Episode 246 Transcript: Beekeeping Advisory Services in Sweden with Lotta Kristiansen

Jamie

Welcome to Two Bees in a Podcast brought to you by the Honey Bee Research Extension Laboratory at the University of Florida's Institute of Food and Agricultural Sciences. It is our goal to advance the understanding of honey bees and beekeeping, grow the beekeeping community and improve the health of honey bees everywhere.

In this podcast, you'll hear research updates, beekeeping management practices discussed and advice on beekeeping from our resident experts, beekeepers, scientists and other program guests. Join us for today's program. And thank you for listening to Two Bees in a Podcast.

Amy

Hello, everybody, and welcome to this segment of Two Bees in a Podcast. Today, I am excited to be joined by Bo Sterk, who is a dear friend of the Honey Bee Lab here at the University of Florida. He is the founder of Bees Beyond Borders, which we're going to talk about today in the segment, and he focuses on international beekeeper education.

He is based out of St. Augustine, FL, and Bo, you have so much information to share with us today about international education, so I'm really excited to have you on today.

Bo Sterk

Thanks. It's great being here. It's been a long time coming.

Amy

I know you know, we were talking about this before the episode. Have you been to almost every Bee College event that we've had?

Bo Sterk

I have. I have. There's only a couple of them that were in state, South Florida, that I missed.

Amy

OK, so how many is that?

Bo Sterk

I've been 19 years.

Amy

19 years and this is the first time we've had you on the podcast. That was my bad. Sorry.

Bo Sterk

No, not bad, not bad. Saving me for the last.

Amy

Oh, OK, well this is definitely not the last episode.

Jamie

Got everybody scared, Bo.

Bo Sterk

Saving the best for last.

Amy

Oh my gosh. All right, well, as every podcast that we have, why don't you tell us a little bit about yourself and how you got into the beekeeping world?

Bo Sterk

Yeah, OK. It goes back a little bit. A good 30 years, close to 30 years now. A good friend of mine actually came down with MS and she started doing apitherapy, bee sting therapy, and it was working really well. But at that time in Florida, we only had around 400 beekeepers in the entire state.

And so, bees, I don't want to say they were hard to come by, but it wasn't somewhere you'd find them very readily. And so, with that, she was having to drive to Jacksonville, an hour away to get bees. And I just said, hey, I'll do it for you, it's not a problem. So, we started with a hive at her house.

And before you know it, like any beekeeper knows, it becomes 3, and then all of a sudden, six, and I went, wait a minute, this is out of control. And so, I had to move the hives out of that area and had to learn more about bee husbandry. And the more I learned, the more I grew and kept asking those questions of how do you do this and why?

And that curiosity in me just got going. And before you know what, I became a beekeeper with 50 hives. In saying that, I started going to some of the meetings and learning people, what was going on and meeting state people. And I was invited to do some international work with one of the bee inspectors here in Florida.

I was in a long line of people that had done it prior to me. And it was a group out of Tallahassee. It was called FAVACA, which was basically a Peace Corps for Florida at one time. We had a great governor, and he actually set up a mini Peace Corps and they would go into the Caribbean for the most part and teach a Fire Rescue at the airports or sign language in the mountains of Jamaica. And I became one of the people that we helped out with doing some beekeeping apiary programs in Barbados.

And after I got down there, I always have been a traveler, so, I learned ways of culture and going in and the bee inspector that I guess – pause – the inspector that I'd gone down with, he did all the classroom work and I was doing the field work in the training program in Barbados and really enjoy it.

Well, a year later we started seeing problems. They'd gone down and done a program in St. Vincent and had American foulbrood and said, OK, we've come back with the diagnostic, and they have foulbrood and you're going to be designated the guy to go down and do the omen of burning hives.

You're the executioner. So, I went, good, sign me up. This is just what I want to do. And so, I get down to St. Vincent and found no bees. Started doing my presentation, they said we don't have any bees left, there's nothing here. And got to find and see food security on that frontline, first level basis of there were very much crop failure everywhere. They couldn't grow anything, especially their Cucurbits, their cucumbers, and that. They were using a razor blade to slice up Gherkin pickles for their salads and the restaurants.

So, I was like, this is really crazy. So, with that, I wrote a report up that year and I went over to Bequia, one of the islands in the Grenadines and we secured they had no bees left and we secured that as a quarantined island.

We were able to secure some bees from St. Lucia. We were able to bring them over on a ferry, about 20 hives, and quarantine them in Bequia for a year. And then with that, we were able to reintroduce them to St. Vincent. And that was the start of it all.

So, it was just that working with international governments and agencies to be able to secure these things was really kind of a challenge across the board.

Jamie

So, Bo, I've been in Florida for almost 20 years, and I cannot remember the year that we met, but it was very, very, very early in my time here. And I've just really enjoyed working with you and seeing the work that you've done as a beekeeper, not just taking care of your own bees, but teaching new beekeepers here in the state, ambassador for bees and all the work you've been doing in the Caribbean.

And I just think that as you've just kind of introduced us to how you got into bees and how your passion for teaching beekeeping outside of the US developed, you ended up creating this organization called Bees Beyond Borders.

Could you tell us a little bit about this nonprofit? And I assume I know how it got started. It's probably just a natural segue from your experiences overseas. But could you tell us how it got started, what its purpose is, all of those types of things?

Bo Sterk

Yeah, it really was a segue into what I was working with, with FAVACA. And like I mentioned earlier, FAVACA basically got defunded when new governors came in. And with that, there was a real need and void in that area of Peace Corps work or just sharing information with the rest of the Caribbean.

We have been so fortunate here in Florida, especially with you, Jamie, with the formation of Bee College and our information sharing and that outreach programs that we do is so valid and vital to the information highway. And so, I started doing more of this and the only way I could get funding in that would be through forming a nonprofit.

And that's how Bees Beyond Borders came into existence. We also had Dave Westervelt was Chief of Apiary at that time. He retired, and I was able to bring him on board as the Vice President, and the two of us are really the instrumental part of getting out and teaching those education programs.

Amy

So, Bo, what countries, islands, areas do you primarily work? And I know you had mentioned Barbados and St. Vincent. Can you share a little bit about where a lot of the workshops that you hold are?

Bo Sterk

Sure. I've done over 20 different countries now that I've done the programs in the Caribbean in particular. We don't try to limit ourselves to the Caribbean, but we will do development work anywhere that it's really needed. So, like I said, we've done programs all through the Caribbean.

I've had a lot of major programs going on in Haiti prior to this last few years that we can no longer get down there. But Haiti's been a real primary source for education, and just for food security for the most part, is what I always like to say.

Jamie

All right, Bo, I'm thinking about all this. You get invited or you elect to go to one of these island nations in the Caribbean and you've got everything in front of you. So, how do you determine what type of information you teach? And then how do you teach it?

You know, what kind of educational programs do you conduct? Are they in people's hives or are they lecture? So, how do you gauge what's needed and how do you deliver it to them?

Bo Sterk

Good question. We usually have to work back and forth with the recipient on the other end, and we always kind of request and have them get some kind of government agency also involved in the program. If you're not invited on all levels, it would really become, it's a problem also that we have found.

And if you can get some more agencies involved or more people, then everybody's going to be on the same page. So, it really determines island to island, country to country what you're going to be involved in education wise. So, we can go anywhere from beginning beekeeping to your basic animal husbandry, pest and control to queen rearing, whatever they need to do.

And usually, a lot of times, when you get there, you have to determine what they really need. They may want to do queen rearing, but they don't know the basic animal husbandry of trying to keep bees alive. And you're finding yourself having to go backwards and treat those basic skill levels, 101 classes in beekeeping.

Amy

Yeah, Bo, I've been part of one of the Bee College of the Caribbean, and that was in Grand Bahama. And something that was key was definitely working with the Beekeepers Association to hold the workshops.

And so, you know, you've already discussed working with the different administrations of ags, you know, having buy in from people, and so I guess how do you continue to develop those local partnerships? And then I guess the second part of that is when there are countries who would like to do some sort of workshop, how do you work with them to ensure that this workshop is going to happen or the different needs that they have?

Bo Sterk

That's always a tough one. You're always trying to work back and forth with them and finding out who's going to be funding what part of the program and project. So, a lot of the governments will kind of come on board and say this is what we need, and they will send you off and you have to do a country report on the backside on what your findings were and what your recommendations are for the follow up.

So, it's always kind of a back and forth that you're working with, not only the government who will kind of oversee a lot of the projects but usually don't get involved a whole lot. They may sit back and just wait for your report on the backside. I always like to try to find out from the beekeepers what their actual honey production is during the year.

And then on the backside, you know, do a follow up on it six months later, a year later, find out where they're at now with honey production and how much tonnage they're getting. There's that whole thing of what we have here is “eat local.” So, really try to prevent a lot of that foreign import of honey coming into these other countries and start, you know, more local beekeepers supporting themselves and supporting their farms through beekeeping.

Amy

So, Bo, you know, you're talking about honey production. I'm wondering, you had said that it depends on their needs, whether they're doing queen rearing, whether they're just getting into bees for the very first time. Can you describe some of the reasons why they're wanting bees in the first place?

I know you have also discussed farms and crops and pollination, but is there, you know, one particular thing that people are hoping to get out of it? Is it from an economic standpoint, environmental standpoint? What is the reason that they are wanting honey bees?

Bo Sterk

A lot of times they're wanting bees just out of economics and for their farms. A few of them are getting into it for even the whole business of honey and products from the hive. So, we actually have done some projects, I bring some other people in with us.

Well, if they want products of the hives and auxiliary products of making candles and lip balms in that week, I have some experts in that field. I understand it, but usually they want a female input on that end of it because you're usually working with the females on that end of the production.

The other end is the farming end of it. And the farms always want to have bees for their crop production. So, everybody has a different need for it, just like we have here in the US. What is your need for it? Is it for pleasure or for profit? If it's for pleasure, you're just doing it for the production and letting them pollinate your gardens.

The other way, if you're trying to make a profit out of it, you're trying to get a crop out of that honey and get a little bit of something more for your bang for your buck. So, everybody's got a different approach to beekeeping and why they really want bees. Generally, it is for profit and they're going to invest that kind of time and effort. They're trying to get a little bit of a profit out of that box of bees.

Jamie

So, Bo, I've actually been on some of these trips with you and worked in developing countries myself, working on beekeeping and beekeeping training. And I know that all of this takes money, right? You have to get to these places, you have to live at these places, you have to eat at these places, your partners have to, you guys conduct workshops, you arrange tours, etc.

So how do you do this? How is your work funded? The interest is there. There's no shortage of people who want to be a part of it, but it costs money to do this. So, how do you do this with your nonprofit?

Bo Sterk

Yeah, that's always the biggest issue with all nonprofits, I think, worldwide is how do you get funding for it. And we kind of go individual. We are a public funded nonprofit 501(c)(3). So, we are actually always asking and begging for money.

It's hard to say that, but that's the reality of it. A lot of the programs we try to, like I say, partner up with the governments where they have to pony up something. They have to have some skin in the game. I get requests every week almost, you know, I want to say some weeks I get four or five requests a week.

I'm in communication with people all over the world and it always comes down to that financial, how we're going to fund this. If we're going to do a project, how many people are going to be involved in it? So, you're always trying to get the bang for the buck out of it. We've already had gone down to an island and had, you know, 2-3 people show up.

And now all of a sudden economically we can't afford this. We've invested thousands of dollars in our airline travel or in hotel bills and that's always the biggest issue. And now you don't have enough people there. So, you really got to have that 20 to 40 people in these meetings to really make it work.

I mean, it's always hard. We don't get any kind of corporate funding at all. Across the board, we're not out there trying to get – grants are really hard. They're getting harder and harder to come by. So, we're basically just a private funded organization from the public and through donations is really how we fund everything.

It's hard. You really have got to stretch a dollar. We don't get any salaries out of it. It's strictly a volunteer organization. We just do it for the love of beekeeping and education. I love teaching and Dave does the same thing. We just want to pass our knowledge on to that next generation.

Amy

Oh, I tell people all the time, you know, I feel like we are all in such a lucky, fortunate place to be able to travel for the honey bee, right? Because we love the honeybee and we're living the life. Of course, when we talk about going to the Caribbean, people are like, oh, wow, you're going on vacation. You know, it must be nice. You laugh because you know. It is work, right?

Bo Sterk

Yeah, a lot of times you're not staying in the best accommodations, and I never see the beaches, and I don't see the resort. Never, hardly ever see the water, even. A lot of times you're inland and you're working on farms. You're in the back of pickup trucks.

I mean, it's tough, it's not easy. You don't know what your meal is going to be at the end of the day, if you get a meal at the end of the day. So, it's always interesting working with the different cultures and that's one thing we have to learn to do also is just work with each culture and individual island we get to.

Amy

That kind of takes me to that next question because you were talking a little bit about some of the challenges that you faced. Logistics is kind of difficult, right? You know, trying to figure out are people going to show up? How are we going to ensure people are going to show up? And it just kind of makes me think about some of the other challenges that you face running programs like this. And so, can you elaborate a little bit more on some of the challenges that you face running international programs?

Bo Sterk

Yeah, it's always interesting because you also have to have a location to do it at. So, you're going to talk to 30 to 40 people at an event and now you have to have a meeting hall of some sort, somewhere to meet. So, you really do have to have that government agency involved for those locations for the most part.

And then getting them there and getting the people there to show up on time. And what do you do now all of a sudden it's lunchtime and now they have to eat? So, we found that we have to get food for those people and have it catered in. So, that's a whole other realm, a problem is catering to 40 people for lunch because once they leave, they usually don't come back.

We found that if you do get them there, that's what's going to intrigue them to come and spend the day. If they're leaving their farm, they're losing their job for the week. It's really hard for them not to have an income. You got to really give them a bang for their buck and education. They've got to be getting something out of it to keep coming back every day.

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So, it's really difficult. There's a lot of challenges that way. That's why I say you have to really get a government agency. Everybody has to work together, associations, government agencies, Ministry of Agriculture, and who's ever in charge of the apiary division of that island to get involved.

And you need drivers and vehicles are expensive. Everything comes down to being really difficult. Nothing easy about it.

Amy

Well, and the other thing, you know, I'm just thinking about when we had gone to the Bahamas, and you don't know the state of the bees, do you? Remember when we went, Bo, and it had been raining and so we couldn't get the smoker lit because everything was completely wet, right? You never know.

Bo Sterk

You never know. And we just did a program down on one of the other islands and you get down there and they want queen rearing. When you get there, it's the drought like we're all encountering here and you have no eggs. You have nothing to even graft with. So, all of a sudden, you're getting somewhere, you've done all this effort, and you get there and it's a bust because it was the wrong season. And seasons are changing drastically in the Caribbean.

For the most part, we've done most of these programs. It used to be you have a wet season, dry season, wet season, dry. You could almost predict, and now, the drought's been lasting 8 months down there at a time. So, it's really been hard. It goes right from drought right into the rainy season. It's tough on the bees, it's tough on everybody to try to run a program.

Jamie

So, I hear local partnerships are important here. You've got to get all the work funded. And I hear that there's lots of logistical issues, but I want to circle back a little bit to what you teach. We visited a little bit earlier because there's thousands of beekeepers listening to this podcast, Bo, from all around the world, and they're thinking to themselves, well, I'd like to get involved.

You know, I know from experience that you can show up on the ground intending to teach one thing but being asked to teach something completely different. With all that said, do you have to know everything? I mean, do you have to be ready to teach everything?

Or are there some common themes that just kind of pop up everywhere you go that people want to know about? So, do you find it being completely random or do you find yourself talking about queen rearing or lot or honey production a lot? Could you elaborate on that a bit?

Bo Sterk

Yeah, you have to be rounded in all of it. I mean, if you don't know all of it or a little bit of all of it, you're going to really get stumped. And you always have those guys that are always going to want to try to stump you when you get into any kind of education program. As you all know, there's always one guy in the crowd trying to pick your brain and figure out what you don't know.

You have to really know a little bit about all of it. Basically, the common theme across it is probably beginning beekeeping. Even when they want something a little bit more complex, we always go back to those basics. What do you know and what don't you know? And really, you have to feel the crowd out and ask a lot of questions, and what do they really need and what do they know and find out who the expert is on that island.

Even with the education that we do teach, I never tell anybody, this is what you got to learn. I'm always an advisor. I think being an advisor is one of the most important things about the whole education program is listening to what their needs are and advising them on it.

Once you start telling them what to do, it turns them right off. And so, you never really want to say, you have to do it in this particular way. This is how I would do it, and if you want to try it, or show me how you do it and I can possibly learn from your traditions.

I found that really interesting in a lot of parts in Haiti, I've never worked with log hives before, just old gum logs laying on the ground. But it was a tradition. I never told them to change that. They have to go to Langstroth of equipment, but I was able to, after two years, able to get them into horizontal hives just to get them to transition.

Keep your log hives. That's what your tradition and your great grandfather taught. But let's start transitioning into something a little bit more conductive for production of honey. So, you never really want to get them going. I had one interesting story in Haiti where we started out with six logs and we were able to get him up to, after a year, 25 logs of bees.

And after we got him up to that level, he was able to start making a little bit of profit off of it. When he finally got it up to 50 logs, he was able to afford a moped and start going to school. And then before you know it, he had 75, and now we were able to transition for him to going to college.

Now he's become an agronomist and actually got an education in agriculture economics. We were able to slowly get him into more top bar hives and get him closer to Langstroth equipment when he got up closer to 100, and he became a mentor for that whole region.

So, that's kind of how we kind of try to progress and advise them on what to do and how to become a better beekeeper in general, and then slowly bring them up. You can't teach a baby to crawl. You have got to get him to slowly get up and start walking before they can ever start running with this whole business.

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So, we always have to try to do a follow-up on what we're doing and really stay in contact with our partners in those islands, and especially in the Caribbean, we see that a lot. If we can really partner up and have a good partner relationship, we can advise them and really bring them up to a speed where they're actually making and seeing a profit and a life change in their environment.

Amy

What a cool success story, Bo. Do you want to come work with me?

Bo Sterk

Oh man, you can come with us anytime, Amy. We have too much fun.

Amy

Definitely. So, you've mentioned this throughout the episode. You've given a couple of tips and tricks. If this is something that someone wants to get into, if someone wants to conduct beekeeping programs outside of their native country, what are some things that you would advise and some things that they may need to consider?

Bo Sterk

I would really start out by saying, try to do it local, like anything else. Really start working with some of your local associations within your state or your region and really start teaching some programs. Try to become a mentor for some beekeepers on all different levels and really learn from other mentors.

Find somebody that knows more than you do and suck their energy off. I'm still doing that. If I could go to all the different conventions, I'm always meeting and learning something from somebody else. Still learning after 30-some-years of beekeeping.

It's very valuable to keep doing that. Really try to work with somebody local first. First off, there are some different programs out there internationally that you can get involved with that do some beekeeping stuff. It's too bad.

We had a real good program with USAID that's now been defunct, but we were starting to work with some programs there and they were really vital in teaching education and farming worldwide. So, there are different groups you can work with. There are always mission groups going down to different islands and different areas of the world that are always wanting somebody to be involved with beekeeping or help them with beekeeping or even removal of bees is another thing.

Here's a funny story, I was teaching a program doing bee removal in the Bahamas. And on one of the other trips, Amy, that we were on and we got back and there was a big swarm of bees in the bushes. So, we all suited up and had everybody marching into the bushes to get this hive out.

Before you know it, the film crew showed up from the local TV station, and they'd heard that there was a dead body, and they thought we were the coroner's department showing up to pull a body out of the woods. We're just here to do a bee removal.

Jamie

We're just beekeepers.

Bo Sterk

We're just beekeepers. We're not the coroner, sorry.

Amy

That is so funny.

Bo Sterk

There are always some funny stories that you can get involved with this whole thing and it never ends. It's always a story and a funny ending.

Jamie

Well, Bo, you've been a wealth of knowledge, so this is very open-ended question, but is there anything else you'd like to share about your experience as a success story or anything else that you think our listeners should know?

Bo Sterk

Enjoy beekeeping and get involved in it as much as you can. Just dive in and do it. There are all different levels of it and all different areas of it. I just happen to be one of those people in an outside edge of development work. Rural development is what I like to say. And really stay involved in beekeeping on all spectra of it so you can get involved constantly with different – what do you want to do in beekeeping? Bees are great to play with and where do you want to be involved?

Amy

I'm listening to you, Bo, and I'm just thinking about, you know, all the really awesome beekeepers out there around the world who are just doing great things for their communities. Whether it's conducting a service or whether it's teaching or, you know, I'm thinking about, we have another beekeeper that we work with that works with firefighters in Costa Rica. And we've

got beekeepers, you know, who work with beekeepers in Colombia. We are going to Thailand, and we love our collaborators there. And it's just really fun to know again that this one insect, Apis mellifera, is bringing us all together, which is really cool.

Bo Sterk

Yeah, it is. It's a really a wonderful opportunity to learn from your colleagues around the world in beekeeping. It's always enjoyable.

Amy

Absolutely. Well, thank you so much, Bo, for joining us today. If we have your contact information, we'll be sure to add it to our additional notes and resources if anyone has any questions from you directly.

Bo Sterk

Sounds great, love to have this conversation with you two.

Stump the Chump

It's everybody's favorite game show, Stump the Chump.

Amy

All right. Welcome back to the question-and-answer segment. Jamie, this Q&A, I feel like such a chump. This is going to be chump Amy, because there's so many words that I don't know, but I'm going to try my very best to say them as I ask the questions.

Jamie

Hey, it's great that you don't know because it's an opportunity for us both to learn through the process, right?

Amy

Yes, I'm sure I'm going to use this vocabulary in all of my conversations moving forward from now on.

Jamie

Good. I hope so.

Amy

So, the first question that we have today is, is nest usurpation real? That's the word, usurpation. Is that real and how often does it happen? What is that?

Jamie

Yes. So, usurpation is essentially colony takeover by another colony. And I was introduced to this topic years ago when I started working with African derived honey bees. It really became kind of a topic when I actually got to Florida almost 20 years ago.

So, I did my research in South Africa. My PhD was done there, but we didn't really talk about usurpation very much there. But when I got to Florida, it was kind of a big deal because African bees were found in the state. People were worried about the impact that they would have on the managed bee population. So, I started hearing that usurpation term pop up a lot.

And now what it is, is actually, you know, biologically quite interesting. It is where a home seeking swarm of bees, so imagine this cluster of bees with its queen, it's a swarm, it's looking for a home. It's where it lands on the outside of another occupied nest.

So, there's a nest that already has a colony in it. That swarm will form a cluster, as it were, around its queen to protect its own queen, and it will move into the nest and fuse with the existing colony in that nest.

And what happens over the next few hours or day or so is that the existing colonies queen is killed by the usurpation colony, the one that's moving into that that colony and fusing with it. And then the bees that are clustering around their own queen, the usurping colony, will slowly release their own cluster around their own queen, essentially, Amy, introducing their queen into that nest as now the reigning matriarch in the nest.

So, it's a fusion of two colonies where the usurping colony is allowing its queen to overtake that colony. And so, you had two colonies, you now have one. The one originally occupying the nest loses its queen. The one moving into that nest replaces the former queen with its own queen.

So, you see this a lot in African honey bee literature, especially in the Americas where African honey bees have been introduced. And the questioner was saying essentially, well, I hear about this all the time, but how common is it really? Does this really happen? And I actually had a master's student, Ashley Mortenson, who also became my PhD student later, who was looking for evidence of this in Central Florida, where she was on the edge of African honey bee territory.

We've got African bees in the southern half of the state, especially in the federal population. And she was asking how common it is. And so, she looked for evidence of this in 288 managed European derived colonies. So, in other words, looking in 288 colonies, did she find evidence of usurpation, and she found none.

But there are some papers, Danka et al. 1992, where they found a 5% usurpation rate of European derived honey bee colonies by African derived honey bee colonies in Venezuela.

Schneider et al. found a 21% usurpation rate of European derived honey bee colonies by African honey bee colonies again in South America.

So, the idea is that they were finding evidence that African honey bee colonies were in fact moving into European honey bee colonies. So, again, they were finding evidence that African honey bee colonies were moving into European honey bee colonies and overtaking those colonies. And that's always been a fear with African derived honey bees that you could have a European honey bee colony today, and tomorrow it's an African honey bee colony, and you wouldn't even notice it if you don't clip and mark your queens because you wouldn't notice that there is this new one.

But the question is, is okay, does this really happen with European honey bee colonies? Well, Dr. Wyatt Mangum, who is a frequent contributor to a column, he's a columnist for the American Bee Journal. He writes about honey bee biology topics. He says that he has seen this a fair amount in his own European derived colonies, and he keeps bees up in Virginia, so it's not an area where African honey bees are present.

And he argues, and I've seen this argued in some other papers, that it's actually a summer swarm occurrence. Some people say late summer, early fall, some people say summer. But Wyatt, in some of his writing, has said that he sees this occur more with swarms that are coming out of colonies in summer rather than those swarms that are coming out in spring.

So, he says that he sees summer as kind of usurpation season, and he's written about it in the American Bee Journal where he describes the process of a European honey bee colony swarming. The swarm lands on the outside of another European honey bee colony, and the rest is everything I described already where they melt into that colony, fuse with it, replace that colonies queen with their own colony.

Now, I will admit, there needs to be a lot more research on this topic. People are kind of skirting around the issue, and most of the work that's been done has been done with African honey bees. But for sure, it appears that European honey bee colonies can do it too. And this is just another one of those research gaps about which we need to know more. It's a really neat topic.

Amy

I have so many follow up questions for that. So OK, the first one, what did you say? Usurpation, you said. What did you say?

Jamie

Usurpation or the usurping colony.

Amy

The usurping colony. That's so funny. OK, so is this specific to honey bees?

Jamie

It's what I know about in honey bees, but I'm very confident that other social insects do this too. So, I can't give examples, but it's very conceivable that termites and ants may engage in this behavior too. But for sure, it's something that honey bees do.

Amy

So, you're basically saying, I get the idea of, you know, a swarm coming kind of merging and fusing with another colony. And so, it's basically just like the colony next to another colony. One of the colony swarms probably takes over a supposedly weaker colony at that point.

Jamie

There's no evidence that it's linked to weakness of the colony being usurped, the one being invaded. So, it's almost like, these summer swarms, they don't even have to be neighboring colonies. It could just be another summer swarm that's landing on the outside and moving into the nest of this other colony.

And so, yeah, it does not have to be a weak colony. It doesn't have to be a strong colony. It doesn't even have to occur in summer for that matter. It's just that there are some colonies that are prone to taking over other colonies. Really, really, really, really fascinating trait.

Amy

Yeah, very cool. Well, I learned a new word today.

Jamie

Good. You're about to learn another new one, I think.

Amy

Usurpation. Usurping. Usurped. OK, the second question that we have, yeah, here's another word. Thanks, everyone. Thank you so much for this. I promise I know how to read. So what do you know about Wolbachia and honey bees? What is Wolbachia, first of all, and what do you know about this?

Jamie

I actually really, really, really, really love this topic. I haven't thought about it much over the years, but there's two instances where I thought about it. So, I'm going to explain the two instances and then I'll answer your question specifically. When I first got hired at University of Florida, I met a professor in our department, Dr. Marjorie Hoy.

She was a scholar in our department, and she studied lots of things, but had dabbled a little bit in honey bee research. And she was aware of bacteria from the genus Wolbachia. So, that's the first answer. Wolbachia is a genus of bacteria. So, there are multiple species of Wolbachia.

And she knew that I had been working with Cape honey bees from Africa. So, she was saying, Jamie, I know that Cape honey bees can reproduce parthenogenetically, right? So, that's the idea that they can lay eggs that aren't fertilized, out of those eggs can come larvae, and those larvae become adult bees.

And so, parthenogenesis is basically the production of an adult individual without the contribution of a male, so a female of any species producing an egg that ultimately results in an adult offspring. All right. So, arrhenotoky is when that unfertilized egg becomes a male.

That's what happens in honey bees. When queens and workers lay unfertilized eggs through arrhenotoky, they become males. Thelytoky is when that unfertilized egg becomes a female. So, Cape honey bees also reproduce via parthenogenesis. The workers do.

But their workers, when they lay unfertilized eggs, a lot of those eggs become female rather than male. And so Marjorie Hoy asked me and had done research. She's like Jamie, you know, I've done some work. I'm wondering if Wolbachia contributes to this trait where Cape honey bees can produce females from unfertilized eggs rather than males from unfertilized eggs.

So, the question is this, why would she come to me with that question in the first place? It's because she knew a lot about Wolbachia. There are lots of species of Wolbachia, and a lot of these species are intimately tied to other arthropods. So, honey bees are insects, insects are arthropods, and there are lots of insects out there that have very close relationships with their own species of Wolbachia.

And Wolbachia is known in a lot of insects to influence the reproductive capacity of the insect. And in fact, sometimes, some species of insects can't even reproduce if they don't have their species of Wolbachia.

Sometimes, Wolbachia is a pest and can cause a problem in the insect. And sometimes, Wolbachia can control the sex of the offspring of that insect. And Marjorie knew all of that. I didn't know that. So, she was wondering, well, maybe Wolbachia is responsible for this trait in Cape honey bees where they can produce female offspring.

So, it turns out they look for Wolbachia. She and colleagues look for Wolbachia in Cape honey bee. She found it, but that Wolbachia was present in both those bees that were laying unfertilized eggs that became female and the ones laying unfertilized eggs that became male. So, while Wolbachia is present in honey bees, it didn't seem, in this particular case, to be the reason Cape honey bees can lay unfertilized eggs and produce males.

So, there you go. Wolbachia. Super cool genus of bacteria that does all kinds of things to its hosts. Honey bees have Wolbachia, but it doesn't appear to be the reason that Cape honey bees can lay unfertilized eggs that become females.

Amy

Interesting. Very cool. So, Jamie, the third question that I have today. So, there's a new paper that is looking at tracking foraging patterns of honey bees. Can you tell our audience what the paper's about and what they've found?

Jamie

Yeah, this one was sent to me, actually, by a beekeeper, and I'm not going to go into their research. I'm just going to go into the novelty of the research method. It was a paper by Stenafort et al. in 2026. It's called, “Precise, individualized forging flights in honey bees revealed by multicopter drone-based tracking.”

It's in Current Biology. Maybe we can make sure and link the paper in the show notes. But essentially, one of the problems that we've had in the bee world is being able to follow individual honey bee flight patterns, right? It's just hard. Once they leave the nest, it's hard. And so, some people put RFID chips on them. Well, that's great. That just tells you that they've left the nest and they've come back.

It doesn't tell you where they've gone. So, we've needed some technology to be able to follow honey bees as they're flying. Well, these individuals in this paper were able to put little reflective disks or paint, I forget which of the two, but nevertheless it was a reflective surface on the backs of bees.

And then use drones, not drones the honey bees, but drones the little, you know, machine, then use drones up in the air that were able to see the reflection off of these marked bees and be able to follow these bees and trace, within milliseconds, the flight paths of these bees. And so, they did it to mark out the foraging patterns of honey bees. But, oh my goodness.

Amy

That’s so cool.

Jamie

Different ways I can think of to use this technology from finding wild honey bee colonies to watching queens where they go to DCAS, and, and, and, and so yeah, it just a neat little paper that came out and their findings are super cool, but how they generated their findings is also super cool.

And I could see us using this technology well in the future. So, guys, you might want to check out the paper. It's pretty neat. It's neat for what they found, but it's also neat for how they found it. So, a really cool addition to the research literature. We need to invite these people for a future podcast.

Amy

I know. I was going to say, it's just such a creative way. I mean, like, why didn't we think of this earlier? You know, it's just one of these things where it's like, dang! If only. That's OK. You know, I'm sitting here thinking about the questions that we just came up with, and also just cracking up thinking about, sometimes, when I tell people if they really want to nerd out on some beekeeping podcasts, they should listen to our podcast. And I think like, this Q&A was the ultimate nerd out episode.

It's just so fun. I know, because beekeepers are asking us all these questions that I'm just thinking any non-beekeeper who is not really interested in bees would be like, what in the world? Like, how can you – Cameron says it all the time, how can you take a week-long conference to talk just about honey bees?

Jamie

How can you not?

And it's like, we have so much to talk about. I know. So, anyway, thank you everyone for your questions. Keep sending us some random terminology that I won't be able to say in the future. You know, I'm happy to try to try to sound it out for everyone.

So, we'll be sure to link some of the publications that we discussed today on our additional notes and resources that are on our website. But if you have other questions, follow up questions, comments, whatever, send us an e-mail Honeybee@ifas.ufl.edu.

Hey everyone, thanks for listening today. We would like to give an extra special thank you to our podcast coordinator, Jeffrey Carmichael. Without his hard work, Two Bees in a Podcast would not be possible.

Jamie

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