

Evelyn Lamb: [00:11](#) Welcome to the Lathisms podcast. I'm your host, Evelyn Lamb. In each episode we invite a Hispanic or Latinx mathematician to share their journey in mathematics. Today I'm very happy to be talking with Carrie Diaz Eaton. Thanks so much for joining me. Can you tell me a little bit about yourself?

Carrie Diaz Eaton: [00:28](#) Thanks, Evelyn, for inviting me. I am currently an Associate Professor of Digital and Computational Studies at Bates College, which is a small liberal arts college in Maine. I have been at Bates for one year, starting in 2018, but before that I was an Assistant, and then Associate Professor, at Unity College. It's just a small environmental college.

Evelyn Lamb: [00:53](#) Oh, I don't think I've heard of Unity before. Where is that?

Carrie Diaz Eaton: [00:56](#) That is also in Maine. It's a college that has all majors related in some way to the environment.

Evelyn Lamb: [01:05](#) Interesting. And so you said you were Professor of Digital and Computational Studies. Is that separate from the math department?

Carrie Diaz Eaton: [01:12](#) Yes, it is separate. So I've always actually been a mathematician in somebody else's department. So when I was at Unity College, I was in a center, which is like a department, for biology and marine biology. Now I'm in a department that focuses somewhat on computer science, but is a little bit more broad and interdisciplinary than that. So I guess I'm used to being a mathematician in other departments.

Evelyn Lamb: [01:47](#) I guess a fish out of water, but hopefully you don't feel like a fish out of water.

Carrie Diaz Eaton: [01:51](#) No, I actually really enjoy the boundary-spanning work that I do.

Evelyn Lamb: [01:57](#) So actually maybe we can start with that. What is your research in?

Carrie Diaz Eaton: [02:00](#) My research right now primarily centers around creating partnerships and communities to support instructors engaged in teaching interdisciplinary mathematics. I was trained as a mathematical biologist, specifically my PhD work was in the co-evolution of mutualistic communities. This basically means that I studied how and why diverse communities confer resilience and stability. And so I think a lot about these ecological and evolutionary processes, also to my work in STEM education.

- Evelyn Lamb: [02:41](#) So how did you end up on the path to become a mathematician?
- Carrie Diaz Eaton: [02:45](#) It's kind of interesting because I think I was pegged by my whole family as going to be a mathematician, maybe everybody except myself. So I just kind of loved doing math for fun. I would do math workbooks while I was waiting for my sister to get out of her gymnastics class every Saturday morning. And I think my parents thought it was a little endearing and they liked encouraging it. But in particular, my father had an aunt who was a math teacher, and so he said, "Oh, you're going to be just like Tia Luz." And so he just kind of assumed that I was going to be a math teacher. I even helped my sister when she was doing math homework, growing up, and I would help my mom... She went back to college when I was older and she was an adult. I helped her with her math homework. But I was very determined actually not to be a math major. And so it took me a while before I came back around to that idea.
- Evelyn Lamb: [03:55](#) So you were tired of being typecast?
- Carrie Diaz Eaton: [03:58](#) Maybe. I think I didn't know what my options were for math, other than just doing the teaching part. And I, in particular, was really, really interested in all sorts of questions about conservation, and kind of helping the world in some sense. And I thought I had to be a zoology major to do that. I didn't see how I was going to combine them. I just assumed that if you were a math major, you had to study math for the beauty of math. And I didn't realize that there were other opportunities until much, much later.
- Evelyn Lamb: [04:44](#) Did you enter college then as a major in zoology or biology or something like that?
- Carrie Diaz Eaton: [04:50](#) Yes. I only applied to schools with zoology kinds of degrees and majors. I was absolutely sure that that was the way I was going. And by even the first semester there I was tutoring other kids in the study lounge in their mathematics for engineering calculus classes. And before I knew it, I was like, "Oh, maybe I should take some more math classes. I kind of miss it." And just a little bit more, a little bit more. And finally I just said, "You know, I'm going to switch. I feel like I'm fighting the math, but it's the part that comes easy." And I had also found a really, really great community in my math department.
- Evelyn Lamb: [05:42](#) Can you talk a little bit more about that and how that drew you towards the subject?

- Carrie Diaz Eaton: [05:47](#) So we had this sort of math club and we would hang out. It was fun. It was bonding. We had fundraisers like Pi Day to help fund a computer lab for the upper level math students. We did all sorts of things for the math department. And at first I just joined just because I was hanging out in the math department a lot. Then next thing I know, I'm now a tutor in the math department's help center, and then I was taking more classes from different professors, and I got to know all the professors. And it was for a State program. I went to the University of Maine. For a State program, it was a fairly small math department. It was maybe 40 or 50 majors. And so that meant my upper level classes were 12 to 15 students each. And we just really got to know each other really, really well. And my professors knew me really well. And this was very, very different from my biology classes in which my intro classes were 200 students. My advisor had 40 advisees. He didn't know our names. It was just a completely different experience altogether.
- Evelyn Lamb: [07:12](#) And how did you learn that you could combine the math and the biology?
- Carrie Diaz Eaton: [07:18](#) We had just hired, in that math department, a brand new person in computational neuroscience. I think I became interested just before that. I was in an evolution class. I was finishing courses for my minor in zoology. And they were talking about how systems evolve to optimal fitness. And then I was also kind of thinking, well, this sounds like gradients. There should be some math here.
- I tried to talk to the professor. He didn't really know, and he referred me to some papers written in the 60s, and around the same time we had made this hire. And so I started talking to people, because I would have to do the senior thesis, and nobody was quite in the area of evolution I was interested in, but the hiring of this new faculty member, Dr. Sharon Crook, was brought to my attention. And they said, "Well, you know, she's been here for a few months and I think she's looking for a summer research student, and so you should really talk to her." And next thing you know I'm doing mathematical biology work in computational neuroscience. And that's what I ended up doing my thesis in. And then I ended up staying and doing my masters with her before she moved to Arizona State.
- Evelyn Lamb: [08:51](#) You said that you were interested in the math of evolution, but then you ended up doing computational neuroscience actually for this thesis. Have you studied a lot of different topics in mathematical biology?

- Carrie Diaz Eaton: [09:05](#) Yes. So actually my very, very first research project, it wasn't quite mathematical biology, but I was invited by my topology teacher to work as a research assistant in geographic information systems, which has some environmental applications. And then I went into computational neuroscience. When I decided to do my PhD, I said, "Well, I'd really like to go back to evolutionary theory and I can choose my school based on who does that." And so then that brought me to the University of Tennessee.
- When I accepted my job at Unity College, because it was a primarily undergraduate institution that focused on environmental work and did not have a math major, I started two additional research programs. One in disease ecology, which made it very easy for students to onboard into. They could take just a couple of math classes and be prepared to engage in undergraduate research there. Then I also started a research program in mathematical biology education. And I think the students actually have pulled me in a lot of directions. So there've been a lot of students who might have interest in environmental indicator work, or marine biology, or something else. And so then I have to learn enough to advise those students. So I've dabbled a lot in a lot of different areas.
- Evelyn Lamb: [10:33](#) Did people encourage you to go to graduate school and get a PhD when you were an undergraduate?
- Carrie Diaz Eaton: [10:40](#) I'm not sure who really was responsible for any kind of particular encouragement. I think I just had a sense that most math majors went to graduate school, and I think that was just because of the type of school I was in and the types of jobs that were available in the area. There wasn't very much that I could locally do without a graduate degree.
- Evelyn Lamb: [11:06](#) And did you want to stay in Maine then?
- Carrie Diaz Eaton: [11:08](#) I did have in mind to stay in Maine, but there's no PhD program in mathematics in the State of Maine, and so I was actually forced to look elsewhere. I'm not from Maine originally.
- Evelyn Lamb: [11:21](#) Oh, okay. I guess I kind of assumed if you had worked in Maine and you went to a college there.
- Carrie Diaz Eaton: [11:27](#) Yeah, I think nobody can quite qualify as a Mainer without several generations invested in the state, but I've been there more years than I've been anywhere else. I just kind of knew

that my career options were limited if I didn't get graduate education.

Evelyn Lamb: [11:45](#) So who are some of the mentors or role models that you've had as you've proceeded through your career?

Carrie Diaz Eaton: [11:52](#) Certainly having the opportunity to work with the math biologist, when math biology was a fairly new hot thing in the nineties, really was very nice. I was listening to one of the other podcasts earlier today, and somebody said that in terms of role models, she didn't meet another Hispanic, or a person of color, with a PhD until much later. And I think that was also the case for me. I didn't have any throughout my entire undergraduate or graduate education. I did not have a single underrepresented minority professor in any of my classes, math or otherwise.

So I think most of the role modeling came from the broader community. And then I also had some really wonderful people who just encouraged me, period. People from the department at the University of Maine for example, that asked me into their research projects, or that same professor that encouraged me to take his topology course, even though I was like, "Really, should I be in that?" "Yes, you should be in that." And so those were really wonderful encouraging moments for me.

Evelyn Lamb: [13:15](#) And I know no career is without some ups and downs. How have you faced challenges and overcome those in your career?

Carrie Diaz Eaton: [13:25](#) I was at this summer workshop last year, that was for a leadership institute that SACNAS runs. And I was talking to some colleagues there, and they said, "Carrie, you have like this super power of positive reframing." And I said, "I didn't even realize that I was really doing it." I guess what I do, without thinking, is I try to reframe the challenges that I've faced into opportunities. Sometimes that can be really hard to step away enough so that you can see a challenge as an opportunity.

Evelyn Lamb: [14:04](#) Right. It could be easier said than done.

Carrie Diaz Eaton: [14:06](#) Exactly. But apparently I do it now so often that I don't even notice I'm doing it. So I think certainly that helps. Sometimes that can bring challenges of its own, because I tend to be maybe more optimistic than a situation might call for. But overall, I think, for example, when I was starting to do a little bit more work in inclusion and diversity and getting more grants, and my college wasn't as equipped to deal with some of that, it was a real challenge. How was I going to do this work? And

fortunately I was able, when I had a sabbatical, to be able to really take it at a place that could support that work. And it helped me get another step forward.

When I accepted the job at Bates, moving to something like a computer science department could be really, really scary. And it was really, really scary. But on the other hand, it gave me a chance to do some teaching in some areas that I might have given myself excuses not to do before. And I really said, "I'm going to do this. I can do this, I will do this, I'm going to do this." And if that was teaching in a class in a new programming language, or teaching a class in which I really had to be frank with students about inclusion and STEM, those were really challenging moments that I think only came about because I really tried to treat them as opportunities to do something better.

Evelyn Lamb: [15:41](#) And can you talk a little bit about the inclusion and diversity work that you've done?

Carrie Diaz Eaton: [15:46](#) Some of it has just been in the realm of sort of boundary spanning. I think there's a lot of similarity between the way I approach interdisciplinary work and trying to work across aisles between mathematicians and biologists and now computer scientists. That's very similar to working across aisles of different communities within mathematics. So right now I am the Mathematical Association of America Chair for the Committee on Minority Participation. So we're working to think about what is our charge for that committee moving forward. What does minority participation mean? Who are we trying to elevate as voices? Being very thoughtful about that.

I recently helped organize, this past spring, an NSF INCLUDES Conference about environmental data science and inclusion, which brought a hundred people to Boulder, Colorado to talk about what are the major challenges facing the environmental and ecology communities, in terms of the emerging data science research front, and what that means for education pathways for underrepresented students. And in my own teaching, I've been teaching courses that center around ethics and inclusion and computing, as well as thinking about what kinds of projects can we use in the context of a computing or mathematical computing class, that explore data related to these issues. I have helped organize the Math Mamas Project, which was launched out of a Math Mamas Facebook Group, but has many components that I work on with many other

mathematics colleagues, that are about raising the narratives of motherhood and academia in mathematics.

- Evelyn Lamb: [18:06](#) So do you want to close with any advice that you might have for students who think they might be interested in math but aren't really sure?
- Carrie Diaz Eaton: [18:14](#) I think I just thought that math was very limited to what I knew existed. And I think that what's amazing about it is it combines with almost anything, to enhance almost any passion or interest. So don't ever think of it as a math or something else, but how could math help you do something even more with what you love already.
- Evelyn Lamb: [18:51](#) Well, thanks a lot for taking the time to talk with me.
- Carrie Diaz Eaton: [18:54](#) Thank you very much, Evelyn. I appreciate it.
- Evelyn Lamb: [18:59](#) Thank you for listening to the Lathisms podcast. It's produced by me, Evelyn Lamb, and made possible by a Tensor-SUMMA Grant from the Mathematical Association of America. Our music is Volveré by La Floresta. Lathisms is an initiative to celebrate the accomplishments of Hispanic and Latinx mathematicians. It was founded in 2016 by Alexander Diaz-Lopez, Pamela Harris, Alicia Prieto-Langarica, and Gabriel Sosa. You can find more information about the project at [Lathisms.org](http://Lathisms.org). That's L-A-T-H-I-S-M-S-O-R-G. Join us next time to hear from another inspiring mathematician.