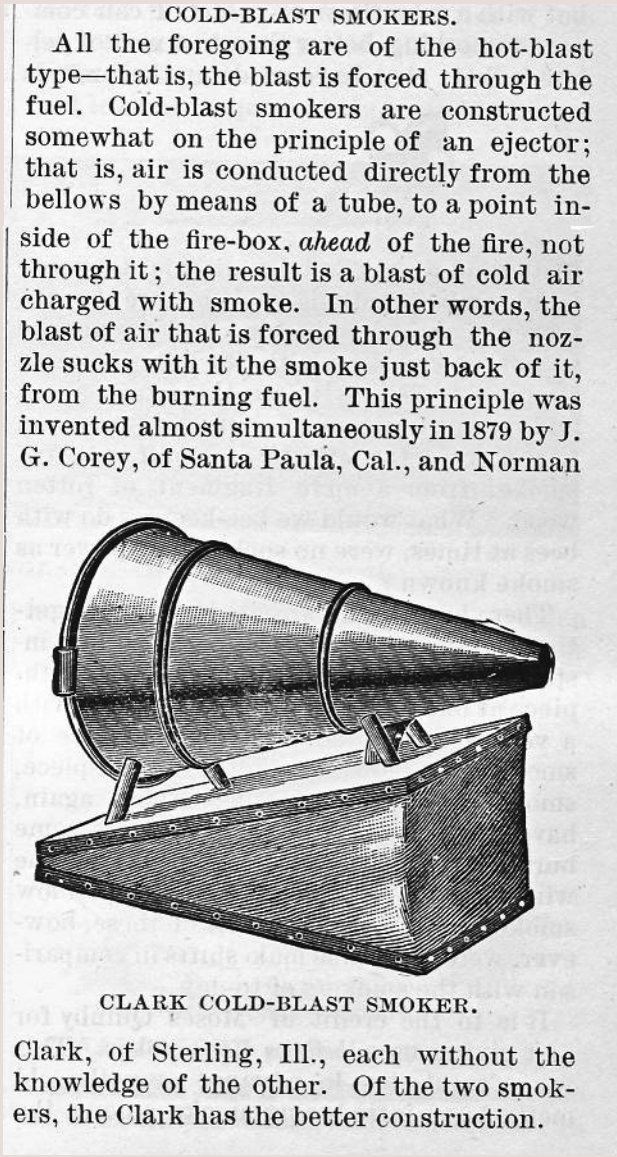
SMOKE AND SMOKERS. 31

RELATIVE MERITS OF THE HOT AND COLD BLAST SMOKERS.

For a large volume of dense smoke, the hot-blast smokers are away ahead. There was a time when the cold-blast bid fair to run out the hot-blast. The former was thought to have the advantage of being cheaper, using the fuel more slowly, and

COLD-BLAST PRINCIPLE ILLUSTRATED.

sending a *cold* blast of air upon the bees. But I doubt if this last feature is an improvement after all. Cold-blasts are used principally by bee-keepers having few colonies, the more extensive ones finding the hot-blast preferable.



COLD-BLAST SMOKERS.

All the foregoing are of the hot-blast type—that is, the blast is forced through the fuel. Cold-blast smokers are constructed somewhat on the principle of an ejector; that is, air is conducted directly from the bellows by means of a tube, to a point inside of the fire-box, *ahead* of the fire, not through it; the result is a blast of cold air charged with smoke. In other words, the blast of air that is forced through the nozzle sucks with it the smoke just back of it, from the burning fuel. This principle was invented almost simultaneously in 1879 by J. G. Corey, of Santa Paula, Cal., and Norman

Clark, of Sterling, Ill., each without the knowledge of the other. Of the two smokers, the Clark has the better construction.

At left and above: images of a cold-blast smoker from the 1905 edition of *The ABC of Be Cutlure*, by A.I. and E.R. Root.

mixed with cool air, before arriving with a gentle puff (or "cold-blast") on the bees.

Clark's model of the cold-blast smoker was commercially available for a few years but was not popular with beekeepers, as it tended to go out. I suppose this shows that what is good for bees, isn't always good for humans.

While on the subject of smokers, I want to mention a mystery package I purchased at a BCHPA convention many years ago. The mystery box had been donated to the silent auction by Bob Meredith, also known as the beekeeping guru of Lillooet.

68 years old.

75 years old.

Nails in bellows.

Copper smoker.

The smoker collection.

I didn't actually place a bid on the mystery box, but someone wrote my name down with a bid of $50.00 just before the bidding deadline. I paid the $50, opened the box and found all the old smokers and broken bellows Bob had saved from his lifetime of beekeeping.

I was impressed at how many smokers Bob had acquired, and he explained that his helpers through the years had a unique talent for driving over smokers.

As most of you will know, Bob has been beekeeping for about 400 years, so the collection spans a large part of the smoker's evolution. The early models had nails securing the leather to the bellows and only two bolts attaching the bellows to the smoker. It later models, the nails are replaced by staples and the two bolts become four bolts. Later still, the four bolts are widely spaced, instead of being grouped in the center of the bellows.

After many years of storing Bob's valuable collection, I have decided to donate it to the auction at this fall's BCHPA convention in Prince George. So if you'd like to own a 1907 copper smoker with original bellows that was once held by the beekeeping guru of Lillooet, start saving your money. You never know what you might end up bidding. ❀

Regional Reports

East Kootenays
~ Lance Cuthill

A somewhat delayed spring at last arrived here in the East Kootenays, with beekeepers struggling to make up for winter losses ranging in the 50% range. Surviving colonies were often weakened, by winter, to the point that splits were not possible. The import of queens and packages were at an all-time high while the usually available local nucs were virtually non-existent. However, with the pussy willows, dandelions and buzzing of the bees, mixed in with beekeepers' love of honey bees, the usual springtime optimism has returned.

In the realm of beekeeper education, Bobby and I offered our annual February Introductory Beekeeping class and are looking forward to meeting these students again in May for their field day. They will work with live honey bees and visit several stations of learning, operated by local beekeepers. At the BCHPA semi-annual meeting in Kamloops, I along with Axel Krause and Ian Farber were pleased to have graduated 12 new Certified Instructors. Their enthusiasm and high exam marks will no doubt give their students the best possible chance for success.

A grant from the Kootenay Boundary Farm Advisors allowed for an exceptional full day workshop, attended by members from both the East and West Kootenay clubs. Karen and Gil Pederson of Saskatchewan spoke on overwintering in single boxes, and Axel Krause updated the 70 plus attendees on issues related to honey bee diseases.

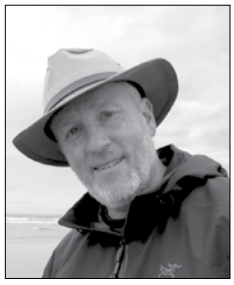
East and West Kootenay beekeepers also owe a huge thank you to Jeff and Amanda Lee who worked to get a grant, through the Bee BC program, for free transportation of hive equipment to Iotron for sterilization. From the Cranbrook area alone, over 90 boxes were sent out.

So, with June moisture and an abundance of July nectar, last winter's losses will be only a dim memory. (PS...watch your automatic spell checker...just had an email from a local beekeeper who wanted to buy two "nuns" and wondered what the was the going price!)

Fraser Valley
~ Courtney White

The beekeeping season is finally underway here in The Fraser Valley. Packages arrived in early March and we had a great patch of weather for pouring them. Some of the Australian packages were rumoured to have *Braula flies* in them, causing a bit of panic, especially amongst hobbyists.

The dandelions were in full bloom by the end of March, and it's too bad that April was so wet! Bees moved into blueberries around the last week of April, with pollination rates ranging from $125-$150 per colony. No reports of swarms yet!



West Kootenays
~ Tom Bell

A big thanks to Gavin Firkser who has stepped down as our regional rep – Gavin did an excellent job reporting for the West Kootenay beekeepers and his efforts are greatly appreciated.

An interesting winter here - our very mild and wet January ran full stop into a cold and dry February, and early March had consistent -15-20°C temperatures in some areas, which is quite cold for us. Then the pendulum swung and we had warm (up to +20°C) weather for the last half of March. April has been cool and showery with night time lows around and even below zero – again a little cool for this area at the end of April.

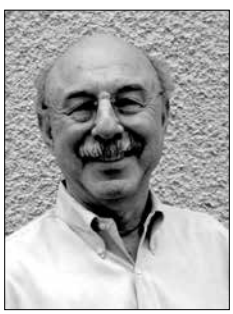
The winter survival has been similar to the weather – mixed, from very good to downright discouraging. The dry weather and dearth conditions in late summer and fall 2018, heavy wasp predation at certain sites, and dense and prolonged wildfire smoke meant that some hives may have gone into winter in poorer condition than usual. But on a positive note – the observation hives in schools did very well with 11 out of 12 surviving, so congratulations to members of the Bee Awareness Society. The hives that came out of the winter seem to be building quickly this spring, so that's good news too!

Jeff Lee in Creston organized a new initiative for us where several members were able to ship boxes and woodenware to Iotron on the coast for treatment in March and April and have them back for spring start up. The shipping distance and logistics are a little more challenging due to our travel distance from Iotron – the Ministry of Agriculture provided some grant money and Jeff and others did a great job organizing and making it happen. It will be interesting to talk to club members in the fall to see how this works out as most of us have never used Iotron before. We are hoping to do another run in the fall.

Due to both poor winter survival for some and continued interest in beekeeping, there is a high demand for startup nucs and packages. We are seeing a few new suppliers develop and some members are expanding their skills and hive numbers to be able to sell locally raised nucs. We are encouraging anyone who has strong colonies to consider making up vigorous splits and offer them for sale, even if the number is small.

We continue to have success in getting local bylaws changed for urban beekeeping. Two communities moved to allow beekeeping in the last two years, another has run a trial which will be evaluated to see if they will make a permanent change, and we have one, Nelson, which is not quite there yet. One smaller community that does allow folks to keep bees has a councillor who has thriving hives this spring – so we just need to get them to join us!

Several local grocery stores are donating their spilled sugar and broken sugar bags to our club as bee feed. They like that it helps to support the bees and we try to provide all the good publicity that we can. Our club uses the sugar as a raffle fundraiser with often 10 or more 5 gallon pails of sugar available at our monthly meetings. Our club supplies the store with the empty labeled pails, they fill them when they have a spill and then phone one of our members for pickup. This has been very positive in using a product which is still great but that they can't sell, and to help beekeepers with costs.



Metro Vancouver
~ Allen Garr

Spring is here – at last. And those hives that did survive the erratic winter weather, including the unexpected cold snap that hit in February and lingered into March, are building nicely, but losses are still on the minds of most of us. A survey of beekeepers in the Richmond Club, though admittedly a small sample of 36, showed a 57% loss overall, which is double what it was the year before.

What also doubled was the number of people who turned up at Iotron for the latest "bee day", on April, 11th, a day set aside by Davin Oforsagd and the folks at Iotron to help small beekeepers who can't meet the usual limit of 100 boxes.

While Iotron's bread and butter is irradiating medical equipment, industrial material and food stuffs, this process also cleans bee equipment of any active viruses or fungi; whatever has ailed the bees, from foulbrood and chalkbrood to Nosema. Serving beekeepers in this capacity has become a growing part of their business, and Iotron is the only such facility in existence west of Ontario.

People turned up at Iotron that day, in the rain, with equipment from as far away as Williams Lake. There was a cube van with a half dozen pallets chest high, from the Duncan area on Vancouver Island. A pickup truck stacked with equipment to the top of the racks arrived from beekeepers on Salt Spring Island, there were folks there from Sechelt, and from all over the Fraser Valley. There was even a crew there from Manitoba who brought netting to be irradiated, which will be used to contain packages of bees coming in from New Zealand, for sale across the prairies.

The mostly likely cause of this unexpected rush, with vehicles lined up across the back of the building and down the lane out to the sidewalk, is an upsurge in deadouts due to *Nosema ceranae*. Yes, last summer's drought may have affected pollen collection for winter stores, and the February winter blast knocked off weak colonies, but *Nosema ceranae* is what had folks most on edge as the true villain in regard to winter losses.

As we heard from Fraser Valley Beekeeper Mike Campbell at the BCHPA semi-annual in March, it is a disease without an apparent cure, so far. Fumagilin-B may work on *Nosema apis*, but not for this latest disease. Applications of Nozevit+, a compound produced in Croatia, won't "cure" your bees but it does appear to be the one thing to help bees fend off the effects of the disease, kind of like Vitamin C may help you avoid a cold, I suppose. What it doesn't do is remove the disease from your equipment; all the more reason to head to Iotron.

In addition to the very long line up, Iotron's equipment broke down several times, but thanks to Davin's generosity and the fact he had a night shift on, instead of shutting down at 4 pm, he kept running until 8pm to get many anxious people back to their ferry terminals or back on the highway home. I got my few boxes out of there at the tail end of the run. Others decided come back the next day.

Another note about winter losses: more than before, smaller scale beekeepers, whether they have kept bees for 2 years or 10, because of this past winter's losses are giving up (for now). Between the sadness of losing bees and the cost of replacement, many are "taking a break". Losses among new beekeepers have been such that Urban Bee Supplies in Ladner, more often in the business of charging for beekeeping lessons, are offering beekeeping classes for free this year, which lets me end this report with a bit of good news.

Terrace
~ Rudi Peters

Winter is finally over and spring has sprung. By now everyone has their hives unwrapped and some are weeping over their losses, while some ae weeping tears of joy over not having great losses. Having talked to a good number of beekeepers it would appear that our winter mortality rate is around 25%. There were some with 90% loss and some with nearly perfect survival rates. What is of interest is that survival rates run along lines of the level of education and training a person has received. Those with little or even worse, Internet training, had very high mortality rates.

In the Terrace area we have dandelions and cherry trees in full bloom, with apple, pear, and plum trees just a week away from being in full bloom. It is time to make splits and build them up for the fireweed honey flow, which comes in July.

In anticipation of another bad forest fire year, a burning

restriction has been put in place in our area; at least they are learning and trying to be proactive with it. The NW is a temperate rainforest, and we are praying for rain; how crazy is that. Our rivers are so low that you could walk across most of them, and there is next to nothing for a snow pack up in the mountains to fill those rivers up. It is going to be an interesting summer.

Prince George
~ David DeLeenheer

Barry Clark asked me to put together a report for the Prince George Region as he is lounging in the warmth of New Zealand. Oh well, some of us have to stay behind and tend to the ordeals that the winter has beset us with. While reviewing Barry's comments from the last issue, he mentioned that winter had been rather mild for the most part until the "freeze" hit us in February, then we suffered record breaking cold temperatures, which our bees did not like! One of the topics we cover at our PG Bee Club meetings is, how are people's colonies faring? Winter losses this year have generally been higher than normal. As mentioned, we experienced record cold temperatures which followed a warmer than normal winter, which seems to have confused the bees and the beekeepers.

This segues into an related item of news: a few Prince George beekeepers, including Barry Clark and myself, were invited to a three part series of Climate Change Workshops entitled "Bulkley-Nechako & Fraser Fort George Agricultural Adaptation Strategy – Partnering for Agriculture Resilience". These workshops were designed to get feedback from the agricultural sector with regard to the challenges climate change may present to our industry. We welcomed the opportunity to provide concerns from a beekeeper perspective, and learn about what the weather in the future may bring.

Climatologists predict that our area will experience a slow increase in frost free days, a general warming trend, wetter springs, drier summers and wetter falls. Drier summers indicate that wildfires may become the norm. Smoke and bees do not mix well, and dry summers aren't great for bees either. The dry summers reduce the blossoms and smoke covers the sun, dropping the temperatures, resulting in a dismal nectar flow. We must learn to adapt our bee management if this will be the case.

On a brighter note, Sandra Ramsey, one of our Club Presidents (Sandra and I co-chair the position) invited Peter Awram to speak at our April meeting, which was well attended by 34 members. Peter explained the need to test for adulterated honey and described the method he is using to do the testing. He provided us with sample kits which will provide him with the needed data. His presentation was well received and we appreciated Peter making the trek north to meet with us.

Our club is working at a steady pace to prepare for the 2019 BCHPA AGM, to be held at the Coast Inn on Oct. 4th, 5th and 6th. We welcome you all to what is looking to be a terrific event!

As the snow recedes and the sun warms the land, it is time to get into the hives and clean out the losses that winter

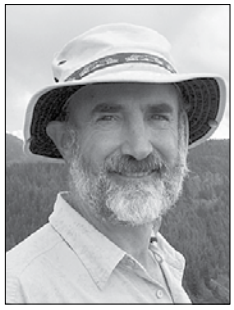
has claimed, put on some pollen patties, think about pest management and get ready to replenish losses with new bees. Our packages should be arriving from New Zealand (no Barry is not bringing them) on about May 4th. Have a great summer and see you in October at the AGM.

Cariboo
~ Carole Mahood

As I write this report at the end of April, I'm looking out the window at the snow falling wondering where our spring went? After a fairly mild December through mid-January, the Cariboo, like much of the rest of the province, got hit hard with winter, with daytime temperatures for most of the remainder of January and February rarely getting above -15°C, and nighttime temps dropping 10-15 degrees. Spring came in quickly in early March and got the bees out foraging, allowing local beekeepers to check on the state of their hives.

Despite the frigid temperatures this winter, overwinter losses for backyard/hobby beekeepers in the area were surprisingly low. A survey of club members in mid-March came back with 87% of colonies alive on March 10, with 85% expected to survive through to spring. This survey included results from 22 backyard beeks, with a total of 98 colonies between them.

Club members are also looking forward to a queen rearing workshop being held at Diane Dunaway's ranch in June that has been made possible by a grant from the Bee BC program. Darwyn and Michalina from Green Bee Honey in Squamish will be making the trip up to the Cariboo to teach 20 eager beekeepers the ins and outs of queen rearing over 2 ½ days.



Peace Region
~ Kerry Clark

Winter weather up and down like a roller coaster: overall the average may have been warm, but February was record cold. Outdoor bee colonies in the Peace already had some stress from unprecedented yellowjacket pressure in the fall, and many colonies perished in February from what some call a polar or arctic vortex: a stable, long lasting flow of cold air sweeping South. Some beekeepers call it TCTL: Too Cold, Too Long: bees maintaining a tight cluster, using up all the honey they were covering, then starving with honey within a centimeter or two of the cluster edge.

This was a year for indoor wintered colonies to shine. Milder conditions indoors allows a cluster to migrate to neighbouring combs with food for fuel. The combination of a mild January and an abrupt and definite warming change in weather on St Patrick's Day qualifies the overall winter as mild, but a bitter end for many outdoor colonies. As of the first of May, snow is virtually gone, willow pollen has been available for about two weeks and active bee colonies have been able to gather a good feed, even if temperatures may dip to -10°C again.

Like last year, nuc suppliers also had losses and are close

to or fully committed from the increased interest in beginning beekeeping, but some beekeepers wintering indoors have a pretty good supply on hand. Conditions are almost 2 weeks ahead of 2018, but that's 1 week behind 2016. What is average anymore?

The Peace beekeepers group will meet May 2. We now have apiary inspection: bonus. Best Wishes to you all.

North Vancouver Island
~ Gerry Rozema

Bee season is upon us, and the late April round of club meetings are done. The winter of 2018/2019 was not kind to the bee population here on the northern parts of Vancouver Island; there are many reports of heavy losses this year, but spring meetings are always full of optimism. We always have new beekeepers excited about the prospect of getting bees for the first time, and those that started last year are full of questions about how to deal with colonies that wintered successfully and are now growing exponentially as our spring flows have ramped up.

Meetings through the early part of the year tend to follow the same theme every year. At a February gathering, the talk is normally about colony mortality over the winter, then through March the discussion changes to that of managing colonies that survived. Meetings in the last week of April are always upbeat and positive. The talk is about splits and swarm management, establishing new colonies, and it's the start of that time of year where folks are raising queens.

As I write this on May 2nd, we have not yet had any reports of swarms, but I've heard third hand reports of swarms just 100 km south of us here on the Island. The time of year when bees want to propogate is upon us, and will likely reach the rest of the province by the time you are reading this. It is a time of the bee season that is both fun and frustrating. Many folks look forward to getting that phone call about a swarm that needs to be collected somewhere; others are frustrated because swarms departed despite the efforts of beekeeper.

It's the happy time of the year here on our part of the Island. Maples are still blooming, dandelions are out in force, fruit trees are blooming and berries are going to start popping flowers over the next week. Honey supers are on and folks are looking forward to a stellar honey harvest, just like we do every year at this point in the season.

Thompson-Nicola
~ Amber Michaud

On the last Saturday in April, the Kamloops Beekeepers hosted their first field day of the year. Unfortunately, it was too cold (5°C!) and windy for live demonstrations but the indoor tutorials by master beekeepers and birthday cake made up for the weather!

Seasonal variability was exemplified with the abnormally warm weather conditions this past winter. The warm weather causes bees to be more active and consequently consume more honey stores, and as a result, overwintering success was strongly associated with available food stores. Most reported losses were due to starvation.

Early this spring, a beekeeper with a hive in the city reported seeing field bees loaded with pollen lying dead at the hive entrance with their wings extended to the sides. The beekeeper suspected herbicide poisoning, but the cause is not known for sure. Larval death was not observed after a cursory search.

When keeping bees within the city, it is good practice to manage hives to avoid conflict with neighbours. I have a hive that pelts my veil as soon as I open the inner cover; they also buzz anyone outside up to three days after I've opened the hive. One beekeeper reported having seven such hives last summer. One way of dealing with the behavior is to shop-vac the whole hive (this produces wonderfully expensive compost); another method is to requeen. Temporarily moving the hive into the country for some convalescing (i.e. until the little jerks are replaced with new gentle progeny) may save your relationship with your neighbours.

North Okanagan
~ Richard Plantinga

As the last week of April has arrived, cherry pollination is on and the apple rush is about to begin. The weather has not been that warm yet so progress is slow, but the ladies seem to have adapted and held back on brood rearing during the cool weather. Those that survived are doing well.

Recent club meetings have had attendance of over 60 beekeepers. Last meeting we had a very informative presentation by Liz Huxter who presented on queen rearing, management of splits, and overwintering nucs. Our club also continues with the preparations for an apiary at UBC Okanagan College.

Unfortunately we continue to encounter aspiring beekeepers who have made poor choices when attempting to start beekeeping. In an effort to help remedy this, our club is providing various education opportunities.

An information talk was given by Keith Rae at Buckerfield's in Kelowna, Carol Harvey and Sheila Campbell will give a free talk at Buckerfield's in West Kelowna, Heather Clay is giving a free presentation on Urban Beekeeping at the Schubert Center in Vernon, and I gave a free first session of the BCHPA Introductory Beekeeping Course in West Kelowna.

Introductory beekeeping workshops are also being offered in Kelowna by Chris Boulanger and Vic MacDonald, and a breeders circle in Glenmore is being organized by Bill Ruzicka in an effort to preserve the Vernon stock of queens.

We plan to participate in the Day of the Honey Bee at the Kelowna Farmers Market on May 25.

Our club continues a brisk sale of that CAPA book Honey Bee Diseases and Pests, offered to club members at $15.00. We now have a North Okanagan Beekeepers Facebook page which is drawing good response. Plans continue for our participation in the Honey Display and judging at the Armstrong Fair, August 28th to September 1st.

As our snow pack is well below average, will we have another dry and smoky summer? Time and nature will tell.

Classifieds

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**.

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

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**.

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.**

FOR SALE: 80 baby nucs with frames, inner feeders, 7" X 5.5" X 8.5", $25 each. Misc. honey pallets, frame parts, hive cracker, 2 & 3 way nuc boxes, inner feeders, all kinds of odds and ends. Call Dianne and Reg, **(250) 56-6149**, Armstrong, BC.

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

Request for the Archives

John Boone recently went through the BCHPA newsletters in the archives at SFU and noted that a few issues from early newsletter years are missing: BeesCenes - #1 from 1989, and #3 and #4 from 1990. Also, earlier publications consisted of BCHPA Newsletters from 1979 to 1984. There is only one issue missing from this period and that is from the 3rd quarter of 1984. If anyone has copies of these older issues that they would be willing to donate to the archives, please contact Ted Hancock (details on Page 4).

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