Houston and Nature Episode 3: What's It Like to Be a Honeybee? Transcript

Nivien Saleh
How much fun is the life of a honeybee?

Hi, I am Nivien Saleh with Houston and Nature. Today's show is about the European honeybee apis mellifera. I suspect you have eaten honey before.

In that case you have been in intimate contact with the honeybee and its digestive juices. In this episode we'll take a look at the bee , and if you ask me, it is just fascinating.

My guest is Carlisle Vandervoort, a beekeeper from the Heights in Houston. You may have seen a movie she recently produced - on Molly Ivins, the iconic party-hard and tell-it-like-it-is journalist from Houston who achieved national fame in the 1980s and 1990s.

I got to ask Carlisle all my bee questions, and she gave me splendid answers, which I'm sharing with you. If you enjoy them, please tell a friend about this podcast.

Nivien Saleh
Hi Carlisle, you're known for producing the award winning movie, 'Raise Hell, The Life and Times of Molly Ivins.' But you also do beekeeping.

The Joy of Honeybee Beekeeping

Carlisle Vandervoort
Beekeeping is one of those things that keeps me grounded in the world and brings me incredible joy and delight. And making a documentary is a long, laborious process. Being able to go out and see my bees and be with my bees would certainly revive my occasional flagging spirits around the film.

Nivien Saleh
So in a way, you could say your honeybees helped you produce the movie by by supporting you emotionally.

Carlisle Vandervoort
My honeybees help me do everything because they're always supporting me emotionally.

Nivien Saleh
How many honeybees did you have at the time of the movie?

Carlisle Vandervoort
The film was seven years in the making, at various points, I was managing 12 hives to three hives to five hives. I had a beekeeping partner for our little hobby business, Kevin Topek, and I learned much about my beekeeping from him. We would manage beehives for people. So let's say that you wanted to have a hive, but you weren't ready to tackle it. So Kevin and I would manage your beehive for you. We would put the bees in. We would be doing hive checks and then it would come time to process the honey. We would take out the frames and we would bring them to my art studio. And we would process the honey there and then bring it back to you.

Nivien Saleh
So you've been in beekeeping for a long time. You've done it professionally. When did you get started?

Carlisle Vandervoort
I think maybe 10 or 12 years ago I started keeping bees. When I was graduated from art school out in California and got my graduate degree, I was invited to Portland, Oregon, to be on a show. And so the art show's theme was landscape. And it was held in this really beautiful old abandoned tire factory. I'd heard rumored that there was an artist that had done a project with beehives and I was really intrigued by that. So I found her and was really intrigued with her project. She put a hive in on a table and she had skirted the hive. So imagine a funnel, an upside down funnel. The skinny part was going out to the vent in the top of the room. She put a camera in, and a mike underneath the tenting. You could sit outside of the tent and watch the video and listen to what was going on. And I just sat down and I went into a really deep meditation. When I came out of that meditation, I literally felt my heart burst open and this huge smile crossed my face, and I heard internally, "You're going to have bees." So that was when I was 40. And I got bees, I think, when I was about 52.

Nivien Saleh
You heard the voice that you will have bees at 40 and then you waited 12 years to do it.

Carlisle Vandervoort
Well, what happened was I moved back to Houston and I lived in an apartment, continued to make art, bought a piece of property in the Heights and I built a house, and I knew it was time to start keeping bees then. So I called up this guy that I wanted to bid on doing my permaculture garden.

Nivien Saleh
Kevin ....

Carlisle Vandervoort
Kevin. So we connected that way. And then I mentioned to him, I wanted to start keeping bees, and his whole face lit up. He said, "Listen, I used to keep bees in the 80s. I learned from my old Italian neighbor down the street, and I would love to start keeping bees. Let's give your garden a couple of

years to grow and settle. And then if you still want to do it, call me, and we'll connect." And that's what happened. Two years passed. I called him and I said, I'm ready to go.

Nivien Saleh
Kevin Topek specializes in permaculture. I imagine that he helped you prepare your garden by telling you what plants to plant.

Carlisle Vandervoort
Yes, absolutely. He planted my garden. It was fantastic. We kept some things that were here and we just did a lot of work to build the soil so things could grow.

Nivien Saleh
And then you had hives. Tell me about that experience.

Carlisle Vandervoort
I invited friends to come join me. So we were in my art studio. There were a variety of people from business people to art curators and kids. Some were really openhearted. And others were somewhat jaded. But to a person, I watched them take a serrated knife, and slice off the top roof of the of the frame packed full of honey and help run the spinner, which is what throws the honey out. And I watched them. They got more and more joyful. They became little kids and they were eating the honey and they were tasting the pollen and they we re getting so excited. As an artist, I always wanted my work to be able to shift people from the mundane to the sublime, even if it was just for two or three minutes. The moment I watched these people harvest honey, I went, "OK, this is it. Here is my service to the world."

The Honeybee Queen and the Drone Comet

Nivien Saleh
The honeycomb your friends were spinning is THE central building block of the beehive. A hive is a dark cavity with a small entrance, and if you were to open this cavity you'd find combs hanging down vertically. Each comb consists of hundreds of hexagonal cells that the bees fill with food – like honey – or brood, which are their eggs.

And what's cool is that bees build the comb using the wax that comes out of their glands. It's the same as if a human started to sweat putty and used that that to build a pantry or a nursery for a baby. That's pretty cool!

What's also cool is that a beehive is one humongous family. There can be up to 80,000 family members. The queen is the mother of them all. Her male offspring are the drones, and her female offspring are the worker bees.

Which brings me to a question: If all bees in the hive come from the queen, where does the queen come from?

Carlisle Vandervoort
The worker bees. If the bees decide that a new queen needs to be born, they will pick several regular worker bee cells and start extra feeding it. And it starts growing and it looks like a peanut shell. the first queen out of there .... is the queen. And she goes around to the other peanut shells. if there's developing queens in there she stings them through the shell.

Nivien Saleh
She kills the other nascent queens. And then what happens?

Carlisle Vandervoort
She's fed a little bit more. She's got a couple more days. Right. And then she takes her nuptial flight to the DCA. The DCA is the “drone congregating area.” That is what it's known as, the DCA. It could be half a mile up in the atmosphere. She emits her pheromones. And so drones then know to fly to her. While she's up in the DCA, she has her way with 12 to 20 drones.

Nivien Saleh
What I've read is that when she goes on that flight, she has sex with multiple drones and the sperm of these drones then get deposited in a special bladder.

Carlisle Vandervoort
Yes.

Nivien Saleh
And she stores them there for the rest of her life. And she draws on the sperm in that bladder as she lays eggs, as she needs the sperm.

Carlisle Vandervoort
Correct. Then she returns to the hive. She settles in and she starts laying eggs and she never leaves. The queen, she can lay up to more than fifteen hundred eggs a day.

Nivien Saleh
That is enormous.

Carlisle Vandervoort
Is that not amazing? The queen inspects the cells that she's going to lay in for cleanliness and the size. And if she finds it acceptable, she places a minuscule spurt of glue that she makes on the bottom. And then she deposits an egg into it that stands straight up. And then the nurse bees then feed the egg royal jelly for three days.

Nivien Saleh
My understanding is that the queen is aided by the nurse bees into putting her body into the egg chamber. So she cannot she cannot really lay the egg all by herself. They help her navigate into the cell. Is that correct?

Carlisle Vandervoort
They do. She has attendants that clean her and groom her and feed her and direct her. Absolutely.

Nivien Saleh
OK, so she lays her eggs.

Carlisle Vandervoort
She lays her eggs. That's all she does until she dies. Queens ....they can live about five years, but after a couple of years, the egg laying drops off significantly. Sometimes beekeepers decide that they're going to put a new queen in if they feel like they're not getting enough honey production, and so they will go in and they'll find the queen and they'll take her out and kill her and they'll put in a new queen.

Nivien Saleh
When a queen lays an egg that has been fertilized by a sperm she got from the DCA, it will produce a female bee – either a worker or a queen bee. When she lays an egg that has not been fertilized, it will produce a male bee or drone. How does the queen decide what kind of egg to lay?

Carlisle Vandervoort
It's the nurse bees who are telling her: "Lay a fertilized egg, lay an unfertilized egg. We need more drones. We have enough drones." When the order has been put in from the nurse bees, then she can make that decision and she can do the chemistry within her own body.

Nivien Saleh
That's fascinating, isn't it? She has this bladder of sperm that she can use to fertilize eggs, but she uses them only when she is told by the nurse bees...

Carlisle Vandervoort
Correct.

Nivien Saleh
... to use it.

Carlisle Vandervoort
Correct.

They Honeybee Drone

Nivien Saleh
And that then influences the amount of drones versus worker bees that are in the hive.

Carlisle Vandervoort
Yes. Maybe 10 percent of the bees in a hive are drone bees. The queen starts laying drone eggs in the spring and into the summer. The drone's existence is focused on the procreative. The drone may go and visit several DCA areas per day because it's a certain season, right? And so he flies for about a half hour. And if he hasn't found one, he'll fly back to the hive, he'll refuel, he'll rest, and he'll go back out again.

And then they get shooed out. They get exited, ushered out of the hive by the workers when there's illness or when there's a nectar or food shortage and also at the onset of winter, because they eat more and they take up more room because they're bigger. And in winter, there is less food in the pantry, basically.

Nivien Saleh
And the ultimate interest of the bees is the survival of the hive. So whatever it takes to make the hive survive, they will do.

Carlisle Vandervoort
Yeah.

Nivien Saleh
I'm learning something really interesting and new here. I thought drones just hang out at the hive and eat and eat and eat. And at some point, they head out and look for a queen. But what you're saying is they do that every single day.

Carlisle Vandervoort
There's a period that they do that. Don't forget, the virgin queen is up there in the air spraying pheromones. And bees have the best sense of smell of all the living creatures. So they smell that. That's when they go off and start looking for the DCAs. The drone will then zero in on the virgin queen, her pheromone, they zero in on that. It's called a drones comet. Because there might be 25,000 drones. And they surround the queen. And about 12 to 20 drones manage to mate with the queen and then they die. What happens is the drone grasps her with his claspers from behind. He has an endophallus. So that's on the outside. So he inverts that and he ejaculates into her. She carries him higher, higher, higher towards the sun. And once he ejaculates, he then ruptures himself and he falls to the ground. But the phallus is still in her pumping semen into her. And then what happens is the next drone, mounts her. And he unhooks the previous drone's phallus. And the process repeats.

Nivien Saleh
That is one of the things that I've found just so fascinating. So you have these male bees, the drones, that look for the queen bee, and then they mate with her and then they die. You would think, who would ever do that? Why would you want to mate with somebody just to die afterwards? And yet it happens. Somehow the survival of the hive, which can go to the detriment of the individuals in the hive, is built into their tiny little brains and it drives them.

Carlisle Vandervoort
I'm not sure there are individuals in the hive. There's a beautiful German beekeeper named Michael Thiele, and he talks of ... it's a German concept of the Bien - B-I-E-N - and it's the superorganism of each hive. It's just this collective consciousness. They're not individual egos in a hive fighting to be a nurse bee or one of the queen's attendant or.... Well, I'm a drone, but I don't want to die early, so I'm not going to go, mate. It's not like that. It's really an amazing thing.

Nivien Saleh
Yeah

Carlisle Vandervoort
Through observation it's been suggested that the hive is a happier and more productive hive when the drones are around. Their duties, besides impregnating the queen, are: they act as guards. They're brood warmers - they hang out in the nursery and because the bodies are bigger, they're warmer and they can cool the hive also because their bodies are bigger. they can flap their wings and start cooling the hive down internally.

Nivien Saleh
I come from Germany, as you know, where honeybees are much more iconic than they are here in the United States. In the United States, I believe, it's more the bumblebee that everybody associates with a bee. But in Germany, it's the honeybee. And the drone has a reputation of being just lazy and they just consume honey and aren't really very useful other than spreading the seed, which in itself is an important function. Right. But what you're saying is, there's really a lot more to the drones.

Carlisle Vandervoort
Absolutely. That idea that the drones take up space, eat all the honey and just lay around is is an old idea in beekeeping. And I do need to say that my style of beekeeping is a pesticide free .... I keep bees not for honey production, but as pollinators. So, honey is not really the main thing why I'm interested in keeping bees. Plus they're magnificent creatures. In the beekeeping circles that I hang out in, we all view the drones as having their own ... service. They're doing a variety of services within the hive.

Nivien Saleh
Okay, good! So we have the mechanics of a male bee, the life of a queen bee...

Carlisle Vandervoort
Worker bees - should talk a little bit about that?
Nivien Saleh
Please.

The Worker Bee

Carlisle Vandervoort
Well. Worker bees... They're definitely the workhorse of the beehive and they have various jobs as they mature, get older. So they're nurse bees. Then they become field bees. They're guard bees. They create cells for the brood chamber. You know, they might be making the cells from the wax from their bodies. They also create the cells to store honey in and pollen in. Some are queen attendants. So. There are many, many jobs, and they take care of the colony as a collective, they're the driving force behind that, the life of the hive. They make decisions collectively and they will decide as a body of worker bees. They decide to either support, supersede or depose the queen, swarm, abscond or build drones cells.

Nivien Saleh
We have this notion of a bee hive being run by a queen. In popular parlance, you often hear, oh, she's a queen bee, right? Like, she's so high and mighty and on such a high horse, but really in a bee hive, the queen is not the kind of queen that we imagine a queen to be. The decisions are not made by her. They are made by the workers. And when I read this, it overthrew a lot of these conceptions that I had in my head. In a way, that's a really valuable exercise. You know, every once in a while to evaluate your assumptions and realize that in many ways you've been wrong.

Carlisle Vandervoort
Oh, yeah, absolutely. I had all those preconceptions, all those same conceptions that you did. So my mind is just getting blown and continues to be amazed by what I learn about them. Bees, they have a really complex way of communicating. They communicate through touching each other, feeding each other, grooming each other, and then the comb in the hive .... If you think of the comb in the hive as a drum skin, then the bees, they touch it. They walk on it. They communicate through it. So the bees at the far end of the hive can know what's going on all through the hive by just the vibrations that are being laid into the comb itself.

Nivien Saleh
Awesome.

Carlisle Vandervoort
Isn't that awesome? That that was really mind blowing to me.

Nivien Saleh
How do worker bees communicate by feeding each other?

Carlisle Vandervoort
When the field bees come in and they've got their pollen baskets, other bees come up to them and take out the pollen from the pollen baskets. If he field bees are filled with nectar, they go and they deposit that nectar. And other bees take that off to the storage cells.

Nivien Saleh
Aaah, that's right, I read about it and forgot! When a forager bee collects nectar, she puts it in her stomach and when she gets back to the hive, she regurgitates the nectar into another bee's mouth, and this way the nectar gets partially digested before it gets stored in the honeycomb. And I guess this is a form of communication by feeding, because one bee learns about the quality of plant that the other bee has visited.

Carlisle Vandervoort
Also, don't forget the queen's attendants groom and touch her and they feed her. And so when they're touching or feeding her, they're also telling her, here's where the nursery needs more, we need more drone cells or we need more worker bee cells.

Nivien Saleh
My understanding is, first off, the queen, even if she wanted to, she she can't feed herself. She does not have the mouth parts to digest food herself.

Carlisle Vandervoort
Correct.

Nivien Saleh
So she has to be fed by worker bees who have to predigest food for the queen. As the food gets exchanged, I think pheromones from the queen bee get distributed through the hive, right. So through food that attendants take from the queen and distribute among other workers in the hive they are communicating the health of the queen, right?

Carlisle Vandervoort
Correct. Yes.

Nivien Saleh
Bees communicate where food is located through what's known as the waggle dance.

Carlisle Vandervoort
The waggle dance is when the forager bees go out, find food, find nectar and pollen and come back. And then draw a map that translates as: Go three three blocks down south and then make a hard right turn and go half a block. And there you are, to, a great nectar treasure. It is a drawing that they do through dance. It communicates latitude and longitude.

Nivien Saleh
And where the nectar is in relation to the sun. Right?

Carlisle Vandervoort
Correct.

Nivien Saleh
And you have to remember: Bees cannot see the waggle dance which unfolds inside the hive, because it's totally dark in there.

Carlisle Vandervoort
It’s totally dark.

Nivien Saleh
But they feel the bee who is dancing and therefore they know what the dance looks like.

Nivien Saleh
Wow, when you think of it, the communication among bees is amazingly complex.

Carlisle Vandervoort
Correct

Nivien Saleh
You said that worker bees take on a variety of tasks. The interesting thing is that they go through a sequence of responsibilities. So they do certain things when they are very young and other things when they are older. How does that work?

Carlisle Vandervoort
Well, once she's a newborn, she might become a nurse bee to other newborns, to her sisters. She might be working in food storage. And at some point, she gets big enough as she reaches her full size and strength. And then she goes out to be a field bee. The field bees work themselves to death. They live in the height of the summer, in the height of the harvest, four to six weeks. They can last two to three months if it's winter and they're not out foraging.

Nivien Saleh
So the worker bee hatches after about three weeks and then she lives for six weeks to two months. First she lives inside the hive as a nurse bee or as a builder of comb. And then she gradually moves toward the outside. In that last stage of her life she is a forager who collects honey. And so the bees that you can see in the flowers, those are the forager bees. And that is that's the last part of their lives.

And what’s so cool is that from the hive survival standpoint, this sequence makes perfect sense, because outside the hive, it's much more dangerous than inside. And so you want to protect your investment that you have placed in raising a tiny little bee as long as you can, until you have to send

your investment out to gather honey. So it makes sense to send the worker bee into the dangerous world when she nears the latter part of her lifespan. If she gets killed by a bird, then maybe two days will be cut off from her life as opposed to two weeks.

Carlisle Vandervoort
Yeah.

Nivien Saleh
What I find curious is that the life span among bees are so different. A worker bee lives at most two months, and a queen, even though she has exactly the same genetics as a worker bee, can live two years.

Carlisle Vandervoort
I do want to say the queen can last to five years. It's typically for beekeepers that are about the honey, they will typically replace the queen at two to three years because after two years, her egg product.... production falls off significantly.

Nivien Saleh
OK.

Carlisle Vandervoort
That has to do with if one is a bee keeper versus if there's honeybees that have formed a feral hive. Right. Because if you're a beekeeper and you're all about the honey, then you might want to replace your queen every two years. In a hive that's in the tree stump or the abandoned barbecue pit, that might not be a bother to them. They may not feel the need or detect the need to replace the queen for three years.

Because they're not about honey production.

Nivien Saleh
Yeah. They're about the propagation of the hive. But at some point the worker bees realize that that the egg laying is going slow and...

Carlisle Vandervoort
Absolutely. And that's part of what the worker bees do. And the queen attendants, I mean, they have gotten yeah.... they're with the queen and they certainly know when the egg production has dropped off. Yeah.

The Hive Splits in Two

Nivien Saleh
When a hive becomes too small a place and the bees decide they need to establish another hive, how does that happen?

Carlisle Vandervoort
They somehow decide it's time to swarm and break the colony in two, right. They don't feed the existing queen as much, and they make her move around a lot so she gets thinner. And they start sending scouts, and they might send scouts out a week in advance, because I've talked to beekeepers about this. For a week you might see your bees just pouring out of the hive and hanging for 30 minutes around your hive and then all going back into the hive. So at some point they understand that the "go" button has been pushed. They gather the old queen. The bees fill themselves with honey in their storage units and pollen; the amount of bees that are going to swarm leaves.

Nivien Saleh
And what we need to say maybe to make this a little clearer, is that the process of swarming is a process of breaking a hive into two. So by the time the existing queen swarms with part of the hive, she has laid eggs to raise new queens. And just as the newest queen is about to hatch and to kill her competitors, the old queen with part of the hive will go on the swarm so that the new queen has room to expand, and the existing colony that's the other half with the older queen that is now swarming, will find a new location where they also can expand.

Carlisle Vandervoort
Correct.

Nivien Saleh
So I have read that this swarming is an example of worker decision making. The decision where to go is not made by the queen. It is the scouts that go to various places. Then they come back to the rest of the bees and say, this is a place we think we like. And then more bees go there and check it out and signal whether they agree or not. And then once there is widespread agreement with that location, that decision is made to go there. So it is a decision that is made by the worker bees.

Carlisle Vandervoort
Correct. Absolutely.

A Life of Service

Nivien Saleh
If you were born as a bee and you had a choice, if you wanted to be a drone or a worker bee or a queen bee, which would you choose and why?

Carlisle Vandervoort
I would be a worker bee because I like a variety of tasks. And I would I would be doing different things until I die. And that is an appealing thing. I would be continuing to learn new things.

Nivien Saleh
Honestly, me too. I mean, the worker bee has such a shorter life span than a queen bee. But can you imagine spending your life laying egg after egg after egg? I mean, this is not a life of a queen. This is a life of drudgery and monotony, hmm?

Carlisle Vandervoort
Says the conversation between two people who've chosen not to have children.

Nivien Saleh
[laughs]

Carlisle Vandervoort
And you totally put a human values on it. Life of drudgery and monotony. I mean, yes, I would look at that that way also. But this is so ... You know, again, from my personal viewpoint, each bee - drone, worker, or queen - fulfills their dharma, why they're incarnated, the service that they're to be doing, and the queen fully is there for the survival of the species. And and she's just willing to do it.

Nivien Saleh
Each - both workers and drones and the queen - serve. They serve the hive. They're not about competing with each other or saying, I want to be the leader, I want to be the queen. They play the roles they're assigned. And the hive, survives.

Carlisle Vandervoort
Thrives.

Honeybee Nectar and Pollen

Nivien Saleh
Bees, when you see them on a flower, they have these little clumps on their hind legs. Is that honey?

Carlisle Vandervoort
No, that's pollen. When they're going from flower to flower, they're taking nectar in and storing that and then they're putting pollen on the sides in their pollen baskets. And then when they go back to the hive, one of the bees will help them get the pollen out of their pollen baskets, and the bees will then regurgitate the nectar into particular cells. And other bees will work with that. And it becomes honey.

Nivien Saleh
What is the relevance of nectar and pollen? Would you say that one is the carbs, the energy and the other one is the protein?

Carlisle Vandervoort
Yes. I would say that the nectar is the carb and the pollen is the protein. And combined, they make something called bee bread, which is fed to newly hatched bees.

Nivien Saleh
So essentially, they take the nectar, and they maybe process it with enzymes that are in their stomachs, then they regurgitate it, they put it into the comb, into the cells where they evaporate the water. And then eventually, at the time when it reaches a certain ratio of water they cap it, and that's then the honey.

Carlisle Vandervoort
Yeah.

How to Find the Good Honey

Nivien Saleh
Now we know the basics of what honey is, but when you go to the store, you can find all kinds of honey. You can find raw honey, local honey. And then you can find the honey in the little bear. You know, like there's like a little plastic bear.

Carlisle Vandervoort
Okay. If you want to find the real deal, then I encourage everyone to go to the farmer's market, because the real deal … raw honey is honey that has not been heated. So it's called Raw. Because when you heat honey for like a recipe and things, it affects the quality of the honey. So it's not anti-microbial. It's not antifungal anymore. It loses the medicinal power of the honey.

Nivien Saleh
So so what we can buy in the little bear bottle, what is that?

Carlisle Vandervoort
In the little honey bear bottle, it could be honey from a guy with two thousand hives in South Dakota. It could also be honey that's been imported from China, and they've added sugar water to it. They added corn syrup to it. That's why I rarely buy .... I don't .... In fact, I don't. I do not buy honey in honey bear jars anymore, because I don't trust it. For a long time, the Chinese, until they were caught, were doctoring their honey with corn syrup and selling that as 100 percent honey. That's why I go to get my honey, if I'm gonna buy honey, from the farmer's market or I know a local beekeeper, and I will get honey from them.

Nivien Saleh
OK.

Carlisle Vandervoort
Yes. Yeah.

Nivien Saleh
You say farmers market, do you have specific places in Houston?

Carlisle Vandervoort
Well, the farmers market on Saturday mornings at Buffalo Speedway and Westheimer, the Urban Harvest Farmers Market, there are two different beekeepers there. And I trust them both. I would be happy to get honey from them.

The Honeybee and Colony Collapse Disorder

Nivien Saleh
What you just what you just said about being careful with honey ... I have read something similar in the book by Les Crowder, who is a top bar beekeeper, and he wrote the book “Top Bar Beekeeping.” He does not talk about corn syrup or any of that sort. But he tried to explain the colony collapse disorder. So a few years ago, there was this massive dying of honeybees. And it was thought that it might have been a mite infestation. The varroe mite. Is that how you pronounce it?

Carlisle Vandervoort
Varroa.

Nivien Saleh
The varroa mite. He said there are so many other things that make these bees sick, including pesticides. And the problem is that pesticides and insecticides lodge themselves in the beeswax. So if you have a large scale honey production where they are trying to sell as much honey as they can, they will use the same comb, the wax structures that the bees have built over and over and over again. In addition, they will hang miticide - a substance to kill mites like the varroa mite - into the hive. And often they won't take it out. So instead of taking it out of the hive and then putting a new one in, they just put additional miticide in there. And so you have this abundance of miticides in the hives, which ends up killing the bees. And of course, you know, if you get the honey from those honeycombs, then probably a lot of that stuff's in the honey, too, huh?

Carlisle Vandervoort
Minute particles. Yeah, absolutely. Think of a miticide as a strip, think of a fly strip in the kitchen. Right. And how nasty that looks after flies have died on it. That's what a miticide strip is in a beehive.

Nivien Saleh
Thank you for saying that. That is indeed one of the questions I did have. Honey bees are not only important for making honey, which is what we love so much, but they are more important even as pollinators.

Carlisle Vandervoort
They are they are our biggest pollinators. One of the problems with colony collapse disorder is thousands of our pollinators were wiped out. If we lose our honeybees, we will not have any fruit trees or vegetables like squash get pollinated. No bees, no pollination, none of those products in a matter of time.

Nivien Saleh
There are many, many bee species in the world, and 90 percent of them are solitary, unlike our honeybee. Those could not jump in to do the pollination, right? We do need honeybees for that.

Carlisle Vandervoort
Those populations of those bees aren't big enough. Their hive structures aren't big enough to support the number of bees that we need for pollination.

Nivien Saleh
Plus a lot of agriculture is mono crop. So you have this giant orchard of almond trees. Or this giant field of ...

Carlisle Vandervoort
Soy.

Nivien Saleh
You need them pollinated once a year and then perhaps for the rest of the year you don't have flowers there, but at that moment you need them pollinated. So you need massive pollination at one time. And that's where you can ship in honeybees in a hive, put them there, let them pollinate it, and then take the hives and transport them somewhere else. Right. So you can't have solitary bees. It's just way too much for them to handle at one time.

Carlisle Vandervoort
Absolutely.

Nivien Saleh
So we do need honeybees.

Carlisle Vandervoort
Oh, my gosh. We so need honeybees. As the U.S. got more and more populated after the Second World War there was a shift in the attitude towards beekeeping. The bees stopped being kept for honey. And they started being kept as farm animals that could be leased out as pollinators. And so there are

beekeepers that have 2,000 hives that will drive their bees to the almond fields in California. The bees that survive almost working themselves to death, are then trucked up into Washington State and Oregon to pollinate pear and apple trees. And then those that survive are trucked back to North Dakota, they might be trucked somewhere for blueberries or they're brought back to the south to overwinter. I love apples. It's challenging. I rarely eat almonds anymore because I know what a hit the bee populations take after being in the almond fields. I'm not ready to give up apples yet. But I just heard my inner voice one day say you got to rethink eating almonds.

Nivien Saleh
I don't quite understand, the bees pollinate the almonds, and why do they take a hit from that? Because they're being transported?

Carlisle Vandervoort
One, they're being trucked all over the country and they're working themselves to death. I mean, they're in those almond fields for four to six weeks, and they're constantly working, and then they're being fed sugar water to keep their energy going. They don't even have time to even feed within the hive what's going to be good for them. And then the ones that manage to survive get loaded up on semi tractor trailers again and are hauled north. The bees are just getting moved around too much. Because of the being moved around so much, being worked, worked so much, they're generationally weaker.

Nivien Saleh
So colony collapse disorder should affect bees that are being moved around a lot, a lot more than ...

Carlisle Vandervoort
Yeah. That's one of the things that we think. It weakens their genetics by being moved around so much. Neonicotides, which is in Roundup and that sort of pesticides, those weaken the bees' immune system also. Which means that they're just a setup for mite infestation.

Nivien Saleh
So you stress them a lot. You don't let them eat what is healthy for them, which is pollen plus honey.

Carlisle Vandervoort
Correct.

Nivien Saleh
And as a result, they are more susceptible to infestations of the mites, plus the constant miticites that are being hung that also weaken the bees.

Carlisle Vandervoort
Yes. Plus, they're they're only feeding on mono-crops. Whether it's almonds or pears or apples, it's still: they're not getting a wide variety in their diet.

Nivien Saleh
Oh, yeah.

Carlisle Vandervoort
Their diet is just monotone.

Nivien Saleh
It's like if we ate white bread all day long.

Carlisle Vandervoort
Exactly.

Nivien Saleh
Good new insights. What would you like the listeners of this podcast to take away from the episode?

A Working Monastery

Carlisle Vandervoort
For me, keeping bees is a completely joyful experience. So if you're thinking about getting bees, it is so much fun. Yes, you're going to get stung. That's OK unless you're allergic. It is joyful. It is fun. Think of it. You're looking at a working monastery.

Nivien Saleh
How are they working monastery?

Carlisle Vandervoort
Well, they're single-minded. There's no ego. They're devoted towards the species carrying forward. They all work together. They're not out partying. I mean, the queen has her one nuptial flight, and that's it, man. And she's back in there and she's doing her job.

Nivien Saleh
Yeah.

Carlisle Vandervoort
So it feels like a monastery to me in that way.

Nivien Saleh
What are things that listeners can do in small ways to honor and support honeybees?

Carlisle Vandervoort
If they can't keep bees, but they have the yards, they can plant bee-friendly plants and nurseries are so hip to what plants are great for butterflies and bees. So you can plant plants for bees. You can consider stop using Roundup on your weeds because the roundup and the insecticides are not good for the bees.

You can support your local beekeepers by buying honey at farmer's markets. And if you live in an apartment, you can still buy honey. Or, you know, if you have a balcony, plant some herbs on your balcony. African blue basil is an herb that bees love. It's a variety of basil. And you can get it at nurseries. And they love it. And you can use it in your cooking.

Nivien Saleh
Thank you so much, Carlisle, for all these fantastic insights.

Carlisle Vandervoort

You're you're welcome, Nivien. it's been fun.

Nivien Saleh
This is it for today, but I want to leave you with a final thought. It’s something that occurred to me yesterday: Honeybees embody non violence. True, if you disturb their hive, you will get stung. But they are not predators, which means they live without harming other animals. In fact, they live without harming plants. Whatever nectar they take from flowers is freely given as a thank you for their pollination services. So if non violence impresses you, consider the honeybees your hero.

If you enjoyed this episode, please share it with a friend. And be well. With Houston and Nature, I’m Nivien Saleh.