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SPEAKERS

Guest, Amy, Jamie, Stump The Chump, Honey Bee

Jamie 00:10
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. Welcome to another episode of Two Bees in a Podcast. In today's episode, we'll be interviewing Dr. Bill Kern from the University of Florida. He'll be talking with us about carpenter bees, and in our Five Minute Management segment, I'll be discussing how to re-queen colonies using a nuc. And then in our question and answer segment Stump the Chump, Amy will be reading your questions and I'll do my best to try to answer. Hello, everyone and welcome to another segment of Two Bees in a Podcast. Today, we are joined by Dr. Bill Kern, who's an Associate Professor in the Entomology and Nematology Department at the Fort Lauderdale Research and Education Center for the University of Florida. We have Bill because he is going to talk to us about the interactions between carpenter bees and honey bees. And Amy, I'll start by asking you a question. How did this come up in the first place? Why is this a topic for beekeepers?

Amy 01:45
Sure, it seems kind of random that we're talking about carpenter bees and honey bees and their interactions with each other. But here, especially in Central Florida, I'm sure North Florida as well, and Bill will probably talk about it a little bit more about where they're distributed, we had an email come in, and our follower basically said that there were carpenter bees all over her honey bees, and they're flying above the honey bees. And she was saying, basically, that these carpenter bees were bullying her honey bees. And she said her honey bees are really scared. She wasn't sure what to do. You know, are we supposed to swat at them? Is there any way to get rid of them, of course, without getting rid of our honey bees too? And so this is kind of where that segment came about. So I guess during that time when I had responded to her, I wasn't really sure what was going on. And so I CC'd Dr. Kern

on this because he's just super knowledgeable with everything honey bees and carpenter bees as well as some of their pests. And Bill said, this is a really good segment, we should talk about this on the podcast. And so, Bill, what did you tell her from that email? Is it even possible for carpenter bees to be bullying honey bees, and what is this? Yeah, is it possible for that to happen?

Guest 02:59
Well, I'm going to say, a qualifying maybe. We know that male, large carpenter bees can aggressively defend their territories. And what they do is they stake out areas that are attractive to females, so someplace where there's exposed wood that the females will think is a good nesting site. And they'll just patrol back and forth. They'll drive away other males. I've had them come up and fly right up into my face. Not touching me, but just fly up so they're flying about six inches away from my eyes, kind of looking at me. And then they decide to go on. They realize I'm a little too big to be a carpenter bee.

Jamie 03:51
That just made me chuckle, Bill. I was thinking about a bee making that assessment. So one of the cool party tricks that I had, I guess it's never happening at a party because I don't usually go to parties, Amy, I'm just one of those people people don't invite to parties. But anyway, when we're out, and carpenter bee season is happening, I get these male carpenter bees flying around me. And since I can tell the difference between males and females, I'll quickly grab them if you can imagine that you can grab a bees. It's pretty impressive to a lot of folks to be able to do that. So, Bill, I know you know the answer this question, but how do you tell the differences between males and females? You were talking about how males can be quite aggressive or defend their territory when they're scouting out nesting sites. How would you know what a male is versus a female? Can you talk a little bit about the biology of the carpenter bee?

Guest 04:41
Okay, well, first of all, large carpenter bees are solitary. And what that means is that very often they have close to an equal sex ratio. So you have almost an equal number of males and females. The male of our two species, we have two species of large carpenter bee in Florida, both of the males have what's called a yellow clypeus. And that's the space that, on a human face, it would be where your nose is. Alright, so it's just above the mouth, and sort of below and between the eyes. So this part of the face is pretty bright yellow or cream colored. The females have an entirely black face. So that's an easy way to recognize the two. You can also tell a little bit by the size of the eyes. The eyes on the males, just like on a drone honey bee, is much larger than the females. And they have very different behaviors. The males patrol and defend territories, and you usually don't see the females except at flowers because when they're not at flowers, they're actually chewing tunnels into the wood. That's where they're going to put a ball of bee bread and lay an egg and then seal it up and they'll have a whole series of cells. So, the behavior between the males and females is very different. Now, with large carpenter bees, they sort of look like bumble bees, except when you look at a bumble bee, the colors can vary depending on the species. But in a bumble bee, the entire body is sort of hairy looking. So they can have a yellow thorax and black abdomen, like some of our large carpenter bees, but they're hairy. They almost look furry. Large carpenter bees, if it's a male, it's always going to have sort of a yellow thorax, a dark head and a dark abdomen. But the males have that yellow clypeus. The females

of our two species look very different from one another. Xylocopa virginica looks like a male. It has a black head, yellow thorax, and shiny, satiny black abdomen. In Xylacopa micans, the female is completely black. So that's sort of how we tell large carpenter bees from things like bumble bees. Now, there are also some other bees that look superficially like small bumble bees. Things like the Anthophora bumble bee, or the Anthophora bees, the miner bees, and also some of the citrus bees, which are oil-collecting bees. And they're going to be smaller, they're going to be half the size of a bumble bee or large carpenter bee. So that's how you can identify those. But they have that same color pattern that we see in large carpenter bees. So you sort of have to pay attention to not only the color but also the size.

Amy 08:23
So usually, I would say that if you're looking at a bumble bee, their bum is basically furry but then you've got the shiny butt, which is a carpenter bee. Is that fair?

Jamie 08:43
Another way that I describe it too is if you look at bumble bees, and this may not be universally true, but it's generally true of the ones we have here -- carpenter bees, their heads and thorax and abdomen, they're like in a straight line. Bumble bees almost have hunched backs and their hands are tucked under a little bit more of their thorax. And one of the things that I was thinking about, Bill, when you were talking about the yellow clypeus is that a lot of male bees for a lot of bee species have this feature. Now, this is not universally true. People shouldn't be going out and catching bees with their bare hands that have these yellow faces. But there are a lot of bee species out there whose males have these yellow patches on their face.

Guest 09:25
Right. Yeah, we see that with not only the large carpenter bees, but the bumble bees, the Anthophora miner bees or digger bees, and even the centrist, the little centrist bees. The males have this light-colored, usually it's a patterned, clypeus and the females generally have a dark face without those light markings on the clypeus.

Amy 09:54
Yeah, I think this is both of you speaking as Entomologists because I'm one of those people where I see one, I don't want to make eye contact with it. I don't want to look at it because I'm scared it's going to sting me. But I think the next time I see one, I'll probably have to look at it in its face.

Jamie 10:11
Yeah, carpenter bees, if it is buzzing and chasing other bees close to a wood structure this time of year, if it's a big scary bee that seems to be following other bees, it's probably a carpenter. But one of the things that you can do with male carpenter bees, since they're so territorial, you can toss a rock by them, and they'll chase the rock.

Amy 10:31
What? Okay, I'll have to try that.

Jamie 10:33
See how cool entomologists are?

Amy 10:34
I have so thrown rocks at bees or next to them. So Bill, okay, so how do I know if the carpenter bee is actually bothering honey bees, or if they're just scouting for a place to live?

Guest 10:45
Okay, the females are the only ones that are going to be looking for wood. And they're going to look for a protected area of softwood, usually something like Southern Yellow Pine, which is what we use as our prime construction wood. And then the females will chew a tunnel into that wood. It's about a half an inch across, and I've seen some of those tunnels be up to six inches long. Usually, if the surface of the wood is well-painted or stained, usually, it discourages the bees from chewing into it. Now, the males are the ones that are territorial. And one of the things about them is when you watch them, they fly a lot faster than, say, a male bumble bee. And the other thing is male bumble bees, you're only going to see in the fall because, throughout most of the year, the colonies are completely female. So this time of year, if you see a male, whether, you know a big, dark colored male bee, it should have a yellow clypeus and it's gonna be a male carpenter bee.

Amy 12:10
And are talking about just Florida in general, or what's their distribution? Where are carpenter bees and bumble bees located?

Guest 12:18
Well, there are species distributed throughout the entire United States. You also have some kind of cool ones down in the Caribbean and in tropical America as well. So it just so happens that in Florida, we have these two distinctive species. When you go out west, you tend to get some more uniquely colored ones. I've even seen some that are metallic blue down in Central America. So okay, we were talking about what the females do. And what the males do is they're defending territories. They're going to fly back and forth. Now, they can be loud, they can make a loud buzzing noise. And that might be enough to irritate the guard honey bees because they think it's a predator something like a hornet or a yellow jacket. So that may be one of the things that they're responding to. The male carpenter bees shouldn't bother honey bees. I mean, yeah, they may fly around, and they may check out honey bees, but, usually, they're not going to attack them. Remember, honey bees feed on nectar and pollen. But what they may do is, if they are annoying the hive just with their activity, it may cause the hive to have more guard bees located at the entrance of the hive. If you watch the hive, you can sometimes see that they are being more attentive to possible threats. The other thing that you'll sometimes see is occasionally the colonies will become a little grumpier because they're sort of on alert. But usually, after any period of time, the honey bees will get used to the large carpenter bees flying around and they'll sort of ignore them.

Amy 14:40

Sure, so just a quick question. I'm wondering if there are any studies that show that carpenter bees will try to rob honey bees at all for their resources?

Guest 14:54
I don't know about that. I have occasionally found female, large carpenter bees dead inside colonies. I don't know if they were going in looking for unpainted wooden surfaces to chew into, or if they were going in and going in to steal. I don't think they do because their behavior is, collect nectar and pollen to make bee bread and lay their egg on it. So I think most of the time, if females come into a colony, they're looking for a place to make their burrows in the wood. So usually, we find damage from female, large carpenter bees in stored equipment. So if you have bee supers or brood boxes stored outside, and usually, we try to do it undercover, which is a good place for these bees, they will go ahead and burrow into the wood. And that can weaken the hive material, the woodenware a little bit. But the main thing we we do to control the females is make sure everything is well-painted or use pressure-treated wood. So if you're building stands for your hives, use pressure-treated wood, if you are using for your woodenware, your hive boxes, your bottom boards, your covers, make sure that it's well-painted. And I really recommend using an oil-based enamel paint. That seems to be much more effective at deterring the females from chewing into the wood. Latex paints, even the exterior latex paints don't seem to discourage their burrowing activity very much. For the males, if they're flying back and forth, they may have decided that those hives might be a good source of wood that would attract females. So, they're going to try to set up defense but they're not going to go after the bees. I can almost guarantee they're not going inside of the hives, they're just going to be flying back and forth. But there are some things you can do to sort of help to control it. One is if there are just a few, you can take an insect net, catch them and remove them. But usually, they'll be replaced pretty quickly. Another technique you can try is set up a mirror a little ways away from all of your hives, and if the large carpenter bee male sees its reflection, it will go after it. And you'll see it just sit there and bang into the mirror, leaving your honey bees alone. So that's another possible thing that you can do. So we've talked a little bit about how we can control the females getting in and damaging the wood. Another technique is there are large carpenter bee traps, and unfortunately, they are horribly efficient at reducing female large carpenter bee populations. So these traps work really well. So if you have, say, a large structure of barn or something, or any kind of pavilion or pole barn where these bees are doing a fair amount of damage, you could try using one of these large carpenter bee traps to remove the females. I sort of hate to recommend it because carpenter bees are really good pollinators. They are one of the species that are good buzz pollinators. So I sort of hate to ever suggest that they be eliminated. I usually try to recommend to prevent the problem by making sure all of your wood is well-painted with an oil-based outdoor enamel paint. Generally, the males are just a nuisance and you don't usually have to do anything about it. One thing is to, I said, set up a mirror, let them concentrate their efforts on that image of the male in the mirror, and maybe they'll leave the bee colonies alone.

Jamie 20:08
So Bill, you've mentioned a lot of things that trigger a lot of thoughts for me. I'm going to say some things. Let's see if you agree with them So we've got listeners from around the world, right? We're focusing on a carpenter bee that occurs here in the US. I would argue that most solitary bees pose no direct threat to honey bees. And so I think what our listener was pointing out was something that maybe

looked bad, but wasn't really biologically significant. These male carpenter bees were just patrolling an area and there were some honey bee interactions. I think, maybe, there are potential interactions between honey bees and solitary bees: disease and pest spread, competition for floral resources, things like that. But just like what you said, where you said that you found carpenter bees mummified in honey bee colonies, I've seen that too. I've seen bumble bees and other bees, but I really don't think they were in there to cause a problem. It's just that they all share common resources, and so it might be that they were just attracted to that. I will also add to that, that honey bees can be threatened by other social bees, right? They are often their own worst enemy. They'll fight each other and rob one another and things like that. But wouldn't you say that, generally speaking, there's not really, I can't even think of one, but I'm just going to say not many solitary species of bees that pose a real threat to honey bees, and that when you might think there's a negative interaction, it's likely not. It might just look like one.

Guest 21:36
Yeah, I would say that's almost universally true. But, being scientists, we can never do absolutes. You could have competition for nesting sites, especially between some of the stingless bees in tropical America, Africa, and Australia. They'll go into hives, and they'll use them to set up colonies, and they may take over sites. But that's going to be very minor.

Jamie 22:20
Well, even in that case, that's example of social insect competition. And again, not really solitary bees. I will say that you've talked a lot about carpenter bee control. I get emails. We happen to be recording this particular podcast in March of 2021. And I get emails every year at this time because this is when carpenter bees are very visible around people's houses. And we even had, at least, it may still be there, University of Florida EDIS document on carpenter bee control and things like that. And what I read in that document years ago when I first got hired is even in the wood, carpenter bees make aesthetic damage, not really structural damage. They're rarely in need of control. And just like what you were saying about that efficient trap for the carpenter bee females, I usually tell people just turn the other way and let these things do their thing. I mean, I find it a rare case of ever needing to control a solitary bee.

Guest 23:23
Yeah, and usually, it's only the females you have to worry about. And you're right, I think it's usually mostly aesthetic damage. Except once those nests get established, I have had woodpeckers come in and literally destroy the wood, going after the baby bees, the larvae in those nests. The damage done by the bee is minor. And oftentimes, it's unseen because a lot of times they like to go in through the backside of the fascia board. So unless you actually look for them, you're not going to notice them at all. And they are they're excellent pollinators. They're native bees. I just like seeing them around. Now, when I was young, we used to do horrible things to them.

Jamie 24:05
You've redeemed yourself as an entomologist, though.

Guest 24:28

So, the only time I've ever seen a negative interaction between a bee and a honey bee, a native bee and a honey bee, I was looking at the bees coming to a eucalyptus flower cluster. I actually watched this collective come in, grab a worker honey bee and pull it off the flower So they were competing for a food resource. Now, obviously, it was a very high-quality food resource, and that's the only time I've ever seen anything like that happen. And it just so happened that it was one of those greenish liquids. I don't think it stung the honey bee. I think she just grabbed it, and then pulled it off the flower. And then she came right back and started feeding it that flower. But I don't expect that you'd ever see this with large carpenter bees.

Amy 25:33
It's like the Wild West.

Jamie 25:34
Yeah, it is crazy. The Royal Rumble. I will say there there is one interaction. I hate to bring it up kind of this late in the interview, but it's not a negative interaction for the beekeeper specifically, but there is one unique interaction between honey bees and carpenter bees. Carpenter bees are often nectar robbers, and that's a term in entomology that simply means they've developed ways to bypass the standard route of going into a flower to collect nectar. What carpenter bees will do is they'll bite holes at the base of the flower close to the nectaries, and they'll go and feed on the nectar straight through that hole. Well, when there's a large number of carpenter bees in an area, they can put holes in so many flowers that honey bees start using those holes to collect nectar, which we all think is not a problem at all. But what it does is it bypasses the plant's pollination mechanism. So if there's just a couple of carpenter bees present per acre, they can bite enough holes in blueberries that honey bees bypass pollinating the blueberries and go straight to those holes produced by the carpenter bees to steal the nectar. And there was some research done on that at University of Georgia when I was a student there, some colleagues were doing that work, and it was pretty remarkable to see this nectar thievery that honey bees were doing because carpenter bees put the holes in the flowers in the first place. And there was a huge shift of honey bees being legit pollinators going through the opening of the flower to these alternative ways of getting into the nectar. So it was a really interesting interaction. But, again, that wasn't necessarily negative for the beekeeper. It was just negative for the plant.

Guest 27:13
Yeah, I have seen that behavior quite common with azaleas, where they'll go after the flower but because that tube is so long, they can't reach the nectar, they'll chew in through the side. So yeah, I've seen that behavior as well.

Jamie 27:29
So Bill, I do like your recommendations on protecting our woodenware, especially our stored woodenware from carpenter bee females because they can bite holes in that woodenware and make tunnels, etc. But for those of you listening out there, if you see honey bees interacting with other bees near the nest, I wouldn't be too overly worried about it unless it was a social bee, another honey bee colony or something like that. Bill, thank you so much for joining us. You really shed some light on this carpenter bee / honey bee interaction thing.

Guest 27:59
Okay. I really liked carpenter bees even though I talked about control. They are neat bees. As far as I know, there are no non-native carpenter bees anywhere. So, usually, if you have large carpenter bees, they're going to be native bees. They don't tend to be transported easily. You think maybe they would be because they're in wood, so if wood got carried from one place to another, but it doesn't seem to happen. We almost never see non-native carpenter bees show up in any particular habitat, not just in Florida, but any particular habitat. So, I actually like seeing carpenter bees. They're fun to watch. They are not defensive of the colonies. And sometimes, it's interesting, if you're really quiet, you can actually hear those females inside the wood chewing, making those tunnels. And then very often you can find the tunnels because they kick out the sawdust. But they're just one of our 320 native bees that occur in the state of Florida.

Jamie 29:34
So there you go. Everybody, you don't have to worry about carpenter bee control except in your wooden structures, etc. except in the off chances that you might have a high density of woodpeckers in the area. You can protect your wooden boxes, but Bill and I both agree that, in most cases, carpenter bees, you shouldn't make an effort to control them. Great bees, great to have around. This is true of most bee species, at least the ones that aren't invasive in the area. Everybody, that was Dr. Bill Kern, Associate Professor of the Entomology and Nematology Department at the Fort Lauderdale Research and Education Center on behalf of the University of Florida, talking about carpenter bees and honey bees. Thank you for joining us on this segment of Two Bees in a Podcast.

Honey Bee 30:17
For more information about this podcast, check out our website at UFhoneybee.com.

Amy 30:28
It is our Five Minute Management time. And for today's topic, we are going to talk about how to re-queen a colony using a nuc. Jamie, that timer is going.

Jamie 30:41
This is actually one of those topics, Amy, that I have been talking about a lot over the last 15 years. And in fact, the number of times I get requested to talk about it to beekeeper clubs has increased substantially in the COVID days. Now, I'm giving a lot of these presentations online. And I think the reason for it is because once I go through the process of ways that you can re-queen colonies, once I end up on the nuc part, people are amazed and astonished. Oh gosh, I never thought about that. Requeening using a nuc can solve so many problems in honey bee colonies. Maybe that's another topic for another day, but nevertheless, the process is really straightforward. I'm going to talk about it from henceforth as if the full size colony has 10 frames in its brood box and the nuc has five. So imagine a scenario that your full-size colony, this hive that it's living in has 10 frames. You go in, you discover it's queenless. What are you going to likely see? Well, the outermost frames are likely to have honey and pollen and the other eight frames you're likely going to have some combination of older brood and maybe some queen cells scattered amongst them. So what I will do is I will take out one

frame of honey and pollen with the bees on it and four other frames from that full-size hive, alright. So, of those four other frames, I make sure that one or two of them have a queen cell or two. I set those five frames, the frame of honey and pollen and brood frames, outside of the hive on the ground. So what I'm left in my full-sized hive with is five frames. I push all five of those frames that are left up against one wall of the hive box. Now, then I go to my nuc that has five frames. It's got bees and brood and queen and honey and pollen and all that stuff. It's a functioning happy, healthy nuc. I take out all five frames, queen and all, and place them into the full-size hive body in the space created by removing those five frames originally. So again, going back to my 10 frame hive, I took out five frames, I set them on the ground, I pushed the other five frames up against the wall of the box, which means one side of the hive is open. I take five frames from the nuc, I drop them straight into that void, and I put my production colony back together, dust off my hands, and that's that. Now, with those five frames that are on the ground, I move those into the nuc box, and I remove all but two of the largest queen cells. I put my nuc together. And now, a couple of comments. My production colony, the full-size hive, was given a brand new queen, more bees, brood, honey, and pollen. They never miss a beat, they pick up right where they left off as if they were never queenless in the first place. Back at my nuc, my nuc now has the task of recreating itself using one of the two queen cells that I left it. I usually leave two queen cells in these situations because it's frequent enough for queen cells to be bad that if you only leave one, you might run up against the wall if it's not a good one. So I leave two, allow the first queen to come out to kill her competition, and she becomes the reigning matriarch in that nuc. So the long story short, I let my nucs have the problems, not my full-size hive. So in every apiary that we manage, we keep a couple of nucs in those apiaries for the purpose of requeening colonies for whatever reason those colonies need to be requeened. How much time do you have because I want to throw in one more comment?

Amy 34:36
I have, you, well I have, we have one minute.

Jamie 34:39
Oh my goodness, that's way more than I even need. People always ask me, are the bees gonna fight when you drop that nuc in there? Don't you need to combine them by separating them with newspaper, spraying everybody with sugar water? The answers are no, no, no. These are tricks I learned from commercial beekeepers over the years. This is how they do it, among other ways. They constantly combine colonies, move frames around with little or no fighting at all. The second question folks always ask me, well, if you put that free-running queen in the nuc frames, aren't the bees from the full-size hive just gonna kill her? And the answer is no. 99.9% of the time I've not lost a queen, requeening a full-size colony using a nuc. So it really seems to work with regularity. I tell people, if they're worried, they can always cage the queen during the transfer and come back and release her three or four days later, but I've just never had to do that. I've written a very long document outlining this and other management strategy with nucs. And we'll make sure and link that in the show notes for this Five Minute Management.

Stump The Chump 35:44
It's everybody's favorite game show, Stump the Chump.

Amy 35:57
Our Q&A session today is all about screened bottom boards. And I know that this is a question that I receive pretty often, especially beekeepers from Florida or people just starting in beekeeping. They're wondering what kind of bottom board do they actually need? And so these three questions were probably asked by the same person. And the first question I have for you, Jamie, is what are screen bottom boards even good for?

Jamie 36:21
Yeah, so if you think about it, everybody's managing their colonies in hives, and these hives are all sitting on top of some sort of bottom. We tend to call that bottom a bottom board. Now, the traditional bottom board is just either a solid piece of wood or multiple solid pieces of wood put together. But the idea is that it's just solid. The only entrance is the one at the front. Basically, a screened bottom board is one that replaces the wood in the middle of the bottom board with screen wire. I mean, it's exactly what it says, a screen bottom board, and the screen is large enough that Varroa that are on the bee's body can fall through, but it's too small for bees to navigate. So the idea is that someone showed some years ago, maybe 15 years or longer now, that colonies that have screen bottom boards, rather than solid ones, tend to have on average around 10 to 15% fewer Varroa than colonies that don't. So it's not like a great Varroa control. But it's one of those things that can reduce Varroa populations beyond doing nothing at all. And I always tell people, when they asked me, are they worth purchasing? I'm like, well, you got to have a bottom board on the hive in the first place, right? So you might as well buy a screen bottom board because you get the added benefit of a little bit of Varro control. We're not 100% sure why they work. Historically, they say it's because as bees groom themselves, or as Varroa just naturally fall off the combs, they'll fall through the screen to the ground, never to make it back into the hive. But I'm aware of at least one other research project that suggested that having screen bottoms on hives can actually interfere with Varroa invasion. So maybe beyond Varroa simply falling through the bottom board, it may mess with biology in some other ways. But nevertheless, I had a colleague who looked across all the research manuscripts related to screen bottom boards some years ago, and showed that on average, the efficacy reported was around 14%. So if you were going to have 100 mites in that hive, you're now only going to have 86. And that may not sound like a lot, but it might be the difference between you treating four times a year and treating five times a year. So it can make a downstream difference for the health of the bees.

Amy 38:43
Okay. I think that when I had asked you about screen bottom boards, I don't even know why I wasn't even thinking about Varroa. So thanks for that.

Jamie 38:51
Well, it's funny, Amy, you mentioned that because it's always used in context with Varroa but then people are like, well, maybe there's an added benefit of humidity. Well, does it let small high beetles easily into the hive? You have to deal with all these kind of added questions related to screen bottom boards, which is coming up next. Right?

Amy 39:07
Yeah, I was about to say that's my second question. How do you know? Here in Florida, and in the southeast or South United States, it is very humid, it can get very humid here, especially. So there are certain times of year that the humidity is high and low. And so people are wondering, do they need to close the screen bottom boards? So do they need to pull that out? Or, what should they do? Should we be replacing the different bottom boards based on the time of year or the different humidity that we have?

Jamie 39:39
Yeah, I mean, I get those questions absolutely all the time when I talk about screen bottom boards. I've only ever lived in a warm climate. I'm from Georgia, I did my PhD in South Africa, now I live in Florida, right? So it's easy for me to advocate for using screen bottom boards because I've always lived in places warm. But every time I talk about them, especially in Northern States or in Europe or elsewhere where it can be cool more often than not than in Florida, people always ask me, "Well, should you close them at certain times of the year? Should you take them off of the hive?" I always say, where I have lived in Georgia and Florida, I've never had a reason ever to close them at all. I don't take them off, I don't close them. If I lived in colder climates, I would certainly consider doing that. So you could do that by replacing the screen bottom board with a solid bottom board. But that now requires you to own two bottom boards for every hive. Or you could simply slide something into the entrance of the hive that closes off the bottom. Those examples that I use, those political signs that you see on the side of the road during politics season, those things actually have a use outside of that. You can cut those to fit the inside of a screen bottom board. Just slide those into a hive or beneath the hive when it gets cold. But even still, when I mentioned that I have some beekeepers from northern states or colder climates tell me, "We use them year-round, no worries." So I would argue that you can experiment with if you live outside of a warmer climate, but if you live inside of a warmer climate, there's really no reason to ever switch or to ever close.

Amy 41:11
Sure. And that's the third question that we have is thermoregulation. So it's basically the same question. Are we helping them or not helping the bees with thermoregulation when we use them?

Jamie 41:23
So I'm not aware of any studies where people have looked at screen bottom board impacts on like the environment inside of a hive, if there's high humidity outside the hives, do the screen bottoms cause increased humidity inside the hive or high temperatures outside of it -- I have never seen any type of research on that. But what I will say is, we just keep screen bottom boards on our hives year round, regardless of the humidity, regardless of the temperature. There's never any hive cue that we're looking at to determine whether or not to take off screen bottom boards. I would almost argue that, again, this is just purely based on reason not based on data, which can get me in trouble, I suppose, but I would almost argue that it might actually help colonies during hot climates, hot times of the year, because maybe it helps with some ability to just vent the hive a little bit. But I've just never seen a reason to take them off or to close them, regardless of the rain, the humidity, the dry, the heat, the cold. But again, if I lived in northern states, I'd consider closing them up when it gets colder.

Amy 42:30
Yeah, I was just thinking about fungal diseases and whether there have been studies between using a solid bottom board and a screen bottom board. Do you know of any studies?

Jamie 42:38
No, I've not. And I think the reason for this, Amy, and this is just me hypothesizing here. There's no data here. But I think what happened is the screen bottoms got a lot of research, and then there were so many other things that came out that "controlled" Varroa that don't really work. And I'm just going to throw them out there: powdered sugar, small cell foundation, fogging with mineral oil. All of these things came out about the same time and have since been disproven with data. But screen bottom boards are one of those things that even though the data supported their use, it was only moderately efficacious, so people just don't use them in droves. And so as a result, I don't think many people study. There's not a lot of motivation for scientists to study things that aren't really used. And I'll even add on another layer of information. This is a generality, but in general, screen bottom boards are an American thing. I don't really see them used much or really at all outside the United States, even though I travel a lot and talk to other beekeepers. There might be beekeepers here and there who do it. But generally speaking, it's something that's used mainly in the US, and even then, it's still a minority number of colonies that have it. It's certainly not the majority.

Amy 43:50
Alrighty, well there we go. That was basically a segment on screen bottom boards. Hey, everyone, thanks for listening. Today we'd like to give an extra special thank you to our podcast coordinator Lauren Goldstein and to our audio engineer James Weaver. Without their hard work, Two Bees in a Podcast would not be possible.

Jamie 44:16
For more information and additional resources for today's episode, don't forget to visit the UF/IFAS Honey Bee Research Extension Laboratory's website ufhoneybee.com Do you have questions you want answered on air? If so, email them to honeybee@ifas.ufl.edu or message us on Twitter, Instagram or Facebook @UFhoneybeelab. While there don't forget to follow us. Thank you for listening to Two Bees in a Podcast!