



The Naturalist

Interview with Elaine Evans about Wild Bee & Pollinator Research

Hey everyone. Welcome to The Naturalist podcast by the University of Minnesota Extension. I'm Nate Meyer, your host today, and we are going to be talking with Elaine Evans from the University of Minnesota Bee Lab and our Extension Fish, Wildlife and Conservation Education Team about her work to monitor wild bee diversity and bee conservation. We'll also share some ideas about where you can learn more and get involved.

Nate

So Elaine, let's dig in. This is a podcast about new discoveries and solving problems to better manage our natural resources. Many of our listeners know you as our Bee Atlas and Bumble Bee Survey leader and Pollinator Workshop instructor, but you're also a researcher on the faculty at the University of Minnesota's Bee Lab. What are you working to discover or what problems are you trying to solve?

Elaine

A lot of my research work connects well with my Extension work. I do a lot of work on issues related to conservation. But on the research side, digging into more specific questions. So a lot of the work with the Bee Atlas and with the Minnesota Bumble Bee Survey. We're working on getting more information about bumble bees across Minnesota. One of the research projects I've been involved with is one that is focusing on survey methods for bumble bees to get into more specific questions. So we're using different kinds of statistical models to be able to talk about our probability of finding bees. So we're working with rare bees. So, in Minnesota we have populations of the endangered rusty patched bumble bee, and as you can imagine, being an endangered species, we don't find them in very high numbers. So there will be sites where we find one or two and then lots of sites, where we find zero. And just because we don't see them at a site, that doesn't mean that they're not there. So we've been working with these statistical models, called occupancy models and detection probability models, to try to get more information to know if we don't see them, what's the probability that they actually aren't there. Which is really helpful for looking at recovery plans for this endangered species. I really like having research projects that connect directly to a conservation method.

Nate

Tell me a little bit about how you became interested in bee research.

Elaine

I came to bee conservation from insect conservation in general. So when I first got interested just in conservation and was learning about biological diversity, and learning about all these different things that are happening—what we know what happens in an ecosystem; how do all these different, you know, animals and plants interact. Seeing how diverse insects are and how many important things they do for making the world run. And then looking at what's happening in the conservation world and seeing, especially at this point in time when I was first looking, there was very, very little work on insect conservation at all. And to me, it was really clear that insects are really important for the health of our ecosystems. And pollinators was a kind of an easy way to get people to realize that. So, I was also really interested in decomposition and soil organisms and all these other ecosystem functions that are really important. But I thought, you know, pollinators. That's something people can relate to, because it you know affects what's on our plate, what we're eating. You know, really dramatic effects that we can see so that made sense to me as kind of a starting point for insect conservation to get people to start caring about pollinators. And once I volunteered helping out on a research project that was working on pollinators in prairies and I think that's what really did it is, once I was just out there, you know, in the flowers, looking at bees, I was done. That was it for me.

Nate

My next question is what is the legacy that you hope to leave through your work? How do you hope your discoveries or problem-solving will change our environment for the better?

Elaine

I think we're still at a point where even just being aware of pollinators is something that's making a big difference. And that's, that's really happening in a lot of ways. Especially in Minnesota, there's been a lot of really good attention to pollinators and just people becoming more aware. You know people start looking at habitat changes that they can make. So I really hope that people can move from that awareness to action. To make conservation changes for bees. To realize that in Minnesota we do have this broad diversity of bees. So at the Bee Lab, we've been adding to the number of bee species that we find in Minnesota. Partly through citizen scientists getting out there, and partly through our research programs that we have studying bee diversity. We have 469 different species of bees and understanding what those bees are, what they need, how they're doing compared to how they were doing will help us to really effectively put in conservation plans that can help these pollinators. And in turn, these pollinators are really important for all this different stuff happening in the ecosystem. So, hopefully we can not only get conservation going for pollinators, but see a positive effect on birds, and water quality, and all kinds of other stuff that happens when we have good pollinator habitat.

Nate

So give our listeners a peek behind the scenes. How do you go about your work? What are one or two cool tools, methods or strategies that you use in working on your bee conservation projects?

Elaine

One really fun method that I'm using right now is bumble bee rearing. There's a project we're doing in the Bee Lab that's called MAPP, Minnesota Agriculture for Pollinators Project. And we're working in western Minnesota, where we have 60 different agricultural lands that have been converted over into pollinator habitat of different sizes and with different seed mixes. And then we're looking at the effects of those things on pollinators, and different surrounding habitat too. So we can really kind of hone in on what's going to be the best way to put pollinator habitat in agricultural areas. And I'm working on getting bumble bee colonies out there to observe how they do. And to do that, I raise my own bumble bee colonies. So this spring, I've been going out and collecting queens and then now I have all these growing bumble bee colonies. And then in a couple weeks, I'll be able to put them out and then monitor them to see directly what's happening with the colonies in terms of their health when they're in these different kinds of environments.

Nate

Science and natural resources management never go quite as planned. How has failure, or changes in plans, been a part of your work on bee conservation?

Elaine

There's always adaptations to be made with research plans. One difficulty is the year-to-year variability that happens with bumble bee population. So I talked about that study where we're looking at these different ways to monitor for rare bees. We had one field season that we concentrated on for that, which was in 2018, which ended up being kind of an amazing year for the rusty patched bumble bee. So it worked out well for us, because we saw them. But then the next year, the numbers were way down. So part of the problem is we don't really know for sure how—we have confidence in our numbers for what we saw the year that we were there. But with populations varying so much from year-to-year, it can be difficult to figure out what that really means for applying that to people going out and looking in other years. And every year for bees is very different. And we don't have a good way to predict.

Nate

So what is your favorite most surprising result or insight from your work at this point?

Elaine

One of my favorite results has been seeing the impact that community scientists, citizen scientists, can have on our understanding of what's going on with populations of bees, in particular, that are low. So with the rusty patched bumble bee, the endangered species, the majority of the records that we have that let us know where they are, you know where we need to do recovery plans for them, are from people from the general public being out there taking pictures and sharing them on either iNaturalist or Bumble Bee Watch. There's other species, there's a species of bee, *bombus frigidus*, that is—we only had records of it back, you know, to the 1930s and it was mostly in northern Minnesota. But we didn't have any records from 1930 up until two years ago when some people who live up in northern Minnesota started sharing pictures of them. So we know without those pictures we wouldn't know that they were still here. I would think, oh well, they might be here, they might not. Now we know they're here. And that's really important to be able to know just who we have so we can then get good conservation actions in place.

Nate

That's a great segue. Our listeners love to learn more about, and help with environmental stewardship. So what are one or two things that you suggest they could do to help with your efforts?

Elaine

This year, there are going to be a few different things. The Backyard Bumble Bee Count is a project that's in cooperation with the U.S. Fish and Wildlife Service and there's a couple things going on with that. I'm going to be using that program, which is through iNaturalist, to get people all over Minnesota out looking for bumble bees. And not just taking pictures of one bee that they see in their garden and sending it in, which can be helpful, but a lot of times we need more information. So we're going to have people looking for a certain amount of time and recording all of the bees that you see in that area so we can get a better idea of what's going on. Part of that is you need a little bit of training. So fortunately, through the Bee Atlas we have some good training webinars that were done by Britt Forsberg available for people to learn some of the basic bumble bee ID that they need to do that. Also with the Backyard Bumble Bee Count, there is going to be a big push. Kind of like the Christmas Bird Count, where we have a week or so, maybe 10 days, at the end of July, where we're going to be really pushing for people to get out and take pictures of bumble bees all through the historic range of the rusty patched bumble bee, which is all through eastern North America, to see if we can really get a good snapshot picture of that point in time. How are those Bumble bee populations doing.

Nate

So this is my last question. I know you're familiar with social media apps. So what is a hashtag that you wish would really take off? Like millions of people are sharing it.

Elaine

My favorite hashtag is #WaspLove. There are a lot of people who, you know, think wasps are horrible. They have a bad experience with a yellow jacket or something like that, and then they just think all wasps are evil. There's all these memes going around that try to say, oh, bees are good but wasps are mean. And I really disagree with that. Wasps are incredibly diverse and they do all kinds of different beneficial things. There's lots of wasps that are really important predators of pests and in our agricultural systems. Most wasps are solitary, they're not—they can't sting people at all. And so it's really just, you know, of course I have sympathy for people who have gotten stung, that's not fun. But don't blame all wasps for it and try to recognize the benefits that they have and the incredible beauty that they have.

Nate

Thanks for listening to this episode of The Naturalist. Huge thanks to Elaine for joining us on the podcast. This episode was recorded over Zoom from our homes during the coronavirus pandemic in 2020. Search for Backyard Bumble Bee Count or visit bumblebeewatch.org, or z.umn.edu/BeeAtlas to get involved in the projects that Elaine mentioned. We hope that you enjoyed the opportunity for some advanced training during your daily walk, while gardening, or while sitting at your desk. Give us a thumbs up or drop a comment to let us know you value the podcast. Pass it along to others too. We look forward to sharing another episode soon. In the meantime, stay safe, be healthy and we hope you enjoy nature in place.