Patrick Shults (00:13):

Welcome to the Forest Over Story podcast. This podcast explores forest stewardship in the Pacific Northwest, helping landowners and professionals gain new insights and information in the field of forest management. The Forest Overstory is a product of the Washington State University Extension Forestry Program, and it's supported by the Washington Department of Natural Resources and the Society of American Foresters. All right, well, welcome back and Happy New Year. I am Patrick Schultz, your host and extension forester with Washington State University. I hope you all had great holidays and are looking forward to the coming year of the Forest Overstory podcast. We're kicking things off really well. We're kicking off 2024, right, with a conversation about a very innovative WSU program addressing something that all of our listeners will be interested in, and that's forest Health, a very important topic to be discussing, and it's a big topic, but we'll get into the nitty gritty a little later. Before I do that, I want to welcome back my co-host and fellow extension forester, Molly Dar. Molly, how's it going?

Molly Darr (01:20):

It's going great, Patrick. Thank you so much for having me back on. I'm excited to be here for this conversation today.

Patrick Shults (01:25):

Well, it's always good to have you. Glad to have you back on the program, and as I said, we're starting off the year really well with a great guest, frankly, a long overdue guest. It's someone we've been wanting to have on for a while. We've actually had quite a few requests to have this person on. I can't say that about every guest. So we are joined today by Joey Holbert, a researcher with WSU Extension Research Center in Puyallup and manager of the Forest Health Watch program, which is a very, very cool program that we're going to talk about today. So Joey, thanks for joining us. How are you?

Joey Hulbert (02:03):

Great, great. Thank you so much for having me, and thanks for the kind words and the introduction. I'm thrilled to be here finally, and excited to share about the work and the opportunities in Washington and beyond.

Patrick Shults (02:17):

Yeah, yeah, as I said, I mean, you've been on my list since the very start of the podcast over a year and a half ago now, and it's really just my fault for taking so long to get you on. So we're excited to finally have you here. Maybe we start just by getting to know you a little better and you can tell us a little about your background and how you ended up at WSU in this position.

Joey Hulbert (02:42):

Yeah, excellent. This is kind of fun for me. It's almost a full circle because I think a lot of what I do now was inspired by a radio show. So I was an undergraduate at Washington State University in 2020. I grew up in Kansas actually in a landscape deprived of trees in the Kaza Prairie. So when my family moved to Pullman, I had to study forestry at Washington State University, and I'm thrilled that I did. But while in Pullman, I had the opportunity to be a broadcaster or have a radio show on KZUU, the college radio station. And after that I went to Oregon State University for a master's and was also on their radio program, KBVR. And at KBVR, we started a program called Inspiration Dissemination, and it was a talk show and we would invite grad students on to share about their research and their science. And I think that really inspired me to pursue a science communication and a science engagement type of program. And that's where we are today talking about Forced Health Watch, how we can get more communities engaged in learning and also studying and discovering about tree health issues.

Patrick Shults (04:15):

Well, that's awesome. I just learned two things. One, that you're a fellow mid westerner, which is great. I love having Midwesterners on, and for some reason we have a lot of 'em on. But second, that you should probably have my job with all your radio experience. You have much more than I, it sounds like. But I'm curious, in your master's and your further graduate work, what was your area of study? What did you actually focus on inside of forestry?

Joey Hulbert (04:47):

Yeah, good question. So as an undergrad at WSU, I tried really hard to have summer research experiences, and my first field season was with Rocky Mountain Research Station in University of Idaho looking at forest fire and prescribed fire and thinning, pre-commercial thinning and the impacts they have on wildfire. After that, I did a field study with climate and growth in Sierra Nevadas. That was my second summer as an undergrad. And then my third summer was on mountain pine beetles in Eastern Oregon. And that kind of gave me a well-rounded experience in forced health, I would say. But it was really during my master's or just before my master's, I was working with Everett Hansen at Oregon State University and learning about sudden oak death. And so that started me on this trajectory of plant pathology and plant diseases and forest pathology. And so as a master's student, I studied a group of microbes called Phytophthora that caused some important tree diseases and agriculture diseases, but notably sudden oak death. And then I continued to study that group during a PhD and I went over to South Africa and did a PhD at the University of Pretoria with the Forestry and Agriculture Biotechnology Institute. And I studied phytophthora diversity in their kind of biodiversity hotspot, the Cape Theistic region. And so together, all of those experiences have really given me a background in forest pathology and thinking about how microbes affect the health of our plants and trees.

Molly Darr (06:44):

Joey, that's incredible. And it's really putting quite a few pieces together for me. So I've only been here for about a year or so, and I was immediately struck by one, how calm and capable and collected you are at leading all of these different meetings and how you appear behind a mic. So your personal history is definitely, that makes a lot more sense to me now. And then also just something, being in the forest health field, it's abundantly clear how crazy diverse it is, and it's like you can't really be comfortable just saying that you are any one kind of expert. You sort of have to be a generalist about pathology and forest pests and climate change and all this different stuff. So all of your background really makes sense why you were able to start such a terrific and impactful program like Forest Health Watch. I was wondering if you could just kind of give us a little bit of a background of how that came about in a general description of what Forest Health Watch is.

Joey Hulbert (07:46):

Absolutely. Yeah. And again, thanks so much for the kind words. You both are giving me more credit than I deserve, I feel like. And pretty much my path to get to where I am is I had really great mentors and a lot of good opportunities, and happy to share more about any of that. But the Forest Health Watch really just came about through passion for community engagement and filling that space between scientists and society or members of society. But I really, really, I think I attribute that interest to my time with inspiration dissemination, that radio show. So during that was the first time I was ever introduced to this concept called citizen science. And somewhere out there, there's this recording of this discussion we were having with someone who worked with Whale Watchers to track individual whales in Alaska.

(08:58):

In that case, the people leading the tour boats and taking people on whale washing events were kind of experts, but also citizen scientists helping collect data and information. And so ever since learning about

that kind of application of citizen science in the method that professionals like an arborist, for example, can get involved in our tree health work, I've always wanted to do projects that anyone can contribute to or that people without formal training can contribute to. So in South Africa for my PhD, we actually started a program called Cape Citizen Science with that same interest, and we tried really hard to engage communities in the research and collecting samples and learning about microbes in the environment. And we did something like 19 different hikes with underserved youth in South Africa, and it was incredible and I loved it. And so leaning on that experience in South Africa, we wanted to do similar thing in the northwest and got really fortunate to find an opportunity. We applied for A-U-S-D-A National Institute of Food and Ag Fellowship. So they have postdoctoral, they have graduate student fellowships and postdoctoral fellowships, and we are grateful and fortunate to receive one to start the Forest Health Watch. And so that was in 2020, may of 2020, we got that funding. And at that time, the proposal was actually titled Forest Health Defenders.

(10:48):

You might not know that.

Molly Darr (10:50):

No.

Joey Hulbert (10:50):

But then once we got the funding, we kind of pivoted and stepped back and asked our stakeholders and our partners, what should we title the program and what should we research and what is the priority concern that we need information about the most urgently? So once we had the funding, sorry, go ahead.

Molly Darr (11:13):

Sorry to step on you. I was just thinking that that makes a lot of sense. It kind of puts the ownership, it's like a neighborhood watch almost like puts the ownership on the participants, the citizens to, I don't know, take the forest is their own to protect and to, I dunno, just be active in that protection and that surveillance.

Joey Hulbert (11:35):

Yeah, I think I hear you. I agree. There's the sense of guardianship that we could instill a lot better. You look at countries like New Zealand and you have the Maori people and there's just so much, maybe because it's just an island, but there's this sense of biosecurity. Everyone has a responsibility in protecting our cowie trees or culturally important trees or communities that rely on this. But in the US we don't necessarily feel that, or it's not as clear. You say biosecurity and someone's like, what is that? And why am I responsible for keeping our trees healthy? And there's someone in the government that does that, right? So that's an important piece that we could leverage a little better. And I think that's one of the main goals of the Forest Health Watch is to provide people with that opportunity to step up and help guard. Or sometimes I ask, are scientists the only ones carrying the weight, biosecurity on their shoulders? How do we share those pressures and the need to protect our environment or our trees a little more?

Patrick Shults (13:00):

And I have to say, worded it as providing an opportunity. I think that's really accurate because there a lot of people care about trees, whether or not it's something they actively think about, I don't know, but everyone at least has a passive admiration for trees. And then when you start seeing these forest health issues, it's when that gets really triggered and then all of suddenly people finding that they have this energy, this concern that they need to direct somewhere about these trees, but they have nowhere to turn. And I think that's something I've run into a lot in this job is people with no forestry background, very little

background in any sort of plant science and not really knowing what to do with this concern they have for these trees that they see dying alongside of the road. And I think Forest Health Watch does such a good job of giving people an opportunity and sort of empowering them. So I think maybe you should go back to Forest Health Defenders. Yeah, I mean very empowering name.

Joey Hulbert (14:08):

Yeah, I think it sounds more like a nonprofit though, and we

Patrick Shults (14:14):

Oh, sure.

Joey Hulbert (14:16):

I don't know. I guess it wasn't that we didn't really like it. I just feel like that was a proposal that we wrote without engaging our stakeholders. And for me, there's a difference between community science and citizen science, and it kind of depends on how engaged the community is in shaping and creating and identifying the issues. And so to really make this more of a community-based program, we wanted to be as inclusive as we could in the decisions about what is called and where are the actors and what are the problems.

Patrick Shults (14:52):

Could you actually describe what the differences between community and citizen science to you? I don't think I'm really familiar with that.

Joey Hulbert (15:01):

So I mean, I think a lot of people use it kind of interchangeably now, and I think that's fair because a lot of pushback on the terminology of citizen. Essentially we want to engage anyone and don't want to limit it to citizens by definition. And this is very much an American problem of just the use of the term citizen. But it is tricky too because community science is by its own, right? Its own discipline. And there has been community science for a long time, and this is essentially the community comes up with a problem, figures out the research that's needed, or the data collection that's needed then addresses or finds that data to address that problem on their own. Whereas citizen science is typically like a researcher has a question they're interested in, so they solicit citizen participation to address or answer that question. But we want to be more inclusive than that traditional kind of citizen science role. At least I do. So that's why we try and do more community engagement upfront. For example, Molly and I have been hosting some collaborator updates recently where we're asking all our partners and stakeholders, what should we study next? Trying to rely on our communities to figure out what is the most important before trying to design a project around it and decide if citizen science or community science is a feasible approach. But I think, yeah, I'm really

Molly Darr (16:47):

Fruitful. No, I'm glad you brought up those meetings and it wanted to lead me into another question that I had, but I thought that those discussions have been really fruitful. And just to me, I'm blown away by just the amount of passion across the board with all of these different stakeholders that we have. So many people really have concrete, fully formed ideas that they want to jump in and sink their teeth into, but there's always the question of time and funding. But through bringing up those topics that they're feeling like they want to address, but they don't have the way to do it, other folks are able to step in and kind of lend a helping hand and be like, oh, well, I've got a pool of money that could potentially be directed towards that. Let's have an offline conversation. So I've found those to be really, I dunno, pretty thrilling

honestly, to witness Joey, I was wondering if you could talk to us about maybe some specific citizen science initiatives that you have been really psyched about since starting Forest Health Watch in 2020?

Joey Hulbert (17:50):

Yeah, cool. We designed the project to be, well, excuse me. We designed the program to be more of a program where there's multiple projects within the program, if that makes sense. So the Forest Health Watch needs to be in a position where it can change depending on a new issue. For example, if Mediterranean Oak bore shows up more places like it has been found in Oregon recently, maybe leveraging the community that we built to look for Mediterranean Oak border. But it's hard to say what the next issue is going to be. So to be flexible is important. So we've kind of structured the Force Health Watch to have different projects, and the pilot project was really focused on the dieback of Western Red Cedar, which we can talk about a little more in a minute. But generally, there's a ton of projects that excite me and would be, I think, I guess what I'm most interested is finding those projects that are most exciting to communities as well to people on the front lines or to youth that we could reach out to in schools.

(19:04):

But a couple projects, there's a couple tree health issues that we're looking at and thinking about. There's been some reports of dieback and Western Hemlock. There's also some issues with sword ferns. And so we've been thinking about projects along that. But there's also some really neat projects out there, like this project led by Yuri Holger's program at University of Florida in the past called The Backyard Bark Beetles, where they developed this really cool method of luring bark beetles in with hand sanitizer into these Coke bottles that they've reused and retrofitted into traps. And we did that just very once or twice with youth in South Africa. And the reason I'm so intrigued by it's because the youth just loved it. It was such a fun activity to do with youth catching these bark beetles. And so while the bark beetles or the ambrosia beetles may not be our stakeholders number one concern at the moment, maybe it is, maybe. But either way, I think it could be a fun project to look at going forward just because of the fun that the communities can have with it. This, before we move on, I do want to say any of our listeners, we'd love to hear from you on what your priority concern is or what tree health issues you would like to see more research on. Don't hesitate to reach out forest health.org. There's a page on there where you can recommend a research project or you can just contact us.

Patrick Shults (20:53):

Honestly, I just got to give you kudos for developing such a, I'm just struck by how evergreen the concept is. It just seems like a program that's very adaptable, very dynamic and modular in a way that it can take on new projects as they arise. And the unfortunate reality is that forest health, there's always been forest health issues, but the next century it looks like there's going to be a lot more. And so really this is a very dynamic program. I'm excited to see how it rises to meet a lot of those, like you said, like Mediterranean oak or emerald ash or any other invasive species. It's just one facet. But yeah, lots of cool projects that keep people engaged and hopefully have a little fun, like you said. While they're doing it, I do want to dive, as you said a little more into one of your projects like the Western Red, the pilot project, the one that's been going on long just to get into the nitty gritty and so people can have an understanding of how one of these individual projects looks. So like you said, Western red cedar decline, this is a phenomenon that's been happening in Washington for a little while. Can you describe for our listeners what that refers to?

Joey Hulbert (22:11):

Yeah, and I guess there's some, depending on who you talk to, they prefer the term dieback versus decline, and I guess that's related to decline. There's a number of diseases that are actually called declines because they know there's a biotic organism causing the decline, whereas in the Red Cedar case, we've

been calling it Western Red Cedar Dieback because we don't really know what the cause was, or we didn't until recently. So recently some colleagues from Washington State University led by Robbie Andres would be a great guest in the future, did an incredible study where they kind of cord trees at different health categories in different time sense mortality essentially. And we're able to link or find evidence for a relationship between the western red cedar dieback and the recent longer and hotter summers we're having in the Northwest. So it does seem like Western red cedar dieback is primarily an issue because of recent climate or recent events, climatic events in just general trend of longer and hotter summers in the northwest.

(23:41):

But since 2020, we've been kind of engaging communities to look at this and to map where trees are healthy and where they're unhealthy. And we've just been building this incredible network of community scientists that are passionate about this. And for example, more than 700 people joined the iNaturalist project, and more than 300 of them have shared observations of either a healthy or unhealthy tree. And some individuals have shared 250 trees in there. So there's just some dedicated, incredible people willing to share in their pursuit of knowledge and understanding about what's going on with Western Red Cedar.

(24:33):

So yeah, I think maybe late November we were celebrating because more than 2,500 trees have been shared by community scientists now, and it's just an incredible data set that we've been slowly analyzing, but we certainly welcome anyone else to participate and get involved in the data analysis of this. All that data is open, it's available on iNaturalist, and we would love to work with more people and make sure anyone that's interested can be involved and included. So that's kind of where we're at. We have this awesome data set and this awesome network. In the next steps are teasing out some of the patterns, trying to make some predictive maps of where we anticipate red cedar to be healthy or unhealthy or in that margin. And then also think about next steps now that we know Western Red Cedar may be vulnerable to longer and hotter droughts, what should we do?

Patrick Shults (25:44):

Yeah, that is a huge question, and we should definitely take some time to dig into that, but I got to stop and say congratulations on that 2,500 observation mark. That's really exciting. That was right, 2,500.

Joey Hulbert (25:59):

Yeah, thanks. It's been really cool to see it just kind of keep going and keep going. And we just put a lot of effort into raising awareness throughout the project and maintaining the quality of the observations that are shared and reporting back to contributors about what's going on and what we're using it for. And so it's been neat to see it creep up there, but I do want to step back as well and acknowledge that that project was co-created with, well, I should step back even further and say, okay, from the Starter Force Health Watch, once we even determined the title, red Cedar was clearly the most pressing concern for a lot of our partners and a lot of our stakeholders and the Forest Service and Washington Department of Natural Resources and Oregon Department of Forestry were already working on a ARC GIS dashboard for their own staff to just mark points where trees are healthy or unhealthy.

(27:12):

Well, they were actually doing little plots measuring where trees are healthy and unhealthy. And so we wanted to work with them just to make it so that the public could participate and anyone could contribute to that. And also recognizing that it's very widespread and it's a very urgent issue. And so early, the project we developed with them was on iNaturalist. We worked with them to determine which questions to include and things like that. And they've used this information that community scientists have shared in their own dashboards and their own kind of analysis looking at what's going on with Western Red Cedar. And so it's been really neat to see that full circle as well.

Patrick Shults (27:59):

Yeah, yeah, absolutely. And it must be a really rewarding experience for people or else they wouldn't keep coming back and doing it. Like you said, you have some that have submitted over 250 observations. That's really cool.

Joey Hulbert (28:10):

Yeah. Let me tell you, if you don't mind, I can,

Patrick Shults (28:13):

Oh, go ahead.

Joey Hulbert (28:15):

The individual did 250 observations, also approached us with his own hypothesis about trees. So Western Red Cedar, every year they drop some of their older needles, like their 7-year-old needles. You'll see the internal browning, the browning of the internal part of the branch, like the foliage on the innermost part of the branch is the oldest. And so you'll see every year, every fall, red cedar will start dropping some of those old needles. And so this individual, Jim, he's so incredible. He's already contributed a ton of time and effort to mapping red cedar throughout the Tacoma area. But he approached us with this hypothesis that trees which were receiving water in the summer are going to have less browning foliage than trees that weren't receiving summer water. And so we worked with him to design that project, and he then went back to many of these 250 trees and evaluated how much browning they had. And so it's been just amazing to see some of these community scientists take it above and beyond onto their next, now I want to investigate this other question, can you help me? And we're like, yes, we would love to help you do that. So that's been really rewarding too, just having that interaction with community members that are that passionate and want to contribute to research in their own way.

Patrick Shults (29:49):

Yeah, what a great example of community science. I think we can all attest to how short staffed and how limited capacity we could be in the academic world and the research world, and being able to have spirited volunteers that are willing to go out and do some of that critical work is enormously valuable. So that's just such a cool example. And I want to ask too, because my experience with Western Red Cedar is that it really seems to be tied to sight. And I don't know if you both agree, but to me it seems that what we're seeing too is kind of just a decline of cedar habitat, maybe long-term, some spaces that can no longer sustain cedar where it might've been able to before. And that may be ahead of the research for sure, but it kind of seems to me that that's the direction we're going. I'm just curious at the individual level, what kind of data do people need to be able to collect for someone listening that wants to get started in this and they're worried that they might not know all the terms or anything like that, what kind of site level data do they need to know about?

Joey Hulbert (31:05):

Yeah, I think you're right about that kind of just the change in habitat and the shift in where Red Cedars going to do well or do poor into the future. But very often you'll see a healthy tree next to an unhealthy tree. And so there's still a lot of need for research to understand what's causing that variation within a site. But that's another maybe the next research project. But yeah, generally we tried to simplify it fairly as much as we could generally. And so a lot of people are just adding observations of individual trees, and then you kind of categorize what you're seeing. There's four questions that are pretty core. One of 'em is what symptoms do you see? And so the main symptoms that people report is the canopy will be thin or it'll be really easy to see through. And so that's what we call is thinning. It's dropped so much foliage that

you can kind of see the skyline behind it more than you would in a normal healthy condition. The other symptom that's common, at least on the west side of the Cascades, is this top die back where you'll see the upper third of the tree is just dead and has no more needles, where the lower part of the crown may still be healthy and in vigorous.

(32:39):

So generally I'd say there is a field guide on our webpage force health.org/map, which gives you instructions for how to participate and contribute to the iNaturalist project and through that field guide, hopefully in some self-discovery, you can feel good about using iNaturalist, but we're also there to help. We want this to be kind of an equitable teaching opportunity too. So if there isn't users that need extra help, we're available and would be thrilled to either meet with you or chat with you on the phone to help troubleshoot some of the issues. But really it's just you take a photo and you answer a couple questions about that photo.

Molly Darr (33:32):

I'm glad that you brought up iNaturalist again, Joey. I think that we've been seeing a lot of successes involved with that. I know just yesterday I was given a talk and we talked about the Northern Giant Hornet and also even Emerald Ash bore. And by looking at the I Natural Maps, there are so many committed individuals on the ground who are checking traps, who are doing surveys all on their own, and they're reporting back to the correct authorities in a way that it still looks like, I mean, the Northern Giant Hornet, again, two years in a row hasn't been found. And that's because people speak up and they say what they see. So I think it's just such a cool tool, and I really applaud you for increasing the exposure of iNaturalist, I think, to the general public in a way that I haven't really seen before. And Patrick kind of mentioned earlier in the conversation, a lot of times you run into, there's a passion, there's a commitment to wanting to see healthy forests, but people don't know how to push that energy forward or how to direct their attention. So I was wondering, are there any other upcoming projects that you're excited about that you'd like to bring to the attention of the public now?

Joey Hulbert (34:49):

Yeah, thanks, Molly. That's really good feedback. And you're right, iNaturalist is an exceptional tool out there. The reason we chose iNaturalist because it's open and the data's available to other researchers or other individuals that want to do some mapping using observations of organisms. But the other reason is because a really stable platform, so it'll continue to exist on our phones and our computers for a long time, and there's already an enormous community of people using it. And so you're right, there's lots of amateur mycologist, there's lots of entomologists, there's folks that add observations whenever they see something out of the ordinary, like a giant Hornet or a spotted Lanin fly. And so we really want to just see more use of a naturalist, and we're thinking about projects that you can use it for. So we have a number of projects on there. The most recent as we've been visiting some Sword Ferns to collect some soil samples around sword ferns that are unhealthy. And that's another opportunity for folks to get involved or contact us. But we're in this process of deciding what should the focus be next. We are fortunate to receive some funding from the Forest Service through the Biden infrastructure law or the bipartisan infrastructure law package to continue the Forest Health Watch for the next three years. So we have just a small amount of money, but it's just nice to have that three years of support. And so we're now in this phase of like, whoa, what should we focus on for the next three years?

(36:44):

Is there a next piece to the Red Cedar that we should work on? Is there a new invasive issue that we want to build community around and be prepared to address? For example, the potential impacts of Mediterranean Oak Bore on Gary Oak is something that maybe a focus we need to pursue, but generally we're looking to the listeners to know what's most important. And so please let us know if there's an issue

you think we should focus on. And with that, we're also thrilled because Molly, the co-host on this show has also agreed to help co-direct the Forest Health Watch. And so the expertise that you bring Molly with Entomology is really exciting to us, and we are happy to follow your lead a little bit and see where you want to go with it.

Molly Darr (37:43):

Well, you can't see me, but I'm grinning really wide. I'm so excited to be a part of Forest Health Watch. I'm absolutely floored with all that you've been able to accomplish already. And I just feel like it is just the warmest, most welcoming community that I could hope to be involved with. So yeah, I'm so excited for our collaborations to come, and I also can't believe that we're already wrapping up our time together here. Joey, while we still have you, I'm on the Forest Health Watch site. I see a Connect with Us tab. Is that the best way for the listeners to get in touch with their ideas and suggestions?

Joey Hulbert (38:21):

That's a good way to just contact me directly or I guess contact you and I, but there's also a page on there. I think it's like Forest health.org/projects maybe, or

Molly Darr (38:40):

Well, we can be sure to link to it in the episode description.

Patrick Shults (38:46):

That sounds like a good call to action to go out on. Also, really cool to be dropping some big news here at the start of the year, Molly, being co-director. I didn't actually know that until just before recording this episode for the listeners. So it's really, really cool to be putting this together and really excited to see what you guys do together going forward.

Joey Hulbert (39:12):

And anyone is invited to be more involved in shaping that program. I feel like the more people involved and the greater the community influencing where it goes, the more meaningful it will be. And so, Patrick, you're absolutely welcome to participate as much as you like in shaping it. And we're just thrilled that WSU has hired Molly as a Forest Health Extension specialist and brings some expertise in entomology and is a key piece for the Forest Health Watch to bring that kind of technical advisory into it. So we really welcome more input, and it's not a perfect program. It could always be better. So we just love it to have more support or more input from stakeholders and partners and community members.

Patrick Shults (40:10):

That's great. And that's just again, back to that kind of evergreen concept. I just think it's just such a cool program and I really appreciate you coming on to talk with us. Yeah, for the listeners, we'll have that link where you can get engaged, get involved with the Forest Health Watch program. We'll have that into the episode description, so keep an eye out for that. But with that, I'm going to close us out. Thank you all for joining. As always, check forestry.wsu.edu for extension events coming up in your way, and we look forward to the future programming in 2024.

Joey Hulbert (40:51):

Thank you, Patrick. Thanks, Molly.