
Living Homegrown Podcast – Episode 104 Gardening for the Monarch

Show Notes are at: www.LivingHomegrown.com/104

Theresa: This is the Living Homegrown podcast, episode number 104.

Announcer: Welcome to the Living Homegrown podcast, where it's all about how to live farm fresh without the farm. To help guide the way to a more flavorful and sustainable lifestyle is your host, national PBS TV producer and canning expert, Theresa Loe.

Theresa: Hey there, everybody. Welcome to the Living Homegrown podcast. I'm your host Theresa Loe, and this podcast is where we talk about living farm fresh without the farm. That can mean fermenting, small space food growing, and just taking little steps towards living a more sustainable lifestyle, all the different ways that we can live closer to our food, even if we have little or no garden space at all. If you want to learn more about any of these topics, or if you'd like to learn more about my farm fresh living membership site, just visit my website livinghomegrown.com. Today's episode is a little bit different because we are just talking about butterflies today, and specifically, we're talking about the monarch butterfly. Now you may not realize this, but the monarch butterfly is one of the most beloved butterflies in the United States. But it is also having a lot of trouble right now. It is in a huge decline. In fact, it has had a 90% decline in the last 20 years. You may have even noticed as a Gardner that you're not seeing as many monarch butterflies in your garden as before.

I wanted to bring on a friend of mine, Kylee Baumle, who just recently wrote a book, *The Monarch: Saving our Most Beloved Butterfly*. The reason I know you're going to love this one is because Kylee is a garden writer. She's a fellow garden blogger, and she created this book specifically for us as gardeners. It not only dives into some of the science and some of the interesting fun facts about monarchs, but it also gives us a lot of hope. Because there are some very specific things that we can do as gardeners to help reverse this 90% decline of the monarch butterfly. Now, she goes into it in this episode and explains exactly why the monarch is on the decline and exactly what we can do to make a difference.

I wanted you to understand one thing about the monarch butterfly that a lot of people don't realize. It is really one of the only ... In fact, I think it is the only

butterfly that migrates. It will migrate just like a bird migrates from a summer location to a winter location, and then migrates back. The monarch butterfly does exactly the same thing. Those little tiny butterflies will fly up to 3,000 miles to over winter in places like Mexico, and then come back to the United States and move back up all the way up to Canada until they have gone that whole distance again over several generations. There are a lot of perils and a lot of challenges that they face, but specifically in the last 20 years, there's been so many challenges that we've had this huge decline and loss of the monarch butterfly.

Kylee has written this book and does speaking engagements and gives lectures to try and educate people on some really simple things that we can do in our own gardens that make a world of difference. I think you will find it really fascinating. Let me first explain a little bit about Kylee so that you understand where she's coming from. Kylee first began writing a blog, Our Little Acre, back in 2017, and that led to other writing opportunities, which have included feature articles in Horticulture Magazine, The American Gardener, Indiana Gardener, and state-by-state magazines such as Ohio Gardener, where she writes a regular column. Her writing and photography have been also featured in Fine Gardening Magazine, Green Prophet, Garden Center magazines, and trade catalogs, as well as several books.

She is the co-author of Indoor Plant Decor: The Design Style Book for House Plants, which was published in 2013 by St. Lynn's Press, and she is the author of The Monarch: Saving our Most Beloved Butterfly, which was released just this year in April. Now, Kylee is a garden columnist and a speaker, and she discovered that the unique and beautiful monarch butterfly has really helped her appreciate how so many things in nature depend on other things, such as human beings. She believes that, since we all share this earth, we have a responsibility to think beyond ourselves and weigh our options when choosing our actions, especially in the garden. I think you'll be surprised at what a big difference we can make in our own backyards for the monarch, which is a beautiful butterfly that we don't want to see decline anymore.

As always, in the show notes for this episode, I will have links to Kylee's blog, all of the organizations that she mentions, her book, and I will have a list of some nectar plants that we can add to our own gardens in order to help. To get to the show notes, you just go to livinghomegrown.com/104, and I will have everything right there for you. Without further ado, here is my interview with Kylee Baumle, the author of The Monarch: Saving our Most Beloved Butterfly.

Hey, Kylee. Thanks so much for coming on the show today.

Kylee: Thanks for having me, Theresa.

Theresa: This is something I've never covered on the podcast, and that's why it's such a

great topic. Before we dive into the monarchs, I'd just love to have you tell everybody a little bit about what you do as a garden writer.

Kylee: Well, I started writing back in 2007 when I started my blog, which is called Our Little Acre, at the urging of our older daughter. She thinks I'm a good writer, and she kept saying, "Mom, I love the way you write." I don't really know where she read it, because at that point I wasn't really much of a writer. But I talked a lot about my gardening. So she urged me to do a blog, and at that point I thought, "What's a blog? Just free webspace where you can publish drivel. Who wants to know about my garden?" But she talked me into it, so I started writing about the garden. Pretty soon, it was like a Julie and Julia experience. People were commenting on it and I was like, "Who are these people?" Because I mainly was doing it just for my kids and family and friends, just as conversation kind of thing.

Anyway, I started writing that and then it wasn't too long, it was within the first year, I started getting contacted by companies that wanted me to write articles for them. Just to make a long story short, it continued along those lines until I was writing for magazines. I was also doing photography, so I was getting some requests for use of my photos. Then back in 2012, my good friend Jenny Peterson and I got a book contract to write Indoor Plant Decor. So that was my first book. I didn't know if I would do another book or not, but my passion for the monarchs kind of dictated that. I really felt that there was a need for it. I still write for magazines, and on my blog I do garden product reviews and I write about anything that's related to gardening, such as insects and birds, and of course butterflies.

Theresa: Yes. I love your blog. We're going to have a link to it and to your books and everything that we talk about in the show notes. I guess I met you at a garden show or maybe it was a garden tour. I mean, it was probably a garden blogger tour years and years and years ago. So we've known each other for a really long time, but I've always loved your writing. I think your daughter was right. But you also pair incredibly photos with it. That's what makes your book so fantastic. Did you take all the pictures in the book?

Kylee: I didn't take all of them, but I took about 85%. Since I've been studying monarchs for about 11 years now, I really can't stop taking pictures of them, and I have thousands. They're always doing something different or I'm finding a different viewpoint or angle. Yeah. About 85% of those are my photos.

Theresa: Fantastic. Well, you do an awesome job.

Kylee: Thank you.

Theresa: Sure. I would guess we should probably start off the conversation about monarchs, and first of all, I want to mention again, the name of your book is The

Monarch: Saving our Most Loved Butterfly. What I'd love to start with is, have you just, in case someone is not sure which butterfly is the monarch, could you just give a general description of what it looks like?

Kylee: Yes. I think most everyone has seen it, but they may not know what's what they're looking at. Because it is the most recognized butterfly, probably in the world. It's black and orange and it has some white spotting on it, and the body of it is black with some white polka dots. The wingspan is probably about three to four inches. Four might be generous, but it's one of the larger butterflies.

Theresa: There's one that looks kind of similar, but is different. What's the one that looks similar to the monarch?

Kylee: There's actually several depending on where you live. In our area, the viceroy is often confused with the monarch. The way you can tell the difference between the two, first of all, the viceroy's smaller, a little bit smaller. Secondly, if you look at the markings on the wings, the viceroy has, we call it a smile. It's a straight ... Well, it's not straight. It's curved, but it's not in sections like the monarch is. It's just one continuous line. It appears to be one continuous line along the bottom. You can also tell ... Once you've watched them and observed them for a little while, you can tell by their flight pattern, because the monarch is much more graceful and slower. It does a lot more gliding, and the viceroy is a lot quicker in its motions and does a lot of dipping. Once you know, it's not difficult to distinguish between those two whether they're sitting on a flower or they're flying in the sky.

If you live in the south, there's also another butterfly that's often confused with the monarch, and that's the queen. They are related. Now, the viceroy and the monarch are not related, but the queen and the monarch are. The queen just has a lot more orange. There's less veining in the queen.

Theresa: Also in your book, I loved the photos where you showed the male and the female monarch with their wings open, and then it was very easy to see the difference when you compared them side by side. That's another reason why I love the photography in this book. It was so educational. The markings were really, really helpful. I would love for you to tell the story of how you first became interested in the monarch. Because it's kind of unusual how you stumbled into this.

Kylee: It is. I call it a divine appointment looking back. My mom and I were on a trip to Delaware from Ohio, and on our way there we went through Pennsylvania. We were on US 30 and we saw a sign that said, "Flight 93 memorial." I think it was two or three miles off the highway there. We talked about it, and it was September when we were making this trip. It had been about five years since the flight 93 had crashed there near Shanksville, Pennsylvania. So we decided that on our way home we would stop, and we did. At that point, it was a

temporary memorial at the crash site. Then we learned that there was a chapel that had been built just outside of Shanksville, Pennsylvania.

We drove to that and we looked around in the little chapel. Then there's a garden just outside of it that they call the Peace Garden. It had been newly planted, and there was a beautiful black granite memorial in the center of that garden. We looked around for a little bit and then we got back into the car to go home. Mom held out her hand and she had this dead monarch butterfly. She said, "Look what I found." So we looked at it a little bit and we noticed, on one wing, on the backside of one wing, there was this little white sticker. It was about as big around as the end of a pencil eraser. On that sticker there was a website, a phone number, and identification numbers and letters. We put the butterfly up on the dash and we got home.

I had written the numbers and the letters down and the website, and I went to it. It was monarchwatch.org. It was there that I learned about the tagging program that they have, that citizen scientists, just ordinary, everyday, back yard gardeners, just people interested in the monarch put these stickers on them in the fall, the generation that migrates. Then if those are found along the way to Mexico and then into Mexico ... Of course, if they find them in Mexico they've died, but they can learn about the migration, what path they might have taken, where they started out, how long it might have taken them to get there. This is very helpful to them. That's what really got me interested in starting on my journey.

The other thing that I learned on the website was about the Monarch Waystation program. That is a program where you can register your garden. They have a guideline, a list of plants that you should be planting for the monarch, both milkweed and nectar plants. If you meet those requirements then you can have your garden registered as a Monarch Waystation. I did that within the first week of when we got home from that trip, because I already was growing the things that were needed. I think there are over 15,000 waystations now, but mine is number 948. The program had been started just the year before in 2005.

Theresa: Wow. I love that story. It's so unusual. I've seen those little stickers. They're teeny tiny. They don't affect the flight of the butterfly.

Kylee: No.

Theresa: We'll talk more about that and citizen science after we talk about the whole migration thing and how the monarchwatch.org and the organizations are helping the monarch. Before we get into that, I want to swing back around to this book. Because that kind of started you on this journey of understanding what really happens with the monarch and their whole lifecycle, which is very unusual and we'll talk about that. What made you decide to write a book about

it? Because there's already these organizations and you had found information. But you decided to write this book, and I've never seen a book like this. It's kind of in the gardening realm, but it goes so much further than that and gives so much information on how we can help the monarch. So what made you decide to write that?

Kylee: Well, I came at it from a gardener's point of view, because when you begin gardening, you get involved in all other things too, related things, and how the whole ecosystem works together. I'm just now naturally a person who wants to know the who, why, what, where, when of everything. I'm a research-aholic. The more I learned about the monarch, the more I wanted to know. I started looking for publications that would help educate me. There are many, many good ones, and that's what my publisher said to me when I first had this idea of writing this book. He said, "There are so many books out there. How is yours going to be different?"

So I had to explain to him my experience of trying to educate myself about the monarch, that most of the books are either children's or youth books or they swing to the other end of the spectrum, and they're focused more ... sort of like, I want to say textbooky. They kind of go into more technical information, which I enjoyed that, but I kind of wanted to write a book that would bridge the gap between the two ends of the spectrum. I wanted it to be a one stop shop place where people could go that wanted to know the basics but were still interested in all those fascinating facts about the monarch. Plus, I wanted to show ways that we could help bring this monarch back from the decline that they're experiencing.

I think once you learn more and know more about the monarch and the lifecycle, and just how incredible a butterfly it really is, then you care more and you want to help them. It's kind of like the master gardeners. They don't everything, but they know where to go to find the information.

Theresa: Yes.

Kylee: My book is that way, too. There's a lot of information in the book itself, but I wanted to provide a jumping off point too by providing references. So if people did want to dig deeper, they would know where to go to find that information.

Theresa: Yes. It does exactly that and the fact that it is really geared for a gardener, or even if you don't grow anything, you tell us exactly what to do. That is so, so helpful. I have also found, mostly I'd only found monarch books for children, which I had for when my kids were little. But I never found one like this. That's one of the reasons I was so excited and I wanted to share it with my audience. Because it's exactly what we as gardeners need. So thank you for writing it.

Kylee: Well, you're very welcome.

- Theresa: Now, I guess we should also mention the importance of the monarch before we dive into their decline. They are part of the ecosystem, and they do have a purpose in life besides being beautiful.
- Kylee: Right. They are a pollinator. They're not a major pollinator, but I believe that every insect, bird, animal is on this earth for a reason, they have a part to play. The monarch has theirs. As much as we want to really help the monarch, they're also not just being a pollinator. They're also part of the food chain. We're trying to save the monarch. We don't like to think about it, that other insects make use of them and animals. But that's just part of a healthy ecosystem. We would like to get those numbers up so that they can serve that part of the process too, in addition to pollination.
- Theresa: Exactly. They are part of the food chain, and if they do disappear, we are upsetting the balance in other areas. We are trying to save them but they do get eaten by birds and other insects. They are part of the food chain, but they are pollinators. They are beautiful things to have in the garden. Let's talk a little bit about the challenges that the monarch is facing, because when I started seeing some of the posts you were doing on Facebook of some of the facts that you had discovered or come across while you were working on the book, it was actually quite startling. It made sense to me. I suddenly thought, "You know, I haven't seen monarchs in my garden as much as I used to." Let's talk about that. What's happening with the monarch right now?
- Kylee: In the mid-1990s, if you look at the graph, and the graph is in the book, if you look at it, at where we were with the population of the monarchs ... The way they count them ... It is difficult when you've got a lot of butterflies all in a cluster like that. The way they count them is by the area that they are inhabiting when they are over wintering. Because they all gather in certain places. That's how they count them. What we've seen is, from the mid-1990s, they have made a very dramatic drop in numbers. The biggest reason for that is a reduction of their habitat. There are a lot of reasons that that habitat has been reduced, but one of the biggest is the advent of roundup ready crops. Lot of the milkweed, especially in the center of the country, grew in fields, along fields, and I understand that agriculture wants clean crops. They don't want weeds, what they consider to be weeds in their fields, but when they introduced the roundup ready crops, that allowed them to spray the entire field. The milkweed that was in it was killed.
- Theresa: The milkweed is the only source of food for the caterpillar. Correct?
- Kylee: Exactly. If you don't have milkweed, you will not have monarchs. They don't use any other plant to lay their eggs on, and those caterpillars eat nothing except for milkweed.

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- Theresa: Got it. So they had a, I think I read in your book, like a 90% decline in the last 20 years?
- Kylee: Right.
- Theresa: That's crazy.
- Kylee: It is. It's incredible. Also, if you think about the number of acres of land, of habitat, that has disappeared since then for them, it's not surprising that it's a 90% decline. Insects in general have a fairly low survival rate. That's not uncommon. The monarch's is downright dismal.
- Theresa: Yeah.
- Kylee: It's about 5% will survive from egg to adulthood. You'll have a natural ebb and flow from year to year, but it's been pretty dramatic, the drop for the monarch.
- Theresa: Then in addition to that, I read in your book that we have the climate change and big storms that have happened where maybe they were over wintering. Things like that just drop the numbers even more. So they have quite a few challenges to overcome.
- Kylee: They do. You're going to have those occasional storms, but when the population level is already low, they can't withstand too many of those. I think the estimates for the big storm that hit last year in March just as they were leaving the over wintering location in Mexico, it was devastating. It not only killed what their ... Some estimates are at as many as 75% of the population that were still there were killed, but not only that, those storms took out some trees that helped formed the canopy of protection for them down there.
- Theresa: Yeah. Let's talk about that a little bit, because they butterfly has a very unusual journey that it goes on. Most butterflies don't migrate down to Mexico. So could you talk about the lifecycle of the butterfly?
- Kylee: Sure. It's a little difficult to know where to actually begin that whole cycle. I'll start with what happens in the spring. The monarchs that have over wintered, in the spring, about mid-March or so, begin the journey north until they find milkweed. Because when they are in those fir forests, they're in Mexico during the winter, they have not yet sexually matured. They have not mated. When they left the north, they did not mate like their parents and grandparents did. They will not do that until spring. Then they fly north until they find milkweed, and then the females will lay the eggs on the milkweed. Then that generation dies. Then they continue north. They continue following the milkweed as it comes up. Let's see. This is the end of June. They have now reached the northern most part of their summer habitat, which is across the lower tier of Canada.

- Theresa: Okay. So they start down at the bottom, down in Mexico, reach the Texas area. As things warm up and the milkweed is starting to come up further north, they just continue flying. Each generation keeps flying north and laying eggs until they reach up towards Canada.
- Kylee: Exactly.
- Theresa: Okay.
- Kylee: There can be as many as five generations. That fifth generation will be the one to fly back to Mexico.
- Theresa: Got it.
- Kylee: Yeah. Each generation goes a little further north.
- Theresa: Then there's a shift, and I think you said in your book something about it's the time of day that they think triggers it, where several days in a row the days start getting shorter each day. Then that generation knows, somehow, that they're going to be flying south?
- Kylee: Right. I've read ... I haven't delved into this in any great detail yet, but I've read that, even as a caterpillar, they know before they form their chrysalis that that's already been set in motion, that they will be the ones to go to Mexico. The angle of the sun, the length of the day, the temperature of the day, the ever cooling nights, succession of cool nights, all those things help determine whether they're going to be the generation to go, and the decline of milkweed quality.
- Theresa: Sure.
- Kylee: You can see that in the fall, that it starts turning yellow. It gets leathery. It's not really conducive for little teeny caterpillars to feed on it. All those things work together.
- Theresa: One thing I would love for you to talk about is the actual metamorphosis that happens with the butterfly, all the way from the egg to when they become the butterfly. Can you explain all of that?
- Kylee: Sure. Once the female lays the egg ... The egg is about the size of a grain of salt.
- Theresa: That's tiny, tiny, tiny.
- Kylee: It's very tiny. You can be fooled when you're looking for the eggs. I have been fooled many times. Even this year I was fooled once. I thought I found an egg, and all it was was the milkweed leaf had cracked a little bit and seeped a little

bit of that milky latex. Then when it dries it looks like this little spot. It looks almost like an egg. Anyway, the egg, it's very tiny. They will stay in that egg stage for about three to five days, depending on the temperature. Then it chews its way ... The caterpillar inside chews its way out of the eggshell. Then the first meal that it has is the eggshell. Because there are a lot of nutrients in that. It will turn right around, eat its egg, and then begin eating the milkweed.

One big reason that the monarchs eat milkweed is because the milkweed latex sap has a toxin in it that is poisonous to a lot of would be predators, for example birds. Not very many birds will eat the monarch butterfly. They may do it once, but they probably won't do it a second time because it makes them very, very ill. The bird, then, comes to associate the coloring of the caterpillar or the butterfly ... Because as a caterpillar, it takes in that toxin, and that will continue into the adult and provide them some means of protection even as an adult. But they look at that coloration, the yellow and the black and the white stripes in the caterpillar, and the orange and black and white in the adult. That's called aposematism, and what that is, they see those markings and that coloration and they avoid it. Because they know that that doesn't taste good. So after they hatch out and they begin eating, then they're in their caterpillar or larva stage, and all they do for the next two weeks is eat and poop, just like babies.

Theresa: Just like a baby. Yeah.

Kylee: Yes. Yes. They will increase in size 2,000 times the original. They're about an eighth of an inch long when they come out of that egg.

Theresa: Wow.

Kylee: They will increase in size by 2,000 times, and in weight by 3,000 times.

Theresa: My gosh. Okay.

Kylee: Yeah. It's like you can almost ... You can literally from day to day see them grow.

Theresa: Amazing.

Kylee: That takes about two weeks. This is all temperature dependent. The cooler it is, the longer it takes. The warmer it is, that speeds it up. After about two weeks, then they will crawl away. Usually they'll crawl away from the milkweed, because that would be too obvious for them to form their chrysalis on the milkweed. Because they're at a very vulnerable state when they're in that chrysalis. They have no means of defense. So they crawl away, sometimes up to 40 feet away. You'll hear people say, "Well the caterpillars were there, and now they're gone. Where did they go?" They figure something ate it or whatever, but in reality it probably just crawled away to what it felt was a safe location to form its chrysalis.

Then, in that chrysalis stage, that's when metamorphosis occurs. That's when the magic happens. When that caterpillar was born, all of the cells that are required to form the adult butterfly are in that caterpillar, but they're kind of latent. They haven't started to grow yet. But when they're in that chrysalis stage, then they begin to grow. It takes about 12 to 15 days, again, depending on temperature, for that caterpillar to turn into an adult butterfly. If you've ever watched a monarch butterfly come out of that chrysalis, you're going to be shocked. Because it's like, "My goodness, how did all that fit in there?"

Theresa: Yes. I've seen it before. It is amazing.

Kylee: My gosh. The wings, you think about the wings. I always say they look sort of like Shrinky Dinks in rivers when they come out. Their bellies, their abdomens are really, really full of fluid and so they will pump that. You can actually watch them do that, pump that fluid into the wings and then a couple of hours or so, then they look like they're supposed to look.

Theresa: That is so amazing. Thanks for explaining that. Because the timing, it's really much faster, a much shorter span than you think.

Kylee: It is. Really, I think everybody should raise one inside just so they can see that whole process up close and personal. It is truly amazing. I've watched it countless times. Every time I have one that's just about ready to do it, everything stops because I want to see it again. I never get tired of it.

Theresa: That's a great idea.

Kylee: The thing that's so incredible about this lifecycle is that final generation of the summer, they call them the Methuselah generation, because they live seven, maybe even eight months, whereas the normal lifecycle of a monarch is four to six weeks.

Theresa: Wow. They're bigger, too.

Kylee: Yes. They can be slightly. I don't know that it'd be anything to the naked eye that you would be able to detect.

Theresa: Okay.

Kylee: But the wings, they are longer a little bit. The scales on the wings are a little bit more dense. Those things all help for them to be able to make that 3,000 mile journey. That's how far they have to go if they start in Canada.

Theresa: Yeah. Let's just stop on that for a second. These little butterflies are flying up to 3,000 miles to Mexico, and they make the trip. This is where they're not looking

for milkweed. Now they just need to sustain themselves with the nectar and water sources. Is that correct?

- Kylee: Right. Even though milkweed blooms and has nectar on it ... They will make use of that at that point as an adult, but what's really, really important for them is not milkweed at this point. On that journey to Mexico, they need nectar. They need it all along that flyway. We're talking about a butterfly that weights about as much as a paperclip. If you think about that ... I often wonder, and I don't want to anthropomorphize ... I'm not sure I'm saying that right, but do they think about that?
- Theresa: Yeah.
- Kylee: "My gosh. I got to go 3,000 miles. How am I ever going to do this?" I don't think they do.
- Theresa: No.
- Kylee: Anyway, they will weigh more when they get to Mexico. If they've had good nectar sources along the way, they will weigh more when they get to Mexico than when they started out in the north. To me, that's crazy. You would think that with expending all that energy, that all they could eat would be ... They would use that all up in making that trip, but they don't. They have to store fat so that they can survive through the winter.
- Theresa: Right. That is amazing. They go to these special groves. I know the groves were discovered in the '70s or something, where they'd finally found where they were over wintering. By the way, the part of those little stickers that we talked about at the beginning is that they are watching this migration to see which pathway they're taking to get there. We'll talk about that too. So they go and they get to Mexico and they go into these groves. Then what happens?
- Kylee: Like I said, when they come out of their chrysalis in the north, they are in a state of reproductive diapause. They are not sexually mature. Adolescent probably would be a good comparison.
- Theresa: They're crazy teenagers. They're just crazy.
- Kylee: They are! That take a lot of energy. Mating takes a lot of energy, and they need all of that energy to make that trip to Mexico. Their antenna, they're like circadian clocks or GPS. We can liken it to a little GPS unit in those antenna. They take their cues from the environment in making that trip. They may follow rivers. They may follow mountain ranges. We don't know exactly how they do it, but we're finding more out about that all the time. When they get down there then, they cluster in these Oyamel fir forests that are at a very high altitude. These trees, these Oyamel firs also require a certain environment to grow. This

is where climate change is affecting them also, because it's warming down there too. These trees need a certain climate in order to be healthy trees. With it getting warmer, that makes them more susceptible to disease and insect damage and things like that.

They cluster on these trees to stay warm. The canopy that the trees provide makes it so that the temperature is correct. The humidity is correct so they don't dry out during the winter, and they protect them from most severe storms. They just stay there. They arrive around November 1st, around the Day of the Dead, which is celebrated down there in a very special way. When these monarchs arrive, the Mexican people in those area believe that those monarchs are the souls of departed loved ones. It's a time of celebration and festivals and things like that that are going on when they arrive. They generally arrive pretty much right on time. On sunny days ... Most they stay clustered on the trees, even on the trunks, for warmth. Then on sunny days, they'll flutter around. They'll come down and drink from the little water sources that are there in the forest. Then when it starts to warm up there in February, middle of March, then they start fluttering around even more. They mate and they begin that journey back north.

- Theresa: That is so absolutely incredible, because there's no other butterfly that does this. Now, you had said before when we were chatting that ... Because I know there's places in California that we have butterflies, but that's a little different. That's the west coast area where they kind of congregate. Do they congregate there over the winter as well?
- Kylee: They do. 200 places, maybe, along the coast that they go in the winter. They come down also from southern Canada, but all the area that is west of the Rockies, they congregate on the California coast.
- Theresa: Yeah.
- Kylee: Mostly they make use of eucalyptus trees, which are not native. But a lot of the native trees are not there anymore. So they make use of what's there.
- Theresa: Yes. I've seen pictures, but I've never gone. I absolutely should, because it's not that far from me.
- Kylee: Theresa!
- Theresa: I know.
- Kylee: I can't believe it. You're right there!
- Theresa: I know. Well, after reading your book I was thinking, "My gosh. We got to make a family trip and see this."

Kylee: You do.

Theresa: Yeah.

Kylee: You do. Because when you see them ... I mean, you can see pictures, but when you see them for real ... I don't know if you knew, but I went to Mexico this spring, the end of February, first of March, because it was number one on my bucket list. I wanted to see those monarchs in Mexico. I had seen overnight roosts during migration in my area, and that was pretty incredible. Hundreds of them.

Theresa: Groups of them?

Kylee: Yes! They cluster in the trees.

Theresa: Wow.

Kylee: Right. I mean I stood in the rain one day, and that's why they were still there in the middle of the day. Because it was raining. They can't fly when it's colder and rainy like that. I stood there in the rain and just watched them for the longest time. I really wanted to see them in their winter habitat. So at the end of February, first of March this year, my husband and I went. It was an emotional experience. I was kind of embarrassed a little bit, because I had tears in my eyes. Then pretty soon they're just streaming down my face, and I looked at our local guide and I said, "Do you see this a lot? Do a lot of people get really emotional like this?" He said, "We see this all the time."

Theresa: Really?

Kylee: Can't even describe it. Pictures don't do it justice. Imagine that you're standing there in a middle of a river. Only, the river's above you and it's made of butterflies. We stood there and they came streaming down. It was a nice sunny day, so they were looking for water. They came streaming down out of that mountain, surrounding us, and I just stood there with my mouth hanging open. And that hadn't even gotten into the forest yet. Then we walked into the forest ... We took horses part of the way up, and then we walked the rest of the way. You felt like you were on hallowed ground. Because there's these thousands and thousands and thousands of butterflies, all clustered together. Trees look like butterfly trees. The thought hit me while I was standing there that, there very well could be butterflies in those clusters that were born in my garden in Ohio.

Theresa: Absolutely!

Kylee: Think about that.

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- Theresa: I'm sure it's so beautiful. That's amazing. It makes me get teared up just thinking about it. One of the things you talk about in the book is, they're not on the extinction list, but there's something called quasi-extinction. That's what we're talking about with them. Is that correct?
- Kylee: That's correct. Monarchs are not going to disappear off the face of the earth. There are other populations, very small compared to the eastern population that's in the US, but what we're talking about when we say quasi-extinction is that there is a level at which the population can get where it can no longer sustain itself in the face of all of the ...
- Theresa: The dangers and things.
- Kylee: Yeah. The challenges, in addition to just the normal ones that they have in the insect world, the ones that we are responsible for too. We're very near to that. That's why we need to get the numbers up.
- Theresa: Absolutely. I know one of the things that we can do as gardeners is we can plant things that will help them along the way. What are some things that we as gardeners can do to help?
- Kylee: We can do a lot, and this is what I love about this cause. A lot of things people think, "I'm just one person. What can I do?" They don't do anything because they don't think it's going to make any difference. This is one area where we can really help. We can of course grow milkweed, because this is the only plant that they raise their young on. So they have to have it. No milkweed, no monarchs.
- Theresa: Okay.
- Kylee: But we also need to grow nectar plants, especially late in the season, the ones that are blooming that in the season, to help the migration, because that's going to be the basis for the following year's population. You want to grow nectar plants anyway, because that helps bring those butterflies into your garden. Sure, they're going to find the milkweed anyway, but you're going to have a lot better chance of attracting them if you have food for the adults too. Then we talked about round up, how that's an issue with agriculture, but backyard gardeners also have a whole arsenal of pesticides available to them. If you're trying to help insect, pollinators, monarchs, you can't use those. You just can't, because they're not specific. If it's meant to kill this bug, it's going to kill that one. Even though organic things, you need to be very careful. Organic pesticides are still pesticides.
- Theresa: Exactly. A lot of people don't think about that. They think, "Well, it's organic so it's safe."
- Kylee: Right.

- Theresa: It is safe ...
- Kylee: For humans.
- Theresa: There's a lot of safe ... for humans. Right. But it's still going to kill the insect and it's not always insect specific. If that insect is eaten by another insect, you end up doing more than you think. That's why we always want to try not to spray anything if at all possible.
- Kylee: You know what, Theresa? I've been a big believer in this, and I realized this early on in my gardening experience, that when you first start out gardening you want to grow it all. All the plants. I want to grow all the plants.
- Theresa: Yes.
- Kylee: You go to the garden center, it's like, "I want this. I want this." A lot of times you do have a lot of different things in your garden. What I found was ... I would hear other gardeners say, "I have a problem with Japanese beetles," or "I have a problem with flea beetles," different things. I was not finding that I had a huge problem, I still don't, with all of those things. I think it's because of the biodiversity.
- Theresa: Yes. I agree with you and I think also that when we grow organically, we aren't putting a stress on the plants like some of the chemical fertilizers do. You get a lot more green growth. All of a sudden your plant is shooting out with green growth and it can't really sustain that. The insects come. It gets a little ... The plant is more stressed. So by just having a general overall organic garden, I think we end up ... I don't spray my garden with anything.
- Kylee: I don't either.
- Theresa: I might have a problem here or there, but something always kind of balances out in the end. I'm not out there even with an organic spray.
- Kylee: No. I don't use anything either. We're coming up here ... In our area, we're coming up on Japanese beetle season, and I've had somebody ask me, "Have you seen a Japanese beetle yet?" I'm actually still finding a few grubs when I dig around in the garden. They're not quite ready to come out yet, but I do have Japanese beetles. I'm not saying I don't have them, but I don't have a huge problem with them. I'll go out once a day, probably, and I just pick them off. I have chickens. Chickens love those Japanese beetles.
- Theresa: Yes. They love them.
- Kylee: I remember the first time I gave my chickens a Japanese beetle and didn't really

quite know what to do with it. They learned real quick.

Theresa: Yes. Absolutely. My chickens will fight over them. They get very excited.

Kylee: Yeah.

Theresa: Yeah.

Kylee: Yeah. That's my method. I will go out ... I hear people too talk about milkweed, because there are other insects, which I show in the book too, that make use of the milkweed plant. People get kind of upset because it's like, "These bugs are on my milkweed, and what are they going to do to the plant? The monarch needs them." They really can co-exist. If they do seem like they're getting out of control, a lot of them, all you have to do is just spray them off with water.

Theresa: Yes.

Kylee: They may return, but that's the easiest way to deter them. It's like, "Well, gee. Maybe I don't want to hit this plant because I'm going to get knocked off here again."

Theresa: Yes. Yes. Exactly. Speaking of water, water is something we should have in our gardens for the butterflies as well, but you don't want to have a raging river fountain. The butterfly won't be able to get the water from that. What do you suggest that we do for water sources?

Kylee: I generally will sit out little saucers of water. I put rocks in the water so that they have a place to perch, but you don't need much. You don't want much, because of course you don't want to have breeding area for mosquitoes. Generally, if I go out there and I add the water to it, it's disturbing the water enough. That's not a problem. They actually love mud puddles. If you can just make a little depression ... There's a good reason for that. If you can make a little depression in your garden, the mud has nutrients in it, and the males especially, when they, they call it puddling ... When the males are drinking that water, they're taking in those nutrients and they are making use of those in the formation of what's called the spermatophore. The spermatophore is like a little packet, little DNA packet, that it transfers to the female during mating. The more nutrients that are in that, the healthier the offspring will be.

Theresa: That is amazing.

Kylee: So there's a purpose for that drinking of that water, especially when it's at the edge of a mud puddle kind of thing.

Theresa: Perfect. Okay. That's really good to know. Now, I also know that you are a huge citizen scientist. In fact, I think you're one of the most dedicated citizen

scientists that I know with all that you do. No. You are. Because you really go ... You don't just follow something on a website. You really do the research and take it even further and then share that information, which is so awesome. Can you explain a little bit more about what a citizen scientist is and how we can do that too?

Kylee: Citizen scientist is just an average, everyday person, or can be. When you think about these programs that the scientist, when they're doing research, it would be helpful to them to have eyes and ears out in the countryside. They can't be everywhere, but we are. So there are certain things that you can do to participate in these programs that help those researchers. For example, with the monarchs, there are several citizen scientist opportunities. You can help count eggs on your property. You can report when you see your first monarch butterfly. There are websites that you can go to to report that kind of thing. This data that you're reporting, they will make use of that. The more people that do that ... You don't even have to be a gardener to participate in the citizen scientist programs.

Theresa: No. Absolutely not. Because they have so many different ones, and you list them in the book. We'll list the Monarch Watch one in the show notes. The Monarch Watch is the one that does the tagging. Is that right?

Kylee: They are one of the organizations. There are some in the west. There are tagging programs out where you are too, Theresa.

Theresa: Okay.

Kylee: They do monitor migration there. They've actually found that some of the monarchs on the west coast do make it to Mexico. They would never have known that without that tagging.

Theresa: Yes. That's amazing. I didn't know that.

Kylee: It's not a great number, but some of them will make their way to Mexico.

Theresa: It's just amazing that they even know which way to go. They don't have little maps and going, "Okay. Turn left."

Kylee: They've never been there before, and their parents, they don't have their parents to help show them the way either.

Theresa: No. It's just amazing. With the tagging, is the citizen scientist allowed to do tagging as well, or is it just they tag [inaudible 00:46:23] ...

Kylee: No. I've done it and many people do it. We're the hands and feet for the scientists out here. At the end of the season, I raise monarchs in my house. I do

that specifically so that I can tag them. It's a little more difficult to catch a wild one. Although, I have and I've tagged them. But by raising them in my house, it's 100% chance of tagging.

Theresa: Yeah. Perfect.

Kylee: Right. Each year I've done about ... it varies, but 70 to 80.

Theresa: Wow.

Kylee: It just depends on how many I find in my garden or alongside the road. I'll tag every one that I can find and raise.

Theresa: Now, you were talking one time with me about how you went for a walk and you found some monarch caterpillars. Then the next day it was ... Can you tell that story?

Kylee: Sure.

Theresa: It kind of illustrates how we really need to keep our eyes open.

Kylee: Right. We take walk almost every night. There's a cemetery near our house. So that's kind of where we go, cemetery and a bridge and a little creek. We go there, walk there and bank. That's about a quarter of a mile one way. Because I live in farm country, so wide open fields, ditches. I noticed milkweed growing alongside the road. So this one evening I said to my husband, "You know, I'm going to check that milkweed and see if I can find any eggs or caterpillars." In that quarter of a mile, I found eight eggs and caterpillars. It's kind of incredible, really. Because there aren't that many milkweed plants. I picked the leaf off, brought them back home. The very next day, they mowed the roadside.

Theresa: Wow.

Kylee: You know what would have happened.

Theresa: Yeah.

Kylee: That happened. You think about that. That happens all over the place. Although I will have to ... Some of the states, and Ohio's one of them, they have modified their mowing so that they're not mowing as often and they're not mowing as far off the road as they once were, so that they can allow the habitat to continue to grow there.

Theresa: Yeah. It's all about getting the word out and that's what I'm hoping we do with this podcast and with sharing your book. People can get this book and they can teach their children. They can go to the schools and teach more of the kids. It's

such a wonderful, wonderful resource, and you have so many more resources inside the book. I cannot thank you enough for coming on and sharing this information. Thank you so, so much.

Kylee: Well, I thank you too, Theresa, for giving me that opportunity. There's nothing I like more than to get somebody excited about it and show them that there are ways that they can help.

Theresa: Well, I hope you enjoyed that interview. I know it was really fascinating for me when I was first reading her book. I learned so, so much. I think if you can get a chance to look at this book and see the beautiful photographs, you'll be even more inspired to help the butterfly in our own backyard. Now, as I mentioned before, in the show notes for this episode, I will have links to everything that Kylee talked about and her book. And I will have a list of some nectar plants that we can add to our backyard as well. To get to the show notes, just go to livinghomegrown.com/104, and I will everything there for you. Thank you so much for joining me here today. I hope you enjoyed this episode. Until next time, just try to live a little more local, seasonal, and homegrown. Take care!

Announcer: That's all for this episode of the Living Homegrown podcast. Visit livinghomegrown.com to download Theresa's free canning resource guide, and find more tips on how to live farm fresh without the farm. Be sure and join Theresa Loe next time on the Living Homegrown podcast.