



## **Episode 234 Transcript: Writing, Beekeeping, and Inspiring Young Beekeepers with Patti Sherlock**

### **Introduction: Meet Patti Sherlock: Beekeeping, Writing, and 'The Nectar Collector'**

**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**

Hi, everyone, and welcome to this segment of Two Bees in a Podcast. Today, I am joined by Miss Patti Sherlock, who is an author of a book called *The Nectar Collector*, which is what we'll talk a little bit about today in the podcast. She's also a beekeeper in Idaho. Thank you so much, Patti, for joining us today.

**Patti Sherlock**

I'm glad to be here.

**Amy**

All right. As we get into this segment, tell us a little bit about yourself and how you began working with honey bees.

**Patti Sherlock**

Many years ago, like 20 or so, my family and I raised sheep, and we had bees down in the pasture. I guess that's when it was easier because we really weren't beekeepers.

We just had bees down there, and I don't remember that we did anything with them. I'm not even sure we had a water source out for them, although we had agricultural neighborhoods, so I suppose there were water sources. We had a couple of hives, and then I returned to it when I moved from the farm to an acreage and I thought I'd like to keep my toe in agriculture.

And then, of course, when I came back to beekeeping, it was a much more focused thing than it had been before I attended some beekeeping classes. And of course, I don't have to tell you guys



all the more complications and problems that either weren't there, or I wasn't aware of the first time. That made me feel like the next step for me in a book might be something about bees.

**Jamie**

So, Patti, you are both an author and a beekeeper, and it sounds like you're experienced with beekeeping, and the issues that bees were facing inspired you to develop this book. And so, you've got a book we'd like to talk to you about today. The book is entitled *The Nectar Collector*. I like that title. Could you tell us a little bit about your book?

**Patti Sherlock**

It follows a forager bee who starts out feeling, she chases under the rules of the hive, and at some point in the book she and her drone friend decide to try life on their own, which leads to many adventures. And by the end of the book, of course, she is appreciating the cooperation, the harmony of the hive, and what that cooperative stance is able to produce.

### **Making Bee Science Accessible: Challenges of Youth Literature**

**Amy**

Patti, what inspired you to begin writing this story? You gave us the ending. I was hoping to go through it and surprise our audience, but you surprised us with the ending. But I'm interested to know what inspired you to begin writing it.

**Patti Sherlock**

Before I started writing this book, I was visiting schools and talking to youth, and that was because I had written some other books for youth. And when I started beekeeping, I felt like, well, I kind of know how to get into schools.

I could give bee presentations. And if anything, that kicked me more into wanting to do a book because I found that teachers are doing a good job of talking about the importance of bees, but I think they are still misunderstood and still fear of them and jokes about what happens if you encounter bees and so forth. So, I felt like I wanted to do something that really emphasized the benefits. I didn't know, at first, I considered for a while trying something like an allegory that could be even for adults.

But my agent only handles youth books, so he nudged me toward the youth market, and that's a pretty comfortable place for me, too. But the inspiration was the dire situation for bees and how alarmed I felt.

**Jamie**



So, Patti, I write a lot also kind of in my job, and I know writing can be difficult and making sure, especially when you're considering your audience and how you can make the story appropriate to them for education purposes and communicate. Here you have this really nice book where you're teaching children, who really are those folks who will be making decisions on behalf of bees well into the future. So, with all of that said, what are some of the challenges, then, you encountered when writing this book?

**Patti Sherlock**

Thank you for saying that you realize that writing is difficult because some people think there's just a matter of, as you know, that it can be difficult. I was surprised that I had never done fantasy and I am not much of a fantasy reader.

And because I had hives in my yard, it wasn't hard for me to visualize the hive, and the scenes and the settings and what they call in the business, I think, world building. That wasn't even anything I had to be concerned about. I just had to peek in the hive to refresh my memory. But I did find that some things were – a strange thing for me was to realize how much in writing I depend on eyes and shutting eyes.

No, we shut our eyes when we're bored, when we're drowsy, when we're exasperated, when we are angry. We shut them and squeeze them. And so many times I would have a character shut their eyes or I have to think, oh wait, these guys can't shut their eyes.

They have no eyelids. So, there was some little anthropomorphizing, things like that that came along the way that weren't necessarily challenges, but things I noticed and things I had to find an alternative way to express what I was trying to do.

**Amy**

So, Patti, you know, Jamie and I do a lot of education with adults, with youth, and although we're teaching honey bee content, we're teaching bee information. You know, it is different when you're looking at different audiences and how you want to make that accessible for different age ranges and different groups.

And so, what is, kind of, your methodology for making this information accessible for a younger audience? You know, how do you get them more engaged? Is there a different type of writing that you do to keep youth engaged?

**Patti Sherlock**

Well, actually, I come out of journalism, and you know, journalism emphasizes simplicity, the short declarative sentence. And I haven't, in other youth books too, I haven't concerned myself too much with scaling down the vocabulary.



I think that kids are able to grasp vocabulary through context. So, that wasn't particularly a new consideration for me, that I think I pretty much write the same for a youth audience as I do for an adult audience. And that's because I'm not from a tradition of complex sentences or long paragraphs.

## **Navigating Publishing: Tips for Aspiring Bee Authors**

### **Jamie**

I like that idea and I kind of want to follow up on this. I know there will be a lot of listeners from all around the world who want to be able to communicate to youth audiences about honey bees and beekeeping. And in this particular instance, you elected to do it through written books, right?

So, what are some pointers? What are some recommendations you can give to individuals who want to follow in your footsteps and write about honey bees and beekeeping when their target audience happens to be youth?

### **Patti Sherlock**

I think that keeping in mind attention span, that youth audiences are not going to hang in there with you for long expositions of anything. I really had thought about a nonfiction book too, instead, and decided that I like the idea of making bees more familiar by anthropomorphizing them and making it a story.

And you know, I think we all value that story is one way to do. But I think there's all kinds of nonfiction possibilities too. Creative nonfiction these days tries to follow some of the principles of fiction writing where you tell a story and it unfolds as you go along, and you have a hook to bring the reader in and that you might have to keep in mind pacing and so forth. But I really think what makes this easier is bees themselves. No one has to tell you this but how utterly fascinating and miraculous and brilliant and inspiring they are.

It seems to me like if you can just say what is already there in a way that is simple and understandable, a person doesn't have to gild the lily with, I'm sure there are species that you might have to press to make them interesting or lovable or whatever.

But you know, beekeepers are crazy about their bees. And when you lose a hive, there's grief. It isn't like they're a bunch of insects out there, and you know all this, that if you love bees and you can communicate that, I think your audience is with you.

### **Amy**

Patty, I want to swing back around to *The Nectar Collector*. You know, is there a specific age group that you were writing this for?



**Patti Sherlock**

It is being marketed as middle grade, and that's sort of from 9 to 14. It wasn't necessarily my target. So, I think that you write it and then your agent and your editor makes the call on who this is for, but it is considered middle grade.

**Amy**

OK. Can you tell me the process of your thought process of going into keeping bees and all of a sudden just saying, like, yeah, this is a really, this is a great book. Like, I'm going to write a book.

**Patti Sherlock**

Well, I think that the difference was that when we had bees and they were in the pasture, well, of course, they're interesting and sometimes we walk guests down and we peaked in the hive and so forth. But I didn't have that level of involvement that when I came back and took classes and so forth and learned how complex that aspect is, which I wanted to tell.

And so, there's human characters too that are a beekeeper, the bees themselves, and I think the more you are around them, the more you marvel. I don't feel like I'll ever get over being stunned by them.

How miraculous they are. How beautiful. How wonderful a hive is in the way it operates. And, you know, particularly right now when I talk to school kids, I like to talk about harmony and cooperation. And schools are emphasizing this anyway. So, your teachers are right behind wanting to talk about this particular thing. And a book, I think, emphasizes that quite a bit. The cooperation, the harmony, and the appreciation for everyone's role.

**Jamie**

Alright, so here I am. I'm interested in bees. I love honey bees. I'm interested in communication. I've got children of my own. I'm inspired to write a children's book. I know about bees. I know about writing. How does one go about publishing a book? What are all the "publishing a book" tricks that I need to know? Let's just say the writing comes naturally. The topic comes naturally. I put it all on paper. Now what? Where do I send it? What do I have to know about publishing a book?

**Patti Sherlock**

Oh, Jamie, you have no idea what green territory you have entered. When I teach writing classes, I do this first: Talk about the statistics and the competitiveness. Because if people have a notion that, you know, I like to do this and I've got the background, well, that's great.



And then you should. And I wouldn't want to discourage anybody, but if someone is going to do this, they need to know that they're going to have to just be persistent as heck. Persistence will be almost the most important thing.

It is so competitive. I don't have the statistic on the top of my head, which is just as well because it's very grim of how many books are written and then how many are published, and then how many are published against how many are read. You know this, there's fewer people reading, there are fewer magazine markets where you can sell articles. I was in the business when there were many magazines, and you got to think it over.

Where would I like to see this appear? Oh, now it's what two magazines are there, and which one would I have the better chance with? It's very difficult to publish a book without an agent. Getting an agent is way hard.

You send out loads of queries. You have to have an opening paragraph that knocks them off their chair because they have a thousand queries a week coming in or something like that. So, the getting to publication is just a real tough thing and it's tough to get into smaller niche publishers.

*The Nectar Collector* came out from an environmental publisher, and I like that and I like working with a smaller publisher, but also the big ones, promotion is all in your camp, whether you're with a big or a small, getting it out for reviews. It's a real tough game.

### **Beyond Economics: The Impact of Children's Bee Books**

But having said that, Jamie, if a person has a passion for their subject, and I think all of us who are around bees have that passion, I think we almost have an obligation to get their story out to the public.

The public knows some of it. They don't know the extent of it. I mean, people will say things like, well, bees, they're pretty important, right? And then if you tell them how important, they're stunned. Another thing I found about kids and doing presentations at schools, I started out thinking maybe a lot of people were scared of bees. So, that would be a question I'd ask. How many of you in here like bees? Well, all the hands go up. How many of you are scared of them? Well, two hands go up.

So, kids know that they're supposed to like bees, but then if you listen to them in the hallway, they're saying something else like, I looked at that picture of all those bees and I just wanted to throw up or I got stung one time and I hate them. Every time I see one, I hit them. So, there's a gap between how we should feel about bees and maybe how we actually feel.

Because, of course, kids are warned about bees and that's the correct thing to do. So, I think moving from thinking you're supposed to like them to actually respecting and maybe feeling in awe of them, it's a jump that I think those of us that love bees need to be involved in.

**Amy**

Patti, when you're talking about, you know, going through and making your book, how do you go about getting illustrations for your book?

**Patti Sherlock**

I've never had to do that. *The Nectar Collector* has a map in it, but I've never written for younger kids, like the picture book age. But I can answer that question, that you sell the book and then the company normally finds the illustrator.

Or they pair a well-known illustrator with a new author or vice versa. More and more I'm told it's a real uneven game that publishers hold all the cards, that they're now looking for people that can both illustrate and write.

But I think it's still the majority of it. They go separately. So, if a person had a manuscript, then finding a publisher for the manuscript, and then they'll find the illustrator. I was very happy with the cover. And then there's this nice little map that was the publisher's idea and I had fun working with the illustrator on the map.

**Jamie**

So, Patti, I'm thinking all this through because, you know, I've worked in this bee space what feels like a very long time now. And I think about all the books that exist on beekeeping, the reference books and the how to keep bees books. And I think about all the books that are just even touching the subject.

History of beekeeping, honey, honey. How do you kind of go about making sure what you are creating provides a unique overview of a field that seems to have a lot of material in it? How do you find your niche, so to speak?

**Patti Sherlock**

It's actually pretty easy. There are books in print catalogs and the libraries used to have them and I don't know if they still have them. I'm sure you can find them online now. It's easy to find out what is already there, and that is a real good thing to do at the beginning. Find out what is there, because then you can ask yourself what is not there.

And I looked for a novel and there's all kinds of novels around bees and beekeeping, but I didn't find one from the bees' point of view where the bee is the protagonist and it takes place in the hive.



And in fact, I kind of had to sell my agent on it. He kind of wanted a kid to be the main character who observes things in the hive. And I was pretty set on, no, I want the bee to be the protagonist, the person that you are involved with, whose story you follow over many chapters.

So, if a person had an idea of what they wanted to say in a book, I think the place to start would be to find out what is already there. And if it's already been done, well, find the book and see if you think it has been done well. If it's lacking, and I think there's a place for a really good nonfiction book on bees that is done in the creative nonfiction way.

I think there's lots of picture books out there where the bee is anthropomorphized, which I'm good with, but maybe dealing with human problems. You know, it doesn't get along with the other bees or is the picked on bee or something that kids deal with. I think that the nonfiction book I'd like to see would be one that followed the life of a bee somehow and was factual. Wouldn't have to be from the bee's point of view, not fictionalized.

**Amy**

So, Patti, earlier you had, you know, you had kind of discussed the book and the take home message for the books. When you're working with kids, you know, there's always that good take home message, right? And so, this worker bee tries to go out on her own, and then she realized the power of collaboration and working together as a colony. How did you develop this take home message with the honey bees in mind for this book?

**Patti Sherlock**

Well, I think in fiction the story has to do it. I think it's cheating if you say to the reader, and now boys and girls, this is what I want you to have learned. I think it has to emerge from the story. And what I was hoping for is that if the beauty and cooperation of bees were conveyed through story and how the characters interacted with each other.

I also think if we could just get people loving bees, not in abstract way, that yeah, I know they're pretty important, or I know that I heard that Einstein said we can't live, we'd go away, which is a fact.

But if we could get them actually loving them, and I think that we can look back at whales and say people were concerned about whales and then we had whale tours and whale watching and environmentalists.

No, not all of that is great and we disturbed them. But in another way, we got school kids loving them and they were adopting, and the same thing has happened with wolves and wolf packs. Classrooms adopt wolves, and I don't see any reason we can't.



I know they're mammals and bees aren't, but you know the way they operate. I don't think we have to feel like they're lesser. I think we could get people to be absolutely crazy in admiring and loving bees.

**Jamie**

I think that comment segues perfectly into my next question, because I don't know, I don't publish in this kind of book space. But I'm thinking, if you're writing novels for adults, the win is that you're making money off of it. But to me, when you're developing books for children, especially in a space where you're trying to slide in some education about bees, what would you consider that win? What do you hope a lifetime of children reading your book will end up doing for the children and end up doing for the honey bees?

**Patti Sherlock**

That's such a good question, and I think that the economic thing has to be out of the picture all the way. And I'm going to guess that 95% of authors would tell you that the economics, that's off the table. You can't imagine how many books you have to sell to be rich.

So, there's people, Stephen King and this person and that person, they sell that many books. They're rich. The other 80% or 90% are down here and they're also delivering pizza and they're doing all, they're driving Ubers and they're doing that so that they can write.

So, the economics is off the table. I think the win is you get a letter that says, I read your book, and I want to be a beekeeper when I grow up, or I didn't know bees were so wonderful, or I'm not going to ever slap a bee again or something. I think that's your win.

**Amy**

Well, Patti, we've really enjoyed having you on today. I was wondering if there was anything else that you'd like to share?

**Patti Sherlock**

No, but thank you so much for having me because I know the hard work you guys are doing on behalf of bees. So, I think it's going to take all of us, and we're all in this together. So, thank you so much for having me.

**Amy**

Thank you very much, Patti.

**Mothballs vs. Moth Crystals: Safe Wax Moth Management**

**Stump the Chump**



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

**Amy**

Welcome back to the question-and-answer segment. Jamie, the first question we have today is about mothballs and moth crystals. So, you know, this podcast is about honey bees, and I'm sure people know where I'm getting with this question. But a beekeeper had accidentally used mothballs instead of moth crystals and then later learned that maybe using mothballs wasn't a good idea. And so, I guess the question is, first of all, why would it beekeeper ever even consider using mothballs, moth crystals? What is it for? And is this OK?

**Jamie**

So, fortunately, Amy, that's the easiest of the series of questions around wax moths for me to answer. So, the reason we worry about moths, using moth control products is because we have two species of moths, specifically called wax moths. One of them is larger than the other, which means it's the greater wax moth, the other smaller, so it's the lesser wax moth.

So, species one, greater wax moth. Species two, lesser wax moth. Just like their names imply, they eat wax. More specifically, they're caterpillars. The wax moth larvae will eat the wax as well as, and preferentially, the stuff that goes with the wax.

So, think about how when a queen lays an egg in a brand-new virgin comb, the comb is white, creamy in appearance. And as that egg goes to developmental stages, larva pupae adult and they do this over and over and over and over. And the comb gets darker and darker and darker to the point that comb that has been used for brood rearing any length of time is black.

Well, it's black because it has detritus and debris and dirty footprints and, you know, silk casings made by the larvae. It just darkens over time. So, wax moth larvae love that stuff that accompanies the wax. And so, anytime we want to protect beeswax away from the colony, we're going to have to do something to stop wax moth larvae from eating it.

So, you can do things like freeze the combs. You can do things like let a lot of light and air into them. There's lots of different strategies, but one of those strategies deals specifically with chemical control options, which are really at the heart of your question.

**Amy**

So, we know that there's a greater and a lesser wax moth, and so what's the deal with mothballs?

**Jamie**

Yeah, OK. So, one of the options for controlling wax moths would be that chemical control option. And if you open your beekeeping equipment supply catalogs and turn to the page that



sells wax moth treatments, you're going to see a couple of treatment options. One is the BT, the *Bacillus thuringiensis*, you know that option.

But the option that deals specifically with the question being asked would be the chemical option. Well, if you look in the beekeeping equipment supply catalogs, the products that are used against wax moths usually go by some sort of name related to moth crystals.

It matters less that it's a crystal or a ball but matters more what the active ingredient is. And what you'll see is that the crystals, more often than not, but if you're using them for bees, always, have a compound called paradichlorobenzene. So, PDB.

So, we often refer to them as PDB crystals. Moth balls, which are also crystals, kind of, in structure. They're these big spherical crystal shaped structures. Moth balls have the active ingredient naphthalene. So, moth balls, naphthalene, moth crystals, usually paradichlorobenzene.

And when you look in the equipment catalogs, they're going to be using PDB-based moth crystals and not naphthalene-based mothballs. And so, the name throws people off. A lot of beekeepers will say to new beekeepers, you just need to treat with moth crystals or mothballs or whatever.

But the key is, you need to treat with a product that's labeled for use in combs against wax moths. And that would be the ones that you can buy off from your beekeeping equipment suppliers. The reason for that is that naphthalene is lipophilic. Lipo, wax. Philic, loving.

So, it gets into the wax and can persist there for very long. It can also be absorbed into the wood and it's toxic to bees. So, you don't want to use moth balls that have naphthalene. Number one, because it's against the label, but number two, naphthalene is bad for bees.

If you use PDB-based moth crystals according to label, it will talk about how much to use based on the number of supers. It'll talk about a withdrawal time where you can air the supers out and it won't, you know, present harm to bees. Questioner is saying, oops, I used mothballs, what should I do?

Well, the safest thing to do is to not use that equipment on bees again. If you look in the literature, especially with the beeswax part of that equipment, that beeswax might absorb that naphthalene for a very long time. So, in the very least, you need to do away with the wax.

But if you haven't done this with hundreds and hundreds and thousands of supers and combs, then it's just always safest, when in doubt, to just move over to new stuff that you haven't used mothballs against because it can contribute to colony losses.

**Amy**

Gosh. I have so many follow up questions for this. So, what about the wood?

**Jamie**

Yeah. So, it can get into the wood. And the problem is, Amy, when I was doing some background research about this using Google Scholar, I was asking all the questions that that would be intuitive for me. The problem is that people haven't done a lot of this research. I couldn't find specifically, you know, a paper that says, you know, when you've accidentally used naphthalene, if you air the supers out for two years, it'll be OK.

I just couldn't find any of that information. So, really, from a wood perspective, I did find papers that say it absorbs into wood and as a result can, you know, radiate, as it were, vaporized coming out of wood over time. And it's just impossible for me to put together, as a result, a recommendation that says, hey, cut out all the wax from those supers because it's going to be in there for a while.

But you can reuse the frames and the boxes after you've X, Y, and Z, because we don't have what that X, Y, and Z is. And so as long as they didn't do this on a ton of boxes, I think it's just kind of safer to pivot the new equipment if it's not over – maybe if I dug harder or maybe those of you who are listeners out there say, hey, I made this mistake before and I found this paper that says I could do this, send that to me and I can correct that stance. But I just think, Amy, it's probably better safe than sorry in this particular case.

**Amy**

Yeah, definitely. It also, I think it brings up the point a lot of new beekeepers will ask, should they purchase new equipment or should they purchase used equipment? And you know, this is just kind of one example of you don't really know.

**Jamie**

You never know.

### **Seasonal Changes: Do Queen Bees Lose Weight in Winter?**

**Amy**

Yeah, anyhoo, well, that was a fun one. OK. So, question number two. The second question is, do queens lose weight over winter, especially in colder climates, right? I mean, here in Florida we do have a quote, unquote winter, but we don't really have like a long cold climate. So, do queens lose weight over the winter?

**Jamie**

It's funny, I got that question, I'm like, huh, I've never been asked this question, and I almost answered it just from what I thought would be the case. And just for the record, I thought that

they would lose weight because I'm sitting here going, well, you know, their egg output decreases, so their ovaries are probably going to get a little bit smaller when they're not cranking out all the eggs.

And, you know, some in colder climates, there's a cessation of brood production all together. So, yeah, queens lose weight. But I'm like, you know, I'm not comfortable giving that recommendation until I've actually seen it in writing.

And I was able to find a paper, actually, from 2015. The paper is titled "Seasonal Physiological Changes in Queen and Worker Honey Bees," and it says right here in the summary between November and January when no eggs were laid, queens were lighter and had smaller less developed ovaries. So, the answer to your question is yes, in winter, queens do lose weight.

**Amy**

Interesting. You know, I know that there's a time of year specific temperature that you're supposed to be introducing queens into a colony, but we talk about winter bees, and is it summer bees that we talk about? Winter bees versus summer bees?

**Jamie**

Yep.

**Amy**

Are there winter queens and summer queens? Just wondering.

**Jamie**

It's technically the same individual. They just have a winter physiological self and a summer physiological self. You know, Amy, I do too. My kids play a lot of basketball in winter, and so we never get to go outside because it's dark and we're always chasing around all over the place playing basketball. So, I'm always eating out. So, winter Jamie is not as pleasant and as healthy as summer Jamie, who's outside working a lot and enjoying the sunshine. So, maybe I'm the reverse of a queen, up in weight in winter and lose weight in the summer.

**Amy**

I wasn't going to go there, but OK.

**Jamie**

You were thinking it already, I could hear it. I could hear it from this side of the microphone.

## **Chemical Ecology Against Wasps and Podcast Wrap-up**

**Amy**

So, funny. OK. The third question, you know, in the past year or so, I think we've had quite a bit of talk about wasps and hornets. And we had a questioner ask about how to counter wasps. They're wondering if there's something that they can use to just make the wasp go away. Like is there a pheromone? Is there an oil? Is there anything that you recommend? Why are you laughing?

**Jamie**

I'm laughing because all of this is just based on, like, very interesting science and a big problem that we have right now.

**Amy**

Yeah, definitely.

**Jamie**

OK. So, we've got these wasps showing up, and I see for example, the questioner is actually from England, and I know that they have *Vespa velutina* in England. And it's a problem for them. And we have *Vespa velutina* here recently in the United States. I say recently, we're recording this podcast in February 2026.

*Vespa velutina* was found in Georgia, I believe in August or I think it was August '23. So, it's been here about two and a half years. Anyway, one of the interesting findings that came out of Asia is that one of the ways to counter the wasp is that dung will be sprayed on the face of colonies and things like that to stop this, because there may be some repellency, and bees respond in certain ways and wasps respond in certain ways.

So, there are these two main wasp species that people worry about. There's *Vespa velutina*, the one I've already alluded to that we have here in the States that they have in the UK as well. But there's also *Vespa mandarinia*. So, in the US we call *Vespa velutina* the yellow-legged hornet. In the States, we call *Vespa mandarinia* the northern giant hornet.

Well, that is the one that there's interesting studies about feces and usage, you know, by bees and wasp and all of that stuff in the context of this wasp interacting with *Apis cerana*. Well, the questioner ultimately wants to repel wasps, but it was based on some original thoughts that they had, like is there anything known about the chemical formula that wasps used to mark hives?

And for *Vespa mandarinia*, there is. I was able to find a paper entitled *Vespa*, sorry, "Behavioral responses of honey bees, *Apis cerana* and *Apis mellifera*, to *Vespa mandarinia* marking and alarm



pheromones.” So, basically these chemicals that *Vespa mandarinia* have produced, scientists have been able to take that and paint those on the front of a hive and *Apis cerana* and *Apis mellifera* would respond differently to them.

So, you're specifically, as the questioner asking, well, are there things I can do to keep wasps away, maybe using chemical ecology against them? And I just couldn't find papers where that level of chemical ecology has been used.

So, we know that *mandarinia*, the northern giant hornet, uses pheromones in this context. We strongly suspect *velutina* does something very similar. We know that they make decisions based on pheromones as well. So, it's entirely possible that there are some repellents and or some attractants that can be developed based on, you know, chemical ecology of the wasp's own alarm pheromone or marking pheromones.

I just haven't seen it used successfully. So, I love this question. It's got the person thinking. The questioner was specifically asking, they were trying to find information from Google Scholar. And Google Scholar, if you've heard me talk about it, it's a great website. It's basically a search engine that will search for the terms that you put in, but it's specifically looking among the scientific literature.

And they were saying they were having a difficult time using the right terms in Google Scholar to find this. Well, Google Scholar has an amazing new tool called Scholar Labs, and it's basically the AI search component of Google Scholar. So, if you go to Google Scholar, there'll be a little icon for Labs.

You click on that, and that will take you to a place where you can type the question. For example, what are chemical marking pheromones of *Vespa velutina*? What are chemical marking pheromones of *Vespa mandarinia*? And it will use AI to find papers and extract information from those papers to summarize answers to your questions.

That's a great new development in Google Scholar. So, I love this question. It's got us thinking about using chemical ecology against the wasps that are spreading and causing damage to bee colonies in Europe, now here in the US and elsewhere. And I love the fact that Google Scholar has given all of us a tool now that we can use, their Lab icon, to actually ask these questions and try to get to the answers quicker.

**Amy**

Yeah, absolutely. You know what's interesting, Jamie? I think we've brought it up in a past episode before, but there was like a news article that came out after the *Vespa mandarinia* thing about, you know, like bees throwing dung out of their colonies. And I just remember all of my friends who are not beekeepers and like, were not aware of beekeeping.



They read this and they were like – that was the number one question I had for like a month straight when people were like, is it true that bees just throw poop? Like, you know, they just throw poo. Like, what kind of poo are they throwing? Do they throw them at people? Like what are all these? And I was just like, oh my gosh.

**Jamie**

Well, I think, Amy, that's where a lot of this comes from. There was a great news storm, and I alluded to it at the very beginning. Didn't go very far into it. But *Apis cerana* will collect animal feces, you know, dung, and apply it and small drops or spread it around the entrance of their colonies. And it appears that this can be a repellent to one of the *Vespa* species there.

So, I think that's why the questioner was saying, hey, we know that they're repellents. We know that there are marking pheromones. Is it possible to develop something? So, the short answer is, yeah, it's possible to develop something. We just got to know a lot more about it. And with the final caveat that anything that a wasp can smell, bees can possibly smell as well.

And they also are governed by pheromones. So, while it's a good idea, I don't think it's just easy as finding a chemical that repels wasps but has no effect on bees. You know, so that would be the fun science in all of it.

**Amy**

Yeah, definitely. I know that this Q&A has been a little bit longer than the past, but maybe sometime in the future as we start to change things up, we have a whole segment just on Q&A's. What do you think, Jamie?

**Jamie**

I think that's great. Man, people give us so many great questions. Our listeners are the best, Amy, and they think about what we say, which is scary great.

**Amy**

I know. I don't even think about what we say sometimes. It goes in one ear, and out the other.

**Jamie**

Amy, you know this, I don't know the answers to half the questions people ask us. I have to spend some time before coming on the Q&A reading papers, and I just learned so much by people's great questions. So, thank you, thank you, thank you, thank you. Thank you for all the questions that you guys ask us.

**Amy**



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**

Visit the UF/IFAS Honey Bee Research and Extension Laboratory's website, [UFhoneybee.com](http://UFhoneybee.com), for additional information and resources for today's episode. Email any questions that you want An Equal Opportunity Institution. answered on air to [honeybee@ifas.ufl.edu](mailto:honeybee@ifas.ufl.edu). You can also submit questions to us on X, Instagram, or Facebook @UFhoneybeelab. Don't forget to follow us while you're visiting our social media sites. Thank you for listening to Two Bees in a Podcast.