

# McNeil Island Honey Bee Program

*Naturalist's Field Journal by Laurie Pyne, Program Lead*

*Editing and Introduction by Bethany Shepler and Joslyn Rose Trivett,  
Sustainability in Prisons Project at Evergreen*





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Enjoy! We know we did ☺



## Forward

### Introduction to the Journal

Laurie Pyne is an expert beekeeper residing in Thurston County, Washington. She is the lead for a team of community beekeepers who support Sustainability in Prisons Project (SPP) McNeil Island Beekeeping program.

Following each trip, expert beekeeper Laurie Pyne shared the visit's activities and observations with all partners, 23 messages from May 22 to November 18. Her accounts were surprisingly fun and interesting to read. She describes the group's activities and learning, and their dedication to the shared effort is obvious. Also, she illustrates their shared satisfaction – they clearly enjoyed the results of their hard work. As an individual, Laurie demonstrates how to be a great partner: she shows her appreciation for everyone at the site, and writes up a report for everyone supporting the program from afar. No wonder the program is thriving!

More simply, her emails are an excellent example of a “naturalist's field journal”—writing out field experiences and observations in a diary-like format. The bulk of this document is a compilation of her reports, presented as journal entries. In sharing them, we hope to give practical insights into beekeeping, inspire others to create naturalist journals, and provide a model of a successful, interdisciplinary partnership.

Note that this document is a case study, not a “how to.” Like every individual beekeeping program, plans and actions are shaped by particulars of the site, the weather, the beekeepers, and the colony of bees itself; specific choices made in this program may or may not fit another time or place. However, the journal is an excellent illustration of the *general* processes, problem solving and care found in all successful programs.

### Introduction to the McNeil Island Program

Adapted from a blog originally published July 16, 2018

After four years of organizing, planning, and building a team, honey bees arrived at McNeil Island.

This spring marks a special occasion for Washington State beekeeping and beekeepers: we have installed honey bees on McNeil Island! McNeil Island offers wonderful beekeeping prospects because the island is *pesticide-free*—a rare resource in the region. Pesticides can interfere with bees' senses, or even be toxic, so having access to a place that is free of pesticides is an exciting opportunity for beekeepers.

## A bit of background on McNeil Island



*This is a sign in front of one of the residential houses at McNeil Island.*



*The expert beekeeping team—we're so lucky to be working with them! From left to right: Dixon Fellows, Gail Booth, Laurie Pyne, Maren Anderson, and Andy Matelich.*

McNeil Island housed a federal penitentiary from 1875 to 1981, when WA Department of Corrections (WA Corrections) took over the facility. In 2011, WA Corrections closed down the prison on McNeil Island, but they continue to be stewards of this epic landscape—Correctional Industry (CI) staff oversee stewardship operations. McNeil Island now houses a Department of Social and Human Services (DSHS) special commitment facility, and the old prison is used by the military, National Guard, WA Corrections, and others for training purposes.

We visited the island a week before the bees were dropped off to take a tour and complete preparations. It's not very big, but it's a beautiful island nestled in the Puget Sound and mostly covered in vegetation. Sprinkled around the island are boarded-up houses where prison staff lived when the facility was in operation, and there's even an old school house for their families. Even though we haven't seen them yet, there are a few bears that live on the island, too!



## Collaboration is key

Like all Sustainability in Prisons Project (SPP) programs, this project could not have been possible without the collaboration of many different partners. SPP is a partnership founded by WA Corrections and The Evergreen State College (Evergreen). The partnership began informally in 2003, and since that time has grown enormously in scope and scale. In 2018, more than 160 partner organizations took part in 191 programs in all 12 prisons in Washington State.

The McNeil Island beekeeping program is one of the few SPP programs hosted outside of a prison; however, it is well supported by staff and incarcerated individuals from Cedar Creek Corrections Center (CCCC). The McNeil Island program also has endorsement and input from many others, including SPP Co-Director Steve Sinclair, Washington Department of Fish and Wildlife, Washington

Department of Natural Resources, CI staff (thank you Brian Peterson, Vania Beard, and Henry Mack!) and leadership, local expert beekeepers from the community, incarcerated beekeepers, and of course, the honey bees. It's a great team!

The McNeil Island program installation crew included expert beekeepers from the Olympia area, incarcerated beekeepers from CCCC, and staff from CI and CCCC. Five expert beekeepers worked with us to bring this project to life: Maren Anderson, Gail Booth, Dixon Fellows, Andy Matelich, and team lead Laurie Pyne. They scoped-out the island and picked the best location for the bee hives inside the orchard. CCCC incarcerated beekeepers and carpenters also made critical contributions to the program, too: they built the hive boxes and supporting benches, helped locate the bus stop, assisted in placement, helped move the bees, and shone as invested partners! More recently, a major supplier of beekeeping equipment in the region, Mann Lake, donated some of the supplies the program will need as the hives grow and multiply—it is wonderful to have their support.

### The bees arrive

The expert beekeeping team brought two hives-worth of bees by barge to McNeil Island. By truck, they continued to the orchard site on the island.

With guidance from Centralia College instructor Bruce Carley, incarcerated students from CCCC's carpentry program built the custom hives from reclaimed wood. Students also painted and stenciled the bee logo onto each hive box. They look great!

To transfer the bees from the boxes on the truck to their new hives, everyone suited up to protect against getting stung. Even though bees are docile and don't want to sting you, sometimes they get pinched between clothes or think that the hive is threatened and then they will sting; it's good to be prepared.

Understandably, a few folks were very cautious about being around the bees. At the same time, experienced beekeepers like Officer Epling were so comfortable that they welcomed worker bees on bare skin.







*Expert beekeeper Gail Booth walked around introducing folks to a young worker bee that landed on a stick. In this photo, she shows a beginner beekeeper how you could tell the young worker bee's age and what tasks she might perform for her hive; the informal "meet-and-greet" eased some nerves about being so close to the bees.*

### Where's the queen?

As soon as the bees are in the hive, the first order of business is to find and mark the queen. The health of the hive is dependent on her, so making sure she's present and healthy is crucial! Expert beekeeper Andy Matelich led the search for her highness. With the support of the crew, he inspected each frame (from off the ferry) before inserting it into the new hive.



One of the queens dropped to the ground and could have been squished, but an incarcerated beekeeper with a good eye spotted her and saved the day!

At the end of the day, the bees were buzzing around their new homes, no one got stung, and everyone learned something about bees and beekeeping...there is always more to learn when it comes to bees.



May 22, 2018

Both hives in the orchard were thoroughly inspected today and both are coming along nicely. We observed the bees bringing in yellow and orange pollen; we know the yellow pollen is coming from Scotch broom; although it's not the greatest pollen/protein source it's certainly available. We're not yet sure what the source of the other pollen is. The blackberry is just about ready to bloom and once it does we will need to be ready with the shallower depth boxes to add on to the existing deep boxes because with the abundance of blackberry on the island they should be working it with gusto; it's a fabulous food source for them (and blackberry honey is delicious.) Hive number one will be ready for its second deep box to be added next week.



Queen from Hive 2D



Double red-dotted queen from hive 1A.

*Pictures from today: On this frame, the brownish covering is all baby bees (brood) waiting to chew their way out and into the world*



Both hives were given one gallon of sugar syrup each as feed on installation day; both hives went through every single drop of it. We gave each hive two more quarts of syrup today. Both queens were doing a fine job with good brood (baby bee) patterns in each hive and we moved some empty frames that the bees hadn't yet drawn out with wax comb closer to the center so they can work on those and fill them. They were calm, and everything else looked good. We also saw

bumble bees on Nootka rose as we were leaving the orchard and got some pictures; some of the native blackberry is blooming and we saw a few bees on it, too. The salal, huckleberry and apple blossom is done blooming so the bees missed that but this is all important information that will help us determine how and when to supplementally feed with protein/pollen substitute next year as needed.

The bees should be checked in a week both to monitor progress but to also feed again if needed and to see if they are running out of room and need extra boxes. Glenn, the note sheets are in the log book from today but I also photographed them and I will send those to you separately so you have them. I'll circle around with you to see how you'd like to handle scheduling next week. We think Gail's hive (to make the third that we planned on installing before that hive swarmed) could be ready to transport out the first full week or two of June, if everyone is agreeable.

On behalf of the Bee Team, thank you all for your incredible support of this project.

## June 13, 2018

Both hives are doing ok; in hive number two we moved some empty frames around to "checkerboard" them between full ones so the bees would work them. The team saw several supercedure cells in that hive, an indication that they are working on making a new queen. It's not necessarily a bad thing, if the bees are "sensing" that their queen is not doing a good job or is failing in any way, they have the ability to take a "regular" worker egg and turn it into a new queen. There was one such cell on installation and three observed last week so we'd really like to keep a close eye. The blackberry is starting to bloom and that's a great food source for them.



*Pearly white bee larvae (from above queen) and nurse bees taking care of them.*

## June 19, 2018

The bee team inspected both hives on Tuesday. Both are doing really well with plenty of brood (babies-in-waiting) and they are starting to fill up the cells with gray blackberry pollen and storing nectar.

We did see issues with the bowing of the wax comb in the frames (see picture below); several areas in frames we pulled out resulted in getting ripped apart and we ended up replacing a frame entirely. We are re-thinking the wax foundation strategy and will switch to using black plastic-coated foundation in the honey supers once we add them. The feeders have been removed as there is plenty of nectar now and the bees were really active and calm. We also spotted both queens. We will determine if extra boxes for more room on each hive are necessary on the next visit. We did see lots of bumble bees on the blackberry and a few butterflies as well and there was a large buck spotted in the orchard as we were putting materials back into the shed.



They should be checked again next week so we'll see what day Cedar Creek's apprentices can join and target it for a visit.

## June 28, 2018

Both hives at the apiary site seem to be doing well. For the first time we felt some weight when we lifted the boxes, indicating they are starting to store nectar and drawing out the last frames of wax comb on the remaining empty frames in each hive. Neither was ready for an additional box yet. Both queens were spotted and rearing plenty of new bees so colony numbers should be building up nicely, which is exactly what we want to see.

The blackberry is blooming but weather dependent, might not be for more than a few more weeks with blossoms. We're already discussing early fall feeding to give them the best advantage heading into the winter. We continue to have wax bowing issues and ended up replacing another frame. (see picture)

The bees are bringing blackberry pollen in but also ivory, orange and yellow indicating they are visiting a variety of plants. The thistle is blooming near the shed in the orchard and is loaded with bumblebees and the blackberry everywhere is just covered with bumbles. Way more bumble bees in a single patch than what Glenn and I observed last year, although we were out there in August so missed the blackberry bloom. No other wildlife noted although we keep hoping for a whale on the barge trips.

Jean thought the incarcerated beekeepers might be able to be out next week and I realize it's the July 4th holiday but if it's possible please let us know what day would work and we will schedule it.



*We will keep an eye on the Swarm cells (The open cup-shaped structures on the bottom of this frame).*



*Sticky and messy to pull these frames apart but good beekeeper opportunity to taste honey!*

Glenn and Tyler, I will send the inspection log sheets in a separate email.

We also noticed when we arrived that the first hive's outer cover lid was askew, even though the tie down was secure and the "doors" to the hive bus stop were closed and wondering if maybe a crew got out there to peek in?

Thanks to all.



*Marked queen...if you look closely you can see larvae*



*Bees hard at work in their beautiful pollen-storage system (note the different colors)*



*Bumble bee on blackberry*



*Honey bee with ivory pollen....she's also got pollen grains on her head.*



July 12, 2018

Overall, the bees on McNeil are doing very well at this point and we had a great afternoon with the apprentices and Glenn from Cedar Creek at the apiary. With the blackberry winding down, we're a bit concerned about what the bees will be foraging on after it's done blooming. To beekeepers, that means we're thinking about our fall feeding starting in the next 2-3 weeks. We want those bees as fattened up as possible heading into winter; it gives them a much better chance of survival. Everything in both hives looks really healthy now.

We had two apprentice beekeepers with us; neither of them had ever been in a bee suit or had their hands in hives and they did an amazing job! We talked them through everything from getting the hive smoker going, to avoiding the easily-forgotten places to check your suits to prevent bees from sneaking in, to pulling frames out of a hive appropriately and what to look for once they started inspecting each frame. They asked great questions and both said they learned a lot. We scraped off some of the excess wax comb (called burr comb) sticking between frames that *happened* to have honey in it which afforded an opportunity for everyone to have a little taste. The apprentices spotted the queen in both hives and could also identify the drones and workers.

The bees are bringing in gray (blackberry), yellow, beige and orange pollen. We did spend some time closely observing blooming plants and got a lot of pictures to start cataloging for our Fish and Wildlife report. We also saw a pretty big three/four (?) point buck walking through the orchard when we got there and later saw a doe with her two fawns. There were lots of bumble bees on the thistle, blackberry, dandelions and hypericum (St. John's wort) and we also saw



*Apprentice beekeepers inspecting a frame, hive tools at the ready!*



*Here you can see the marked queen, a drone (male) and workers (hint: drones have bigger eyes)*



*The top of this frame with the white waxy covering is honey; the middle tan colored area is drone "babies" waiting to emerge (the cells are bulging and not flat as they would be if they held females); bottom is cells filled with nectar that's not quite honey yet.*



*Glenn making a point!*

## July 19, 2018

We had another really great hands-on beekeeping session with Cedar Creek apprentice beekeepers yesterday.

The bees are doing well, but we're noting a change in the laying pattern of the queen in one of the hives that bears close observation; we don't want a failing queen at this point, with the need for each colony to continue to build up its population as they get ready to head into the winter. Worker (female) honey bees only live about 6 weeks in the summer months, which means if the queen isn't busy laying 1000 or more eggs a day, the colony will lose strength and not have enough bees to survive the winter. When we check them next week, if things haven't changed we will consider getting a new queen for that hive.

With the blackberry done and very few remaining blooming plants that we saw, other than dandelion, thistle and the remaining stands of shaded blackberry that still has flowers on it, (many of the plants in bloom took a hit with the extreme heat and continued lack of rain) we know we will need to start supplementally feeding the hives soon.

Queen Anne's lace, birdsfoot trefoil, and two types of everlasting pea blooming. Glenn and I were discussing how interesting that last year on each summer trip to the island we looked really hard, everywhere, for bumble bees on blooming plants and were hard pressed to find even a handful compared to the numbers we're seeing this year, which is pretty exciting.

We will plan on visiting for the next consecutive three weeks per scheduling apprentices/work crews via Jean and Cedar Creek. We're aware of the barge transition and will be flexible as advised by MIS staff.



*Very proud of their work today!*





*Learning the art of gently pulling each frame out of the hive box.*



*The tan-ish colored cells with the holes in them are new worker bees in the process of chewing their way out of their cells and into the world.....you can see two little bee heads sticking out of the cells here.*

Glenn and his crew did spot some fireweed on their island drive, which we hadn't seen on any of our recon trips previously. Fireweed is a great plant for end-of-summer food sources for the bees.

As far as other wildlife, we did see a big beautiful buck in the orchard and a coyote further down the perimeter road when we were heading back to the barge.

We'd like to follow up again in one week; the barge crew told us there wouldn't likely be barge service next week. As always, we are flexible but if we can still access via ferry (and needing ground transportation once on the island) that would be fantastic.

Enjoy a few pictures and thanks to all.



*This beekeeper wasn't expecting this frame to be super heavy.....but it's fully loaded with honey!*



*Bee scaffolding...leg-to-leg connection (called "festooning") of a bunch of bees on a frame getting pulled out of the hive.*

July 26, 2018

All,

This visit, we confirmed that the hive that we were concerned about needing a new queen proved that it definitely does. The existing queen's laying pattern is very poor; without her laying at least a thousand eggs a day the colony's population will diminish which increases the risk of that colony's demise over the winter.

So, we need to re-queen and we just got a queen sourced and "reserved". Because each colony is attuned to its queen's individual signature scent, her pheromone, introducing a new queen to a colony needs to be done with care. The bees will recognize a newly introduced queen (and her scent) as an intruder and will kill her if the beekeeper doesn't take steps to prevent it.

One of the best ways is to remove the existing queen from the hive and wait 24-48 hours before introducing a new one.

Could we access the island for a short trip tomorrow, to remove the queen and then return later this week, short trip, to install the new one? After that the plan would be to return on a week from now, a work crew day.

July 31, 2018

Yesterday's trip to the orchard hives accomplished its purpose; removing and sending the queen from the hive that needs a new one to bee heaven. Unfortunately, because the temps were very cool, all the bees were still in their cozy hive (and that means finding her in a sea of about 50,000 other bees) so it took a bit of effort to find the queen. After going through all the frames once and not seeing her, the guys resorted to assembling another box, bottom and placing a special screen (called a queen excluder) between the two and shaking bees off of frames to try to better isolate her because she's too big



*This photo shows the "let's find the queen" set up in action. It's always so much easier to spot her on the frames, but this goes to show that even when she's marked with a red dot to make it easier to locate her, it doesn't always work out that way. Then one must go to plan bee.*



to pass through the screen. Happily she was finally spotted.

Within a few hours of her departure the bees will recognize she is gone and they'll start to try to make a queen of their own (except that takes 16 days). We're going to intervene by introducing a new queen tomorrow that the workers won't be hostile towards ... their queen mother's scent will have dissipated by then.

Mites were also observed in the hive and we will be treating for them at some point in the near future. Varroa mites are a scourge in beekeeping because they can weaken the bees immune systems and introduce other diseases and pathogens. More to come on that.

And, both hives were each given a chunk of pollen patty as protein supplementation because there is little to none coming with the diminishing number of blooming flowers.

The team will visit again tomorrow, a short trip for new queen's installation. Will send a separate email to Brian and Vania with personnel.

## August 2, 2018

We introduced the new queen into the queenless hive. The bees were already busy starting to create new large queen cells around fertilized (female) eggs to replace the one they lost. One of the amazing things bees can do is take an egg destined to become a female worker bee, encase it in a large peanut size-and-shaped wax cell and feed it a special diet to change its destiny to become a queen in 16 days. For that reason, we had to go through that hive frame by frame to scrape the queen cells in process off; by removing them we further entice them to accept the new queen and not kill her.

It was another cool day and all the bees were home instead of out foraging, so we had to shake many of the frames just to get some bees off and get a clearer look to make sure we got all the queen cells removed.



*The red-dotted new queen is in this little cage that has a tube of fondant-like hard sugar at one end with a cork. We remove the cork before placing it in the hive so the hive bees can start eating away the sugar. In the day or so that it takes them to eat through it, thus releasing the queen, the queen's pheromone starts to permeate the hive further increasing the chances of her acceptance by the colony. There are worker bees in this cage with the queen that attend to her and feed her. The queen can't feed herself, so the cage also allows workers in the hive to start to feed and interact with her.*



There are also a ton of yellow jackets out and about near the hives so we reduced the entrances with wood shims we had in the shed and rocks to hold them in place; we will replace them with a solid strip of wood when we come back. By making the entrance very small, the bees can still come and go but now have a smaller area to defend against the yellow jackets which are eyeing those bees as food. Everyone is getting short on food supply now with the drought and heat and yellow jackets can utterly decimate a hive. It's a big reason for loss of a hive at this time of year if a beekeeper isn't paying attention and intervening. Hanging yellow jacket traps also helps.

Both hives had eaten about half of the pollen (protein) patty we had given them so we added another 1/4 piece to each hive. We are going to stop at the water treatment facility and fill up on water to mix sugar syrup for feeding on the next trip out.

As far as other wildlife we saw a few deer and there are three baby swallows in a nest in the empty bee shelter. A few bumble bees are still out foraging on whatever they can find.

We are looking forward to working with the incarcerated beekeepers next week!



*Queen cage placement on the bottom of the bottom box between frames. Once she comes out she will move up and further distribute her pheromone around the hive.*



*A bunch of worker bees working on a frame with a half-built queen cell or queen "cup". When it's finished it looks like a peanut shell.*



*Makeshift entrance reducers*



*New residents in shelter # 2: baby swallows.*

## August 9, 2018

The bees are doing well but desperately needing food. We anticipated adding the sugar syrup feeders to the hives on the last visit and made a water stop on the way to the orchard site so we could mix some syrup up for them.

The bees have accepted their new queen in the re-queened hive and we saw a decent amount of eggs indicating she's gotten busy. We did scrape a few new queen cells off several frames in that hive to make sure we don't have another queen in process in the mix; we want to keep this one alive and laying and not in a duel to the death between a newly emerged queen and herself. There can only be one queen per hive.

In the other hive we saw beautiful frames full of capped brood (new bees in the making) and that queen is doing a fabulous job. We did end up replacing a frame that the wax foundation fell apart on once it was pulled out of the box and saw a few frames that had blackberry "honeydew" deposited in the cells. The bees are gathering the sweet juice from the ripened blackberries and storing it in cells in lieu of nectar because nectar is not available.

There are some beekeepers that think this sign of dearth is also a sign of trouble and can cause a dysentery problem in the bees, weakening them; that made it that much more important to add feed today and a gallon of sugar syrup has been given to each hive. You'll now notice an extra third box on each hive which is empty; it allows us to place four jars upside down with feeder hole lids on the top of the second box and keep them enclosed. We also gave each hive 1/2 of a pollen patty (protein supplement) as there is virtually no pollen coming in and they completely ate every bit of what we gave them last week. The bees need the protein to raise babies and build their colony numbers up to prepare for winter.

To address the large numbers of yellow jackets we've been seeing which can be especially aggressive this time of year, we hung a trap in



*Seeing this makes a beekeeper's heart go pitter-patter. All that tan waxy covering houses new bees and the fact that it's so uniform and solid says the queen is truly majestic! This is the hive that did not get a new queen. (And both sides of this frame looked exactly like this ....double good!)*



*The dark purple liquid in the cells here is blackberry "honeydew" gathered by the bees from ripe blackberries.*



an apple tree. We also added bungee cords to the sides of the bee shed to keep the “gates” open while the hives are being inspected.

As far as other critters, we saw a few bumble bees out on whatever they can find, two bucks and a few does. We’d like to return in one week if feasible and follow up, refill feeders, etc.

## August 16, 2018

We had a great time going through the hives with incarcerated beekeepers. The most significant finding is that the shortage of nectar and pollen sources has ratcheted up the bees’ storage of blackberry honeydew. This is not a good food source and can lead to problems down the road so our goal is to provide ample food via sugar syrup and syrup infused with protein (a powdered pollen substitute) to break that cycle and load them up with an ample supply to ready them for the winter.

We added liquid feed in both forms mentioned above to both hives and team members Andy and Dixon are going to head out for a quick turnaround trip on Tuesday to assess how much the bees have gone through in that window of time; this will help us know how much we need to feed at each weekly visit. The drought and heat have been hard on beekeepers all over the region; just about everyone is feeding now. Or should be.



*This little worker bee stopped for a brief rest with her pollen sacs full of creamy white pollen....likely from Queen Anne’s Lace.*



*Freshly mixed sugar syrup waiting to go into the hives.*



*The dark purple stuff is blackberry honeydew “storage”.....we all had a lovely taste....and then discussed feeding strategies to curb it. The set of fingers on the right somehow found their way into real honey.*



*Feeder jars on top of the hive (The darker solution ones show protein supplement mixed in with the sugar syrup).*



*Starting the mite treatments, beekeepers working their way through each frame in the bottom box of this hive.*



*Applying oxalic acid solution to treat for varroa mites. (Notice the backside shot of the bee flying in to check it out.)*

We also treated both hives for varroa mites with an oxalic acid solution. We will do a second treatment with a thyme (like the herb)-based product in the next week or two. In this way, we get the first wave of the mites to fall off the bees with one method and then use an alternative method to knock the rest off; sort of like covering a patient with an infection with a broad-spectrum antibiotic to make sure all the bacteria are killed. Both treatments derive from natural materials, i.e. they are not synthesized and thus, hopefully, the mites will not develop a resistance to either one over time.

The team would like to return in one week to follow up on status inside the hives and add more feed.



*A beekeeper lets a worker bee sit on his finger.*



## August 23, 2018

The bees are still doing fine, albeit needing feed supplementation at this time of year. On Tuesday, they had already emptied every jar of syrup and syrup mix inside the hive.

We observed wax cappings (a white wax covering indicates the nectar-into-honey-creating process has been completed by the bees) on the areas in the frames that held the blackberry honeydew. We scraped the cappings off those areas, exposing them, and creating a “must-eat-this-right-away” scenario for the bees. They won’t re-cover it with wax again so they have to consume it. That coupled with additional feeding will, hopefully, break the blackberry honeydew “habit.” We also gave each hive a freshly-made (non-commercial) pollen patty to supplementally feed them. The instant it was placed in the hive the bees were all over it.

We treated both hives with a thyme essential oil paste that also incorporated essential oils of wintergreen, peppermint and tea tree in a



*A wax capping removal tool, typically used before harvesting honey to remove its waxy covering so that the honey can be spun out. Here, we are scraping it off to expose the blackberry honeydew the bees have stored to get them to eat it, clean it out and store syrup instead.*



*Empty jars left by hungry bees. The brown-ish ones contained a mixture of protein/pollen powder and sugar syrup.*



*One very large and thin homemade pollen patty that the bees instantly jumped on (fresh is best!) plus a square of mite treatment. The bees will remove and carry out the waxed paper. They keep a very tidy home.*



*Exposed honeydew cells after scraping.*



Crisco and sugar base. A tablespoon size scoop on a piece of waxed paper was placed in both hives. The bees don't really care for the scent and will start to remove it by carrying it out of the hive; we place it in the top box and in doing so it gets distributed amongst the frames and throughout the boxes. The vapors are not harmful to the bees, but will kill any varroa mites clinging onto them.

We did observe both queens. Both hives have brood (babies) in process with the re-queened hive a bit ahead of the other hive. In fact, the queen in that hive has been so busy laying eggs that we will watch that hive closely to make sure she has enough room to keep laying. We don't want her to stop rearing new bees ahead of the winter.

## August 30, 2018

The bees are doing well and still need to be well fed. The blackberry honeydew storage issue has much improved in both hives, hive #1 greater than #2. The incarcerated beekeepers with us did a fabulous job; one of the incarcerated men is to be released in another week or so and is excited to keep learning about bees!

In hive #2 (the hive we had re-queened) the bees ate much less of the pollen patty (the more solid protein form) that we had placed in the box. They also were developing some drone brood in addition to new worker brood. This tells us that the protein supplement level has helped to feed and rear new bees. While there were empty spaces and not the solid-wall-to-wall brood that we love to see it could simply mean that many of the new bees have emerged and that those spaces will, again, be filled with eggs and new babies. Follow up will tell more of the story. Hive #1 had excellent brood patterns. At some point, as we head into cold weather, the queens will stop laying and the bees will cluster in a ball inside their home for the winter.

We added the thymol paste mite treatment to both hives again, per treatment protocol; the



*If you look really closely here, you can see a worker cleaning her long tongue. You can also see her back left leg pollen sac not filled with pollen but with a reddish ball of propolis. This worker has been out gathering the sap/resin from trees that the colony uses to seal holes and keep their hive hygienic. Propolis is a great antimicrobial substance.*



*If you look closely at the bottom of this picture you will see covered cells that aren't flat and bulge out a little. Those bigger cells hold drones (males). We typically don't see drone cells this time of year because the workers kick them out mid-summer; they aren't allowed to overwinter with the colony because they do no work inside the hive.*

good news is that we didn't see any mites hanging out anywhere in either hive. Both hives were given 1/2 of a large freshly made pollen patty and three quarts of sugar syrup/protein mix as liquid feed. Both queens were observed.

The plan, with approval, is to return on September 6th for follow up. If there are dates that we will have work crews/beekeepers this month, would you be so kind as to pass those along so we can synchronize dates?



*Pulling out individual frames in a box.....with a smile! This man's beekeeping evolution has been fun to watch.*



*Handling frames and hive tool like a professional beekeeper!*



*Teamwork helps to put the hives back together once they're inspected. The boxes with honey in them are super heavy.*

## September 6, 2018

Dixon and I did a quick turnaround trip on the 6th with our primary objective to refill the feeders. When we arrived at the site we observed a waxed-paper-pieces trail nearly out to the road from the hives; the bees had been busy cleaning house and removing the backing from the pollen/protein patties we had given them as well as the square of waxed paper we had placed the thymol mite treatment on. It would have been fun to catch one of them hauling one of the bigger chunks of paper out to get a picture.



*Part of the waxed paper trail; this collection was about 15 feet in front of the hives.*

The bees had emptied all their jars and hive #2 had eaten the entire pollen patty; hive #1





*Fresh sugar syrup/protein feed in jars and pollen patty on the left. The jars have lids with small holes in them; placing them on the screen is a great way for the bees to get under them to slurp out the food.*

still had about 1/3 of theirs left. We replaced the quart jars with fresh mix and also gave both hives another large piece of freshly made pollen patty. While the temperatures are warm they will still consume it.

Two of the rocks holding one of the entrance reducers in place were knocked off hive #1; possibly by a mouse or at least another small critter. We will need to be thinking about getting mouse guards to put in place for the winter soon. Mice see hives as a warm, cozy winter home with attached pantry and can wreak havoc if you don't reduce the entrance to super

small size allowing bees to be able to go freely but not the opportunistic mice.

We will plan on, with approval, a visit in one week; Tyler had relayed that there will be a work crew with incarcerated beekeepers on that day. If this has changed, please let me know.

## September 13, 2018

The bees are doing pretty well. They had gone through all three jars of their liquid protein/sugar syrup feed and only partially consumed the pollen patty we had left for them. They were seen bringing in a tiny amount of orange (dandelion) pollen, however, when we arrived hive #1 had more entrance activity with bees flying out and hive #2 was quiet at the



*The bees have two spaces to enter, on either side of the rock. With all the yellow jackets around, a smaller space is more manageable for yellow jacket defense. In contrast, the mouse guards are metal with really small holes.*



*In this picture you can see bees congregated on and around the rocks at the front entrance in the hive on the left; zero activity at that point on the right.*

entrance. The bees will continue to fly as long as temperatures are at least 50-55 degrees outside; in the winter, if temperatures rise enough, periodically, they will take a “cleansing flight” to relieve themselves away from the hive as honey bees will not defecate inside their home. Seeing bee poop inside a hive is a sign that something they consumed doesn’t agree with them or is symptomatic of a disease.

We spotted both queens today; they were both in the bottom boxes of each of their hives and both still laying eggs. This means the workers are still feeding and caring for eggs and larvae and using the food (especially the protein) provided to do that. We observed that only a small portion of the pollen patty in hive #1 was consumed; much more had been taken by hive # 2. We removed the old leftover patty and gave the bees a fresh smaller sized piece. We know that at some point in the coming weeks the queen is going to stop laying as temperatures drop and the bees move into winter mode. Both hives also had their jars of syrup mix refilled.

There was no sign of varroa mites or any other problems other than the many yellow jackets still hanging around. We have added emptying the yellow jacket trap as a “to do” on every visit.

We will be moving into winter prep soon including adding an extra top box filled with cedar chips or flakes to the hives called a “quilt” that acts as a moisture trap for the colony. In the winter, the bees generate their own heat keeping the hive a very cozy 90-ish degrees. All that moist heat rises and contacts the much colder outer cover and can, potentially, cause condensation to form on the inside of the cover and then drip back down on the bees. Moisture raining down on the bees can be lethal so adding a quilt box is a little extra insurance to assist their own climate control system and trap any water preventing the bees from getting wet. The quilt box also allows a hard form of sugar “candy” to be fed during the winter if necessary because the bees’ digestive systems cannot process the liquid water in the syrup they are getting now during the months they are clustered in a big ball inside their hive. They will consume their honey first as the winter goes on but the weather plays a major factor in how much and how fast they go through it.



*A nearly full frame of wax-capped honey for the winter bee pantry.*



*In this frame the original wax foundation had warped and large pieces of it had gotten torn off as we pulled it out of the hive on a previous inspection. This shows how the bees fill in the gaps that were left with fresh wax comb that they make. Eventually the entire frame will be filled in and there will be no empty space in the middle. You can see their wax “welds” to the wooden frame in the upper left and right sides.*



Glenn and Tyler have relayed that there will be incarcerated beekeepers to get some hands-on bee time in on September 20th so we will plan on following up on that day.



*The queen is partially obscured by a worker on top of her head. There's a bit of everything in this picture of the bees' nursery: capped honey; cells filled with shiny nectar; [mostly orange] pollen; white larvae and some tan wax-capped brood.*



*The bottom of this picture is actually the top of this frame; we were tilting it to see if the larger open cell (called a supercedure or new queen cell) had an egg in it. It didn't, so no worries that these bees are trying to make a new queen. We noted it and will observe.*

## September 20, 2018

The Cedar Creek beekeepers got to inspect the McNeil hives today with the team and they did a great job! One of the greatest things the bee team has been privileged to witness with this project is the transformation of an individual who is completely and utterly frightened of the bees and doesn't want to get anywhere close to the hives; after about 20 minutes or so of observing his peers working the hives and talking about what they are seeing, the previously intimidated starts to inch his way closer. More often than not we then hear the same individual(s) asking if he can pull "one of those frames" out too? This is exactly what happened today. It's wonderful to see their confidence and knowledge grow with each experience in the hives; these tiny insects really are gigantic catalysts for changing lives.

The bees in both hives are both still busy prepping for winter and received refills on their empty feeders today. We're going to proceed with securing two quilt



*Can you spot the queen? Worker bees putting wax coverings on larvae. The larvae will spin a cocoon inside the cell and become pupae before emerging as a fully formed bee.*



boxes (as described in the last report) and will see if Bruce Carly's team might be able to put them together for us.

The bees in both hives are both still busy prepping for winter and received refills on their empty feeders today. We're going to proceed with securing two quilt boxes (as described in the last report) and will see if Bruce Carly's team might be able to put them together for us. We're also going to take the old deep (derelict) boxes we found at the site before the bees moved in (that are sitting on the side of the storage shed) to see if those can be cut down in size to use in the future or for making the quilts. It will be critically important to make sure the bees have appropriate feed into the winter months and then over the winter (when we switch to a solid form of sugar) to keep them from starving if they run out of honey stores.

We will continue to strategize best management as we observe them over the coming weeks; we know that any future time now we could lose our warm daytime temperatures. At present hive #2 appears a bit more populated and stronger than hive #1. The bees consumed only part of the pollen patty that was left for them last week in both hives; this could also be a sign they are slowing down the "baby bee" production and, therefore, not taking and needing as much protein as before. Right now, the queens are still laying eggs.

We will plan on following up in one week, with approval.

## September 27, 2018

Both hives appeared to be doing well. Feeding continues to be of high importance and multiple forms of feed were given including protein/pollen substitute patty; viscous sugar syrup (2:1 and 3:1 sugar to water) and liquid protein mixed with syrup. Temperatures are still supporting the bees' taking and utilizing the liquid feed. We will be prepared to place



*The frame gripper tool this beekeeper is using makes pulling the frames out of a box a bit easier.*



*Spot the queen!*



*Freshly painted bee shelters look bee-utiful!*

solid sugar “candy boards” in the hives in the coming 4 weeks or so. This will also be important as the fall rains settle in, the bees will be stuck inside and we don’t want moisture to be a problem in the hives.

We have not seen any varroa mites since fall treatments were completed. Both hives still have quite a bit of brood and eggs and both queens were spotted. Hive number one has a slight edge on size vs number two; we always like to see lots of bees heading into the winter in a hive. They will make a big ball with the queen at the heart of it and cluster in the center of the boxes, vibrating their flight muscles to stay warm. They will work their way up through their honey stores in the boxes as the winter progresses. A larger number of bees can, generally, better climate control their hive.

We will likely plan at least a monthly trip out in the winter months, weather permitting, just to make sure the bees aren’t running out of their winter hard sugar feed and to keep an eye on any potential condensation issues. Plus, anything observed that will help us tweak our hive management for next year will be helpful information to have.

The bees were bringing in small amounts of orange and light yellow pollen.

We still need to add the quilt boxes at a future visit and today made a repair to a frame that had pulled apart in one of the hives.

With approval, we’d like to check on them again in one week.



*A bee feeding smorgasbord: each hive got a quart jar of (from L to R) protein powder mixed in 2:1 sugar syrup; a jar of 3:1 sugar syrup and a jar of 2:1 sugar syrup plus a solid freshly made pollen patty.*



*The bee at the end of the finger is on her way to unload her bounty of pollen in a cell. If you look underneath her wings you can see filled orange pollen baskets on her rear legs. The wax covered cells on the left side of this frame hold honey.*



## October 4, 2018

It was a gorgeous day to inspect the MIS hives. The bees were very calm and very busy bringing in whatever pollen they can find, feeding eggs and larvae and storing as much nectar/honey as they can for their winter food supply. We even saw drone (male bee) brood today, a bit unusual for this time of year.

Both hives are doing well; we saw both queens, and almost, surprisingly, both are still laying lots of eggs. There was fantastic brood (baby bee) patterns noted in both hives. We did a frame repair on hive one and replenished the depleted food supplies with solid pollen substitute patties as well as liquid feed for both hives. The remainder of the less viscous syrup from last week was not being taken by the bees so we removed it; they should really only be getting the more viscous sugar syrup now anyway. The bees always teach us how to beekeep.

Incarcerated beekeepers did a great job with inspecting; it is really fun to watch the wary individuals move closer and closer towards the hives during an inspection, especially when someone excitedly spots something interesting inside the hive. Its kind of like the beekeeping version of "Mythbusters" because of the pervasive social ideas about honey bees being "mean and nasty". Everyone learns something new and the crews that participate all gain some fluency in bee knowledge and information while learning to care for a colony of bees.

Everyone is enjoying the apples in the orchard including the island bears, apparently, as we did spot our first bear scat not far from the bee shelter in the orchard. Hopefully they have such an abundance of other food that the bees won't even fall anywhere on their radar.

**Glenn and Tyler:** Glenn mentioned today that there are incarcerated artists at Cedar Creek that are able to create custom painted art for the bee shelters. Could you two please share



*Can you spot the queen? brood? larvae? wax capped honey?*



*Beekeeper exhibiting excellent technique returning a frame to the box.*





*First orchard bear scat sighting.*

more here for the group on that? And, one of the incarcerated beekeepers mentioned that one of the artists has sketches of ideas that perhaps could be photographed and emailed? If so, that would be fantastic!

The current working plan is to return, with approval, for three weeks in a row, weather permitting, to continue follow up, feeding and prepping for winter by adding quilt boxes, mouse guards and solid sugar blocks/candy for feed.

If there is any need to change that schedule please let us know so that we can plan accordingly.



*This is a larva that was removed from its cell to check and see if any varroa mites were hiding on it. Mites feed and reproduce on larvae (and pupae) in the developing brood and can cause diseases and other problems for the bees. The brown spot on this larva is not a mite, but a piece of propolis from the hive.*

## October 11, 2018

The bees are doing well. It was 47 degrees in Steilacoom, so we waited a bit after we got to the island for it to warm up enough to pull the covers off, assess feed and add more. The bees had drained it all so we loaded them up, likely for the last time this season. Bee



*Hungry bees emptied every bottle*

numbers look good in each hive and they are in excellent condition heading into winter.

This coming week is forecast to be gorgeous so we are going to take advantage of it and go through the hives for the last time, add the quilt boxes, add the mouse guards and either add hard sugar now or wait until the follow up visit. If weather permits the bees to continue



*This forager is bringing in whatever pollen she can. She stopped for a rest before heading into the hive.*



*Round heads, cylindrical bodies and supports that look like legs. Yes??*

to fly we may give them another week of viscous liquid feed but we'll wait to see what status is when we get there and get a look inside the hives.

We will also be re-inventorying the tool shed either that day if there is time or the following week. Even if the temperatures are cool on follow up we can add the solid sugar feed without disrupting the bees because we'll have the quilt boxes on.

After the 25th visit we will plan on a quick trip out per month-ish, weather dependent. We saw more bear scat in the orchard and those bears have been busy eating apples.

I sent Tyler the shed dimensions as CCCC has artists to ply their craft and custom-create a design for those buildings. As we were measuring them we also measured the two big tanks and we think they look a LOT like the shape of a bee.....

Henry stopped by and mentioned there is going to be an exhibit on the history of McNeil Island at the Tacoma Historical Museum in 2019. Link here:

<http://www.washingtonhistory.org/visit/wshm/exhibits/McNeil/>

## October 18, 2018

We got a last look inside the hive boxes and the bees are looking good. We gave them two more jars of feed since the weather was forecast to be warm, added mouse guards to both hives and also added the quilt boxes. They were busy bringing in orange and light yellow pollen.

We would like to return this week (and next week likely), if possible, to remove the feed jars and the extra box that surrounds them; the more compact the bees' home the less space they have to climate control in the coming cold, wet months. We will also "trouble shoot" anything that looks like it might need attention before winter.





*Handmade mouse guards; allows the bees to come and go but not the mice!*



*Measuring for screen for mouse guards on entrances.*

On another note, we have a sudden emergence of hundreds (maybe more) of flies in our beautiful equipment shed; fly traps will go up at follow up. We also saw 2 coyotes, a huge 4 point buck and a beautiful hawk on our visit.

Going forward, we are planning on checking on the hives every three-4 weeks or so to make sure all is well. These should be quick trips as we won't be going through the boxes and disturbing the bees in the cold weather. We do want to make sure they have supplemental hard sugar feed as well as no issues with moisture or other obvious problems. We are hoping the bears go into their own hibernation and migrate out of the orchard soon. They have obviously been enjoying lots of apples.

After the winter, if the hives are strong, we can possibly split each of them in the spring, thus doubling the existing colonies. Fingers crossed! We know there is plenty of spring



*Quilt box for insulation and moisture control. The holes on each side allow for ventilation and are covered with screen so nothing can get in.*



*Because this quilt box has hardware cloth on the bottom with larger spaces, two pieces of burlap were used as a liner to hold the high-tech sawdust for moisture control.*



forage available with the fruit trees and maples, etc. that produce early pollen. That spring pollen/protein collection is critical for raising lots of new bees.

The bee team will be meeting in November to review the inaugural beekeeping season on the island and to start to strategize and plan for next year. Any and all feedback is welcome...what works, what could be improved, how you all envision the program going forward, etc. Perhaps in January or February we can schedule another meeting with DOC and SPP personnel to synchronize ahead of the new beekeeping season? Joslyn, I'll leave that to you!

We will plan on a few team members heading out in one week, pending approval.



*Brown quilt boxes in place; the bottom two boxes are filled with bees and honey and the box underneath the quilt will get removed along with the quart jars of liquid feed on the next trip out. You'll notice the rocks are gone from the entrances and have been replaced with the mouse guard entrance reducers (also very high tech!)*

## October 24, 2018

Glenn contacted to inform that he and his Cedar Creek crew were on the island today. They were able to remove the remainder of the feeding jars/feed and surrounding box from both hives which was part of the work plan for this week.



With heavy rain predicted tomorrow and next day, the bee team is canceling its visit for this week and will plan on returning to the island next week. We still need to add winter feed, make sure bee needs are managed for much longer stretches of time and conduct a winter inventory in the equipment shed.

*Last round of liquid feed*

Glenn also relayed that artists from Cedar Creek are planning on a trip out to paint murals on the bee sheds; Tyler, if there are any sketches to share, that would be awesome. Everyone is really excited about that project and what they come up with!

Thanks to all!

## November 8, 2018

The team did a brief check on the bees; we were planning on adding additional hard sugar winter feed but the bees were still out flying and foraging in our unusually ongoing warm fall weather.

We will plan a trip out in the next 3-4 weeks, weather permitting, to do a quick general hive recon and slip in some hard sugar bricks in both hives.

Also, Bruce Carly and his CI crew finished the medium boxes for the hives with the wood donated from Home Depot; for now they'll stay at CCCC and we'll move them out on an early spring trip to the storage shed.

Brian sent a note this past week that the bear(s) were spotted close to the apiary; Glenn and his crew are working on building a fence for some bee protection around the bee sheds.

We also did a follow up inventory of the storage shed and I'll send Henry an updated/revised document once it's typed up.

Thanks to all!

## November 18, 2018

It appears the winter rains are moving in and the MIS bees are as tucked in at this point as they are going to be, although they were still out flying and foraging on whatever they could find.

The team elected to use dry sugar instead of a "brick" of sugar; there are multiple ways to deliver sugar for winter supplemental feeding; we feed supplemental sugar to make sure they don't run out of their own honey stores and starve to death. All winter sugar delivery methods take into account that the bees won't fly outside their home if it's below 50 degrees and that they cannot process excessive liquid/water content while they are stuck in the hive; this is why we don't give them sugar syrup anymore. The natural moisture that will be generated while the bees are keeping their home a nice and cozy 80-90 degrees will be just enough for the sugar to be slightly dampened so the bees can physically process it.



*A little smoke to drive the girls (all the males are long gone at this point) deep into the lower boxes so it's easier to add the sugar and not squish anyone.*



*Sugar loaded up in hive number one. The bees can chew holes in the waxed paper which sits directly on the topmost boxes' frames. The quilt box with the wood shavings in it goes on top of this box.*

Sometimes if there is excess sugar left in the hive come spring, and the bees don't want it, they will simply remove the sugar granules from the hive.

Glenn and his crew continue work on the apiary fence and we'll look forward to an update once it's complete.

The bee team will plan on checking on things sometime in the next 3-4 weeks, weather permitting; there are a number of things a beekeeper can do to monitor winter hives without opening them although sometimes we get a warm spell during the winter that allows for removing only the cover and taking a quick peek. We will also see how heavy the boxes feel, which will give us an idea of how much of their winter stored honey they have gone through. We've troubleshooted for mice by installing the mouse guards so those critters are excluded and the hives themselves are housed in the bee sheds which will provide a good windbreak.

The bears are a bit of a wild card, but hopefully they still have plenty of other food sources and will move along after finishing off the apples.

That's it for now. Happy Thanksgiving everyone!!



*The sugar is sitting on top of waxed paper (newspaper works just as well)....this keeps it from falling through to the bottom of the box. The bees will work their way up from the bottom box as they work through eating their honey. By the end of the winter they are essentially occupying the top box and the sugar is there if they need it. It will also absorb some moisture in the hive.*



## Acknowledgements

The McNeil Island Beekeeping program relies on several organizations and numerous individuals. Like all Sustainability in Prisons Project (SPP) programs, the program is interdisciplinary, befitting from a variety of expertise and perspectives. The whole is much greater than the sum of its parts. While we do not know all of the individuals who have contributed, we extend thanks to those we know. We appreciate all you do to make the program possible.

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