

BC Bee Breeders

Darwyn Moffatt-Mallett & Michalina Hunter Green Bee Honey

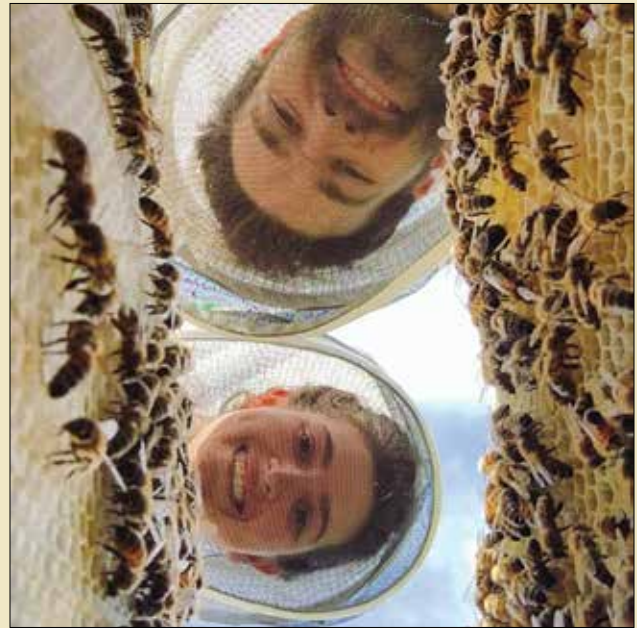
We run a small beekeeping operation in Squamish with about 50 hives, and our path to beekeeping together is a bit of a love story. Michalina (Michi) started a bee club, which included an on-campus apiary, at the university we attended, and Darwyn quickly became her most devoted volunteer beekeeper (in order to attract her attention). It worked, and we have been keeping bees together for 5 seasons.

Michi was quite allergic to bee stings when she was younger, but was still curious about bees, and she is also still allergic to honey; luckily her reactions to stings have subsided and she seems to improve each year. One summer she worked at the Sunshine Coast Botanical Garden, where the Sunshine Coast Beekeeping Association has an apiary. She was invited to a hive inspection one day, and one of the hives had swarmed. Upon opening a hive, one of the beekeepers “just knew” that it had swarmed, and he located the bees on a nearby tree. Michi was struck by the beekeeper’s intuition and the gentleness of the bees. She later worked for a summer at the SFU Native Bee Lab with Elizabeth Elle. She assisted with pollination experiments in blueberry fields in the Lower Mainland, which entailed isolating and artificially pollinating blueberry flowers, surveying pollinator activity on the wing, and netting pollinators and identifying them in the lab.

Darwyn was studying marine conservation and science communication until the end of his degree when Michi derailed all of that by inviting him to come try beekeeping. He responded to a swarm call on his own in Squamish that first year, collecting it in a cardboard box, and quickly built a top bar hive to house them in since he didn’t have any equipment. He began reading everything about beekeeping he could find, and raised his first queens by cutting strips of foundationless cells with new larvae and used melted wax to ‘glue’ them to a new bar where the workers created a few new queens. He was able to get one of those first queens mated in a split he made from the swarm, and both colonies wintered well. An obsession with beekeeping was cemented!

Michalina took an intro to beekeeping course in her first year of beekeeping offered by Brian Campbell and loved it, and both are graduates of the Bee Master course offered in partnership with the provincial government and UBC.

Getting a larger apiary started a few years later, we bought 20 nucs from James Macdonald in Armstrong, and those colonies served as our production colonies and drone mothers. Since we started beekeeping we have collaborated



Darwyn and Michalina

to improve our local stock with other local beekeepers and friends Nic and Elyse (Good Time Bee Farm). We always aim to do a round of isolated matings when our bees are in the fireweed together, and between us we now have genetics from local swarms, James MacDonald, University of Guelph, 6 Legs Good Apiaries, Kirk Webster, Liz Huxter, and VP Queens. In 2018 we began collaborating with the UBC proteomics project, which has allowed us to share genetics with the other participating breeders.

We select our top hives in the categories of winter performance, low mite counts before and after winter, honey production, hygienic behaviour, and strong spring build-up. We have a very low tolerance for aggressive colonies.

The Squamish Valley is wonderful in the summer months, but a terrible place to winter bees. The surrounding mountains ensure there is very little solar gain for months in our main apiary, where the bulk of our bees spend the winter. We get a lot of rain and wind, and later wet snow and fog for most of the season. This is the biggest selection hurdle nearly all of our colonies have to pass (we do have a couple backyard hives at our rental property in town, where the boxes actually see a bit of sun in the winter).

Our goal has never been to focus on one or two breeds of bees - we have brought in genetics we think will help our stock perform well in our area. Our queens are open-mated in areas with reasonable to excellent isolation in the Squamish Valley, on Bowen Island, or in our fireweed yards in the subalpine. We chose to bring in some Buckfast queens from the U of G breeding program to graft from when we read about Buckfast hybrids wintering best in Canada, we’ve grafted from VSH and treatment-free queens to incorporate more hygienic behaviour into our apiary, and we’ve done our best to incorporate gentleness and productivity with others. Raising queens is the most fascinating and rewarding part of beekeeping for both of

us, and while honey production helps support the overhead of the apiary, we have always focused on improving our stock.

We have been experimenting with different mating boxes and have used Mann Lake minis, homemade 2, 3, 4 and 5 frame boxes or divided boxes and snelgrove boards above production colonies. Last season we had the best return in our 3-way deeps, which also withstood the wasps better into the late summer.

We prefer to use a queenright starter-finisher, and for the past 3 years we have used a two-queen system called the 'John Harding'. Our trial of this queen rearing arrangement was featured in a past BeesCene issue, and a couple years of our documented experiences with it are also available on our website (greenbeehoney.ca). We like that with regular inspections, this system is always ready to accept a frame of grafts, so we don't need to impact our production colonies or move graft frames from starters to finishers.

As part of the UBC proteomics project, we used liquid nitrogen freeze-kill assays to determine hygienic behaviour. Some of our colonies performed very well on this test, so samples were sent to the proteomics lab to look for certain proteins that are associated with hygienic behaviour. From there some colonies scored well enough to be considered for drone mothers/breeding stock for the program. The hygienic testing was surprising - some that we expected to do well did only alright, and others we supposed would just do alright scored perfect or nearly perfect. We have learned a lot from the beekeepers and volunteers involved with this project and we are looking forward to participating again this year.



Results of a hygienic test.

We sell some overwintered queens, some from our mating colonies and occasionally we have sold virgin queens. We sold our first nucs last season with overwintered queens; ours are 4 frame nucs comprised of a good food frame and 3 frames brood/emerging bees. We have only ever sold locally and in small numbers, and our stock is generally available in late spring. We aim to sell 10-20 nucs per season and produce several hundred queens; some to sell, some that we use, some for use in queen banks (something we are trying this winter for the first time), and some are raised in collaboration with the UBC proteomics project.



One of Darwyn and Michi's queens.

There are a number of Canadian beekeepers jumping into the queen banking trials several years after Margriet Dogterom's (formerly Wyborn) initial testing. Her research from the 90's seems to be the best available resource on the technique and many are basing their trials on her thesis project (which is available online, search: Mass Storage of Honey Bee Queens During the Winter). We are riffing on it a little, but the basics of the technique involve running a two queen colony (or combining two strong colonies in the fall), removing the queens and then introducing a 'bank' frame containing a series of mated queens in individual cages to overwinter. The colonies should be very well fed, contain as many young winter bees as possible, and may benefit from additional insulation. The winter bees should cluster around the caged queens and care for them as they would in a normal queen bank, and in the early spring the queens can be placed into splits to recover numbers or make increase. Margriet's research followed the productive lives of queens she overwintered successfully using this technique, and the queens showed little to no difference in productivity the following season. We're hoping that banking queens over the winter may enable us to make early splits with mated queens from our own apiary, or populate mating nucs in preparation for our breeding season.



Block of caged queens ready to go into a winter bank.

Jon Aebischer Sweet Nechako Honey

I grew up on a farm between Fort Fraser and Vanderhoof. My father was a beekeeper and the bees were a part of my life growing up; he had up to 40 hives and his business was known as Willowvale Apiary. He was a computer programmer and jack of all trades who left the U.S., hoping to live off the land in Canada. I was his assistant with the bees, having my own first hive at ten yrs old, in 1976.

He worked hard to establish a ranch from bushland, and felt that the region was not reliable for bees; often haying and cattle caused conflict with best bee management times. I remember visiting a bee yard in some remote area in Washington state to see his and a friend's bees, and tasting the fruity honey there. His cousins, commercial beekeepers in Logan, Utah, kept him supplied with packages and cases of frames. We always wintered the hives, and dad had journals from the Vanderhoof bee club in the '70's, and from the apiculture extension services with "how to" info. Tar paper over pink insulation is what we did.

Dad got cranky when stung, so all I can say is that I got familiar with bees and opening hives, with not a lot of detailed training, and in the early days I only had a winter jacket and veil to protect myself. Often dad's dream was just that, "his". I realize now he was often tired and against a lot of odds to achieve his hopes, things I know very well in my '50's, having worked for sawmills for over 27 years. Farming itself can be a work of faith.

In 1993 I was recruited by foreman Bob Cary in Hawaii to work for the Kona Queen Company while attending the University of the Nations studying counselling and Christian ministries. I had never worked bees without gloves, and the boss was worried I was too afraid, but the first week was all it took. The first thousand nuc bee yard I experienced impressed all my being, overlooking the ocean, buzzing pleasantly and rimmed with papaya. Beethoven's prelude to "Ode to Joy" bubbled around inside me - easy to recall today!

While not grafting, I got an overview of the steps for running a queen rearing business for a season with a great



Jon's main mating yard.



Jon with a frame of queen cells.

bunch of guys. I remember a new pair of boots lasted only 5 weeks on the lava rocks some of the mating yards were built on. That year I courted Susan, my classmate, who didn't mind if I took her to a fancy restaurant while smelling of bee smokers. I liked her adventurous attitude (and Gus Rouse told me I had to marry her if she came to the end of season banquet at Kona Queen!) Working at Kona Queen was serendipitous to open my own passion and view of beekeeping. We began our first years of marriage in the Philippines, and then my dad passed away, so with our baby Kassia, we returned to the Nechako.

In the spring of 1996 Sol Nowitz sent me 6 packages from the Island, and from then on I began trying different strategies for splits and queen rearing. I have room for 300 queens in mating nucs, usually selling those from July on, and selling overwintered nucs. I had a very successful winter queen bank that gave me early splits in 2016, but am not ready to give up my Olivarez Carniolan or Saskatraz queen spring infusions. The last few years saw low survival in the queen banks, in part perhaps because the initial success came so easy. Was it a fluke gentle winter the first year? Are the fluctuations to -30°C too much? Did we cut too many corners setting up?

Making winter queen banks can start in July with setting up two queen colonies. For us, the best producing single hives, made queenless, and combined with an eye for stores and capped brood before winter are key. We wintered two banks in the Cache Creek area and two here, and the only failure in the first year was one southern bank. We incorporate a mid-winter zero degree check to move stores around; having extra capped honey to give the bank

is planned, for (warmed up) food donations seem necessary. That first year we got about 70% surviving eager queens, with highest acceptance, unlike ordering queens which can be in adverse contexts. This year we took a break and split hives in fall for increases instead. I needed more help to set up banks.

Basically we must create the most stunning and condensed unit, with a young population and well insulated (if in the north) queenless unit, with space to accommodate mated queens centrally. This may not make sense to some, but if we have no customers and have a bonus round of queens at season's end, it is a good option. A remembrance of my original project hope: banking ourselves off spring imported queens, or, self sufficiency for the future. I hope to have some banks set up for the Bee Breeders at the AGM in Prince George.



Caged queens ready to go into a winter bank.

A fascination with hybridizing led to following Rod and Jo Moody, and as Bob Cary advised me, to cross Italian and Carniolan races for our area. Kona Queen carries Italian and Carni, importing semen from top outfits on the mainland. I have had few issues with Kona or Olivarez stock per se. I have really enjoyed the Saskatraz project, using their stock both for breeders and drone moms, and the detailed genetics on their website. In 2008, Ontario Buckfast queens were crossed with Liz Huxter's VSH queens that were all amazing for the next season. We look for gentle, productive and good wintering bees, which are preferably easy to manage for varroa, etc. We use drone flooding to focus the gene pool as it is open population mating.

Along with John Gates teaching a queen rearing course, books by Harry Laidlaw and Roger Morse as well as videos and BCHA speakers have all influenced me, and the BCHA uncles Joe Lomond and Bob Meredith have both encouraged me with sage bee wisdom and friendship throughout the years.

I am currently a Canfor millwright, and always relied on others to help achieve goals by hiring helpers for the bees. Learning how to juggle all this forced me to rely on grace,



The students from Jon's beginning beekeeping course; David Kelly is 4th from the left.

seek coaching, and keep aware of what refreshes me about these pursuits.

Now a young fellow named David Kelly who completed the Certified Introductory bee course with me has agreed to his first full season helping us. Retiring to focus on bees and refocus on volunteering as Susan and I did in early married days is hopefully not far in the future. Currently my schedule allows me to focus at least 2 or 3 days a week on bee stuff. All the family helps in harvesting and marketing when needed, but only Samira (our middle child) loves creatures intensely enough to carry on with beekeeping one day.

We currently have 330 hives, produce up to 800 queens per season, and sell nucs which are usually 4 frames - 1 frame food and bees, 2 1/2 frames brood and bees. We try to have them ready for mid-May to the first week of June. ❀



One of Jon's queens.