In this episode, Confluence interviews Michelle Terwilliger, Ph.D. candidate in Forestry and Conservation Sciences at UM. Terwilliger is winner of the P.E.O. award which honors female graduate students making a distinctive contribution to education. In our conversation, Terwilliger discusses her work with Montana EPSCoR where she manages a statewide research program. Terwilliger also describes her love for research, the complexity of infinitely variable human beings, and the community of researchers at UM.

This episode is the second in a 3-part series exploring the power of collaborative work in natural resource conservation and highlighting the role of three dynamic, independent female scholars at UM.

Ep.69 Terwilliger Script: PEO Scholar

STORY SCRIPT

Kinch: This is Confluence, where great ideas flow together. The podcast of the Graduate School of the University of Montana. I'm Ashby Kinch Dean of the Graduate School on Confluence. We travel down the tributaries of wisdom and beauty that enriched the soil of knowledge on our beautiful mountain campus.

Libby: Yeah. Chelle is interesting. She's an electrical engineer turned social scientist. What I love about her is that she's probably one of my most quantitatively inclined students. She has far surpassed my knowledge on quantitative analysis. And so she'll come back to me and ask me a bunch of questions about a model she's running, and I'm like, Chelle I have no idea. You're the expert. Not me.

Kinch: You just heard the voice of Dr. Elizabeth Metcalf, talking about her student, Chelle Terwilliger, who is completing her PhD in UM's program in Forest and Conservation Sciences.

On Confluence, we like to highlight graduate student accomplishments, and in this episode we celebrate Chelle as a winner of the PEO Award, a national organization that honors a female graduate student making a distinctive contribution to education.

Chelle is finishing her PhD, working on a project studying the collaboration models in science teams. She's been a Project Manager and Administrator of UM's EPSCOR grant since 2016, and

that work has introduced her to the interdisciplinary team-building and collaboration that makes for the best science.

In this episode, we discuss her path from prior training in Physics and Engineering into her work in the social sciences, as well as her positive experiences with a range of faculty at UM in Biology, Business, and Forestry.

We're proud to share her story with you on Confluence! Enjoy the float!

AK: Welcome to Confluence Chelle!

Chelle: Thank you so much for having me, Ashby.

AK: It's great to have you in here. And we're here congratulating you on the PEO Award.

Chelle: Thank you.

AK: Tell us a little bit about what that meant to you.

Chelle: It is a huge honor to receive this award. And Libby Metcalf gets a lot of credit, of course, as my advisor for encouraging me to apply and helping me and supporting me in that application. But I have to say it is validating and it means a lot for me as far as my focus going forward with my studies too. It's going to allow me to put a little bit more focus and emphasis on my research within the next calendar year.

AK: Relative balance of work versus focus on the research.

Chelle: Yes.

AK: Well, say more about that. I mean, your work life is a key part of why you're here at University of Montana.

Chelle: Right! So I work as the project administrator for Montana EPSCoR, and that's a statewide program. And I'm working basically helping manage a research project that involves faculty at the University of Montana at Montana State and at Montana Tech and Little Bighorn and the tribal colleges and universities.

AK: Another thing on confluence that we like to elevate, there's a lot of interesting work going on campus linking out to the TCU's.

Chelle: Yes, absolutely. So it's a huge collaborative research project and then faculty, students, post docs and it's complicated enough that we have an administrative team to help things work. And so within this work, basically that's how I actually ended up in graduate school again. This is my second round and then a little bit different field, right?

AK: Well, yeah, let's talk about that for a second. I mean, you have an MS in Engineering.

Chelle: Yeah, I have an MS in Engineering from Montan-

AK: We'll edit that part out.

Chelle: Both excellent schools, of course.

AK: So you got the engineering degree, but you've been working in EPSCoR, but then you're sort of through that work, kind of got interested in grad school again.

Chelle: Right. So as part of this collaborative research, I'm doing project management. And Ray Callaway. I worked for Ray Callaway. And Jakki Mohr is part of our team. And they actually had this idea of we're doing this big collaborative research project and that in itself is a big undertaking. And is there an opportunity here to take a look and research how people are working together.

AK: And listeners of our podcast will know about the Jackie Mohr episode, which we just released a few weeks ago. She's an amazing business professor, but who does a lot of work in forestry, conservation especially, sort of putting value, trying to convince businesses to put value on natural resources.

Chelle: Yeah, she's done some great work in that area and she's collaborated with Libby Metcalf, Alex Metcalf and then also Theresa Floyd, who is also in business. And so all of these together we started having a discussion about, is there an opportunity here? And Theresa Floyd does social network analysis. And so Ray Callaway, my boss, I was fortunate enough. The great thing about my job is I get to work with all these wonderful, really interesting and smart people with all these great ideas. And so I kind of got looped into this research project and started learning about social science, which is something that I didn't know anything about. I mean, I studied physics and I studied engineering, and like, social science always seems like it has so many degrees of freedom. It's so complicated that when you start in something like physics, you're like, how could you possibly do this?

AK: How do you constrain your variables?

Chelle: Exactly.

AK: These crazy humans.

Chelle: Exactly. And I think that yeah, and I still have moments where it's almost kind of overwhelming because you kind of get this imprint wherever you start in science, it's sort of how you approach things. But in the end, as another member on my committee, also in business.

AK: Chandler mentioned and again, for listeners, Chandler does big data. He's a data scientist. Effectively, he's a school of business person, but his underpinnings are like computational math.

Chelle: Yeah, he pointed out to me, as I think he could see the internal struggle that I was having with this. He pointed out that in management, whether you're in business or something else, people are going to be making decisions. People are making decisions all the time. And I can relate to that in my job as a project manager. It's complicated, it's complex. There's all these things. It's these different angles and different ways to put things together. So we're making these decisions all the time, and wouldn't it be helpful to have a little bit more data or a little bit more research to inform all of these decisions? And so perfection is the enemy of good, right? So it's difficult to really be able to explain all of I mean, what I'm really studying is collaboration in a particular context. That's a hard thing to get after. Can you bottle this up quantitatively? Well, we can sure try. And that could be a valuable contribution.

AK: As you were exposed to this broader project, you kind of can see that, hey, there's serious research to be done here. You thought, I'm going to go pursue a PhD in It. And you found this fit in this program where Libby Metcalfe does work a lot on this interface between the social systems and the ecological systems. And that's what attracted you to apply.

Chelle: Absolutely, yeah. And I have to say that first I just thought, well, I don't really understand that, so I should go take that class, and then maybe I should go take that class. And then finally I realized maybe I should consider going back to school. So one thing leads to another, and it's such a wonderful opportunity. I'm grateful to all the people that I've already mentioned and the people that I work with on my team that are helping me balance this work and school relationship. But it's great.

AK: Yeah. And of course, graduate school houses the Interdisciplinary Studies Program, and someone like you, in a weird way, would be a good match with it. But when you work in a field that is already kind of interdisciplinary, in other words, it already folds different methods into it, it's a better fit because now you're in a domain that your professors and your researchers are all kind of agreeing with the spot. Right. And that spot for you is ecosystem work or ecological landscape work.

Chelle: I'm in Forest and Conservation Sciences and in the Human Dimensions Lab with Libby Metcalfe and also Alex Metcalf run in that lab too. And it's a wonderful home for me. I'm learning a lot both from Metcalf and also from my lab mates and Ada Smith, who you all get to hear from as well. But I think that for me, it's a really interesting obviously, my previous work isn't going to transfer in, and so I'm just kind of like a fish in a brand new like not just a new pond, but it's like a different ocean or something, picking up all these invasive species. Yeah, I think I am an invasive species, perhaps, but yeah, it's a great opportunity.

AK: And so you finish the PhD probably in a couple of years. The P.E.O of course, gives you some funding that allows you to back off some of your work for a while and focus a little bit more on your research. You'll finish a couple of years. What do you think you'll do after you complete the PhD?

Chelle: Oh, that's a real thing. I have a question. I'm interested specifically in science teams and how they are working together. There's been a lot of research on teams within other contexts like military medicine, health sciences, and then also organizational behavior. And some of that translates and some of it doesn't necessarily. And it's a really interesting animal, I think, especially because we're really starting to just do more and more and more collaborative research. There certainly is a lot of value in research done in one lab that will continue to be valuable, but there also tends to be more and more funding opportunities and just more and more opportunities for researchers to collaborate across institutions, continents, disciplines, of course, interdisciplinary work. And so I would like to keep working in that area. I love the research element, and I also enjoy my work as an administrator, are in doing management work. And if there's a way to combine some of it, I think that would be the ideal. As far as what that looks like as a career job,

AK: You could put that off a little bit longer. But I think that idea that you'd focus on, I don't want to say meta studies, but studies about what are the principles that move across these different kinds of teams. And so I'm guessing one of the things that would translate as questions of expertise, who has the expertise and who doesn't, questions of hierarchy, who's in the where and the decision-making chain. Some of those things would probably move over into the science realm, but then there would be different maybe social pressures in terms of how the sociology of different disciplines function across a collaborative team. Academia is a very proud place. Right. People are very vested in their models, so there might have to be more attention in the model discussions or something like that. Is that kind of the area you're talking about?

Chelle: Yes, all of those things, definitely. Like, if you're going to make typologies of the different types of teams where some teams are doing things like fast and with high consequences really quickly, that's military model. Yeah. Not academia. Right. Many things, I think, from organizational behavior, if you look at especially within industry, there's a lot of research that's done in industry, too. So some of those things, science teams in both places, there's some crossover, but then also the way that information flows is perhaps going to be a little bit different in the academic environment than in industry, perhaps. And I think that I mentioned network analysis and networks is a really interesting tool that they use networks in physics and biology, food webs and things like that as well, epidemiology for the flow of information and disease. And I think that's a really interesting lens to look at how people work together as well because it's relational. You're looking at how people behave in.

AK: The context of others and it's relational. But it's also that model allows you to pull, to view it from a semi-objective perspective. People are nodes rather than people carry around their own narrative on how they relate and how they communicate.

Chelle: Right.

AK: But this actually shows objectively how they're doing it with their points of contact are where they're communicating, not just the subjective report of a subject who is saying, I love to talk with team members.

Chelle: Right. Yeah. As much as I can reduce the data reduction, my initial training, like, I tend to go in that direction if I possibly can.

AK: Totally. Yeah. To eliminate the noise.

AK: So with all of this experience that you've been accumulating and working in teams, what do you think about your experience here at University of Montana as a team member and as a part of a community of researchers?

Chelle: I think that I have kind of stumbled into just a really wonderful opportunity in community. And I will you know, Ray Callaway, who is my supervisor and he is directing this research project that I'm going to be part of. He really was the one that came to me and said, I think you should check this out. I think you might really like this and you might be really interested in this. And so he brought me into these conversations, introduced me some of these people I met through work, but in a different context. I got to start interacting with some faculty around here and who have all just they're brilliant and exciting and interesting and are just wonderful mentors. And I think that getting to work with everybody in the Human Dimensions Lab, Libby and Alex Metcalf, both leading that lab, but also the other graduate students. I'm learning so much from them as well. And I don't know if they realize it, but class discussions or lab discussions. It's a wonderful environment and I'm really grateful for the opportunity.

AK: Well, that's a story we love to hear in the grad school in particular because it really highlights just what incredible talent university attracts. And our graduate programs are just full of incredibly talented, creative, thoughtful people that form these intellectual communities that have such great impact on the country, the state, the region and the country they had often make an impact wherever they go and they carry this model with them. It's really lovely to hear you put it eloquently.

Chelle: Yeah, I think that especially because I think for me it gets underlined even more because I'm switching disciplines too. I started out in engineering and here I am in social science. And so it's really it's wonderful to get to hear these different perspectives just in discussions with other students. So it's great opportunity.

AK : Well, thank you so much for joining us on Confluence Shell.

Chelle: Thank you very much for having me Ashby it's been a pleasure talking with you.